

**THE LIMITS TO LAW:
HOW INTELLECTUAL PROPERTY RIGHTS ARE USED AND PROTECTED IN CHINA**

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ABSTRACT

Many studies on development argue that, with industrial growth and increasing local innovation, companies in developing countries will seek protection of their intellectual properties (IPs) under local laws, and this will lead them to push for the improvement of legal protections for IPs. The present research suggests a more complicated process in China. Many Chinese companies have accumulated a large number of IPs but have not always shown the need to protect them; they are reluctant to enforce their IPRs through judicial procedure, and lack the incentive to lobby for better formal IP protection.

With a focus on the use of IPs and relevant protection mechanisms in China, this study suggests explanations both for companies' acquisition of IPRs even when they do not enforce them and for their failure or reluctance to enforce their IPRs through formal legal procedures. Concerning the first question, many companies acquire IPRs for purposes other than the enforcement of property rights, such as attracting investment and media attention. Concerning the second question, although the Chinese IPR legal system is still under development, many companies have ways of protecting their IPs without resorting to court enforcement. Informed by the literature on the sociologies of law, development, and organization, and based on 88 interviews and various secondary data, this study shows how the broader institutional context of different industries shapes approaches to IP.

This study analysed the following nine industries in three sectors in China: (1) the medical sector, including the chemical drug industry, the biomedicine industry, the traditional Chinese medicine (TCM) industry, and the medical device industry; (2) the telecommunications equipment sector, including the capital goods industry and the consumer product industry; (3) the film & TV sector, including the film industry, the traditional scripted series industry, and the online series industry. This study found that companies use IPRs for different functions, aside from profit appropriation based on potential or actual IPR litigation. The alternative functions include: (1) gaining government support (tax benefits, government subsidies, or policy privileges); (2) gaining publicity and attracting customers; and (3) attracting outside capital. The study also found that

companies use various alternative methods of IPR protection in these industries, aside from legal enforcement (including both enforcement through the courts and administrative enforcement based on IPR law). These alternative enforcement methods include: (1) technological or technical barriers; (2) administrative market-entry control; (3) first-mover advantages enabled by market characteristics (including a market taste for novelty, the importance of marketing experience or channel cultivation, and sales or service bundles); and (4) reputation concerns inside a close-knit network. Both the alternative functions and the alternative enforcement mechanisms are shaped by industrial characteristics, especially in four aspects: (1) Technological and product characteristics, (2) administrative regulation, (3) market characteristics, and (4) network structure.

With regard to theoretical contributions, this study mainly contributes to three literatures. It contributes to the development literature by explaining how a developing society interacts with a formal IPR institution that originated in the West; it contributes to the sociology of law literature by expanding the scope of alternatives to law; it also contributes to the organization-environment literature by elaborating the dynamic interaction between companies and legal institutions. Although the study focuses on IPRs, it also can be instructive for general implementation problems of law; despite some unique characteristics, the Chinese case is generalizable because China is also similar to many developing and post-socialist countries.

RÉSUMÉ

De nombreuses études sur le développement affirment qu'avec la croissance industrielle et l'innovation locale croissante, les entreprises des pays en développement chercheront à protéger leurs propriétés intellectuelles (PI) en vertu des lois locales, ce qui les poussera à améliorer les protections juridiques des PI. La présente recherche suggère un processus plus compliqué en Chine. De nombreuses entreprises chinoises ont accumulé un grand nombre de PI, mais n'ont pas toujours démontré la nécessité de les protéger; ils sont réticents à faire appliquer leurs droits de propriété intellectuelle par le biais d'une procédure judiciaire et ne sont pas incités à faire pression pour obtenir une meilleure protection formelle de la propriété intellectuelle.

En mettant l'accent sur l'utilisation des PI et des mécanismes de protection pertinents en Chine, cette étude propose plusieurs explications sur l'acquisition de droits de propriété intellectuelle par les entreprises même lorsqu'elles ne les appliquent pas et sur leur échec ou leur réticence à appliquer leurs DPI. En ce qui concerne la première question, de nombreuses entreprises acquièrent des droits de propriété intellectuelle à des fins autres que l'application des droits de propriété mais par exemple pour attirer l'attention des médias et des investisseurs. En ce qui concerne la deuxième question, bien que le système juridique chinois en matière de DPI soit encore en cours de développement, de nombreuses entreprises ont des moyens de protéger leurs PI sans recourir à l'aide des tribunaux. Se basant sur la littérature de la sociologie du droit, du développement et de l'organisation, ainsi que sur 88 entretiens et diverses données secondaires, cette étude montre comment le contexte institutionnel général des différentes industries façonne les diverses approches à la propriété intellectuelle.

Cette étude a analysé les neuf industries suivantes dans trois secteurs en Chine: (1) le secteur médical, y compris l'industrie des médicaments chimiques, l'industrie biomédicale, l'industrie de la médecine traditionnelle chinoise (MTC) et l'industrie des dispositifs médicaux; 2) le secteur des équipements de télécommunication, y compris l'industrie des biens d'équipement et l'industrie des biens de consommation; (3) le secteur du film et de la télévision, y compris l'industrie cinématographique, l'industrie des séries scénarisées traditionnelles et l'industrie des séries en

ligne. Cette étude a révélé que les entreprises utilisent les DPI pour différentes fonctions, mise à part l'appropriation des profits gagnés à partir des litiges de DPI potentiels ou réels. Les autres fonctions comprennent: (1) obtenir le soutien du gouvernement (avantages fiscaux, subventions gouvernementales ou privilèges politiques); (2) gagner de la publicité et attirer des clients; et (3) attirer des capitaux extérieurs. L'étude a également révélé que les entreprises utilisent diverses méthodes alternatives de protection des DPI dans ces industries, en dehors de l'application de la loi (y compris l'exécution par les tribunaux et par les moyens administratifs basée sur la loi DPI). Ces autres méthodes pour assurer la protection des DPI comprennent: (1) les obstacles technologiques ou techniques; (2) le contrôle administratif de l'entrée sur le marché; (3) les avantages du précurseur rendus possibles par les caractéristiques du marché (y compris le goût du marché pour la nouveauté, l'importance de l'expérience marketing ou de garder une bonne relation avec les canaux de distribution, et les offres groupées de ventes ou de services); et (4) les problèmes de réputation au sein d'un réseau dense. Les fonctions alternatives et les autres mécanismes permettant l'exécution de la protection des DPIs sont déterminés par des caractéristiques industrielles, notamment sous quatre aspects: (1) caractéristiques technologiques et des produits, (2) réglementation administrative, (3) caractéristiques du marché et (4) structure du réseau.

En ce qui concerne les contributions théoriques, cette étude contribue principalement à trois catégories littéraires. Elle contribue à la littérature sur le développement en expliquant comment une société en développement interagit avec une institution de DPI officielle originaire de l'Ouest; elle contribue aussi à la littérature de la sociologie du droit en élargissant la portée des alternatives à la loi; cette étude contribue également à la littérature sur le comportement organisationnel en mettant en avant l'interaction dynamique entre les entreprises et les institutions juridiques. Bien que l'étude se concentre sur les DPI, elle peut aussi être instructive concernant les problèmes généraux de mise en œuvre de la loi; Malgré quelques caractéristiques uniques, le cas chinois est généralisable car la Chine est également similaire à de nombreux pays en développement et postsocialistes.

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Chapter I. Intellectual Property Protection in Developing Societies: Literature and Research Question

1. Context and the Puzzle

In the summer of 2015, I went to the China International Medical Equipment Fair (CMEF) at Shanghai, the biggest fair in the Chinese medical device industry, which gathered more than 2000 medical equipment producers. While going around checking brochures and asking questions, I noticed an interesting phenomenon. Although most companies' brochures claimed that they had patented products, either under review or authorized, they seldom mentioned patent or intellectual property (IP) during interviews, nor did they show strong awareness or worries of protecting their patents. Instead, they would enthusiastically discuss how to get "the certificate" (a license from the China Food and Drug Administration, which gives the applicant the permission to sell the product in the market), and proudly announced that their products have got "the certificate". Later, during an interview, a representative from a medical device consulting company said intellectual property right (IPR) protection in China is weak, but he also said that this does not worry company managers.¹ Another representative from the legal department of one of the biggest and most innovative pharmaceutical companies in China revealed that the department had not engaged with any IP-related case since she had worked there, i.e. from 2010 to 2015.² It seems that these local companies in the medical sector do apply for patents yet pay little attention to their legal protections.

At October 2016, a Chinese film director named Ping He, the former Secretary-General of the China Film Directors' Guild, shared a link to the pirated version of his new film, because he thinks that "the film had limited screenings and many people were not able to see it (Xiaoqin He, 2016)". The director only enjoys the right to claim authorship but does not have the copyright of the film;³ thus the fact that he shared a link to a pirated source of the film is likely a copyright

¹ Interview 20150514, with a manager from a medical device company.

² Interview 20150517, with a representative of a pharmaceutical company.

³ According to Chinese copyright law, Article 10 (similar to US copyright law C1§106): "Copyright" includes different exclusive rights: for example, the right of publication, the right of authorship, the right of alteration, the right of integrity, the right of

infringement. But related news reports and online comments do not raise the question about copyright infringement; almost all of them expressed their sympathy for the director and their worries about the Chinese film industry where high-quality art films are disadvantaged.⁴ This incident might give an impression of weak IP protection in the Chinese film & TV sector. However, since 2014, an "IP spree" has swept across the film industry, online literature, and the game industry: copyrighted content from online literature and games, or even songs, are being snapped up by film production companies at more than ten times the price of a few years ago. A manager from one of the biggest film and TV production companies in China told the press that, around 2010, the adaptation rights for an online novel with more than 10 million reads could be bought by film and TV producers for only 100,000 RMB (US\$14,706),⁵ but in 2015 the adaptation rights for a novel like this could worth more than 2 million RMB (US\$294,117) (T.-J. He, 2015); this means an increase of, adjusted for inflation, about 1.64 million RMB (US\$241,176),⁶ which is a huge increase. It seems that film and TV producers in China are willing to spend more and more money to purchase IP resources for film production, without worrying much about piracy.

Another example is the Chinese telecommunications equipment sector, which is an area of increasing innovation. In terms of patent applications, it is by now the most innovative sector in China.⁷ In 2015, a leading Chinese company in this sector, Huawei, ranked number one in Patent Cooperation Treaty (PCT) applications among worldwide companies, and ZTE, another Chinese company, ranked number three (WIPO, 2016c).⁸ In 2011, Huawei's customers served several

reproduction, the right of distribution, the right of information network dissemination. "The right of authorship" here means the right to claim authorship. Also see Article 15: "The copyright of a cinematographic work or a work created in a way similar to cinematography shall be enjoyed by the producer, while any of the playwright, director, cameraman, words-writer, composer and other authors of the work shall enjoy the right of authorship, and shall be entitled to obtain remuneration as agreed upon in the contract between him and the producer".

⁴ Although it is still a debate whether that film is an authentic art film or is pretending to be an art film to attract attention.

⁵ For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early 2017 (about 6.8, i.e. 1 US dollar equals to about 6.8 RMB).

⁶ The inflation rate is about 4% per year, according to data from the National Bureau of Statistics.

⁷ It is important to acknowledge that using patent applications as a measure of innovation is controversial.

⁸ According to the World Intellectual Property Organization (WIPO), Huawei Technologies led for the second consecutive year with 3,898 published PCT applications, or an additional 456 applications over 2015. US-based Qualcomm Incorporated was the second largest applicant in 2015, with 2,442 published applications, while China's ZTE Corporation ranked third with 2,155 PCT applications. See:

http://www.wipo.int/pressroom/en/articles/2016/article_0002.html

billion people in over 140 countries, and Huawei itself had been involved in over half the rollouts of super-fast 4G mobile networks announced in Europe (The Economist, August 4th 2012).⁹ These companies are large IP owners and have been actively engaged in lawsuits in the international market. However, according to public databases¹⁰ and reported news, they seldom bring charges against potential infringers inside China. It seems that large Chinese telecom equipment companies rarely need to use legal weapons to defend their intellectual property rights (IPR) inside China (however, this does not mean they never use legal protections, as will be seen in later sections).

The logic behind the behaviour patterns of Chinese companies eluded me. Is intellectual property important for Chinese companies, and is intellectual property protection important for them? Is legal protection for intellectual property strong or weak from their point of view? If it is strong, why do the companies complain about it so much and why do the big telecom equipment companies use legal weapons against potential infringers much less than they do in the international market? If it is weak, why would companies apply for more and more patents and pay more and more for copyrighted content, and why do they express so little worry about copyright infringements?

The puzzle here is as follows. There are criticisms about weak legal enforcement of IPR in China from various sources, and reports and studies indicate that financial compensation for infringement lawsuits is far too low; however, there are large IP activities, companies invest a lot in IPRs, and they do not worry much about infringements.

Specifically, on one hand, although studies have confirmed the rapid and impressive development of the legal structure of IP protection in China (Jianfu Chen, 2011, p. 302; Devonshire-Ellis, Scott, & Woollard, 2011; S. Guo & Zuo, 2007; Yuanguo Zhao, 2003), it has remained accused of IPR violations and lack of effective protection by companies, media, and scholars, both domestic and foreign (Lejeune, 2014; J. Liang & Hu, 2013; P. K. Yu, 2007;

⁹ See: The Economist, Aug 4th, 2012, at: <http://www.economist.com/node/21559929>

¹⁰ For example, two of the biggest legal case databases: *pkulaw.cn* and *China Judgements Online*

Zimmerman, 2013).¹¹ These complaints were also encountered during my fieldwork where I found that seminars and meetings, participated in by lawyers, judges and local companies, also discussed the low average compensation rate of IPR cases a lot; there are internal concerns that this would make it hard for the rights holders to retrieve their losses through legal methods.

On the other hand, there are rapidly increasing local patent applications and a market for copyrights (as I mentioned in the film-industry story): patent applications filed in China rose sevenfold between 2004 and 2014; China ranked first in the world in IP filing by origin in 2014 with 2,680,900 patent applications, and it accounted for 89% of total growth of patent filing (WIPO, 2015). (I address the issue of IP activity in chapter three.) IPR lawsuits also increase rapidly: there were 95,522 first-instance IP civil cases admitted by all local courts in 2014 (Court, 2015), and there were 109,386 in 2015 (Supreme People's Court, 2016); figures for approximately the same time period in the US were 13,335 in 2013 and 13,420 in 2014 (The Administrative Office of the U.S. Courts, 2015). Besides, as my fieldwork indicates, most companies admit the seriousness of IPR infringements in China, but they also express that it is not a threat to them.

In sum, the aforementioned puzzle suggests that the working of IPR laws in China is complex and works differently from in the West. This study is an attempt to understand IPR law and enforcement in China, as well as the puzzling interaction between the intellectual property legal

¹¹ For more criticisms, Business Software Alliance (BSA) showed, in a survey published in 2012, that 77 percent of PC software in use in China was pirated, whereas the piracy rate of software in US is 19%. (This is how the piracy rate is calculated: 1. Determine how much PC software was deployed during the year. 2. Determine how much was paid for or otherwise legally acquired during the year. 3. Subtract one from the other to get the amount of unlicensed software. Once the amount of unlicensed software is known, the PC software piracy rate is computed as a percentage of total software installed (Business Software Alliance, 2012)). According to the European Union report, in 2015 China continued to be the main country of provenance from where goods suspected of infringing an IPR were shipped to the EU, accounting for 41% by number of articles and 58% by value (EU, 2015; Europol & OHIM, 2015); the OECD also has identified China as the biggest producer of counterfeit goods worldwide (OECD & EUIPO, 2016). According to a report from the US International Trade Commission in 2011, companies in the US IP-intensive economy that conducted business in China in 2009 reported losses of approximately US\$48.2 billion in sales, royalties, or license fees due to IPR infringement in China (US International Trade Commission, 2011); a 2014 survey report from Asia Pacific Foundation of Canada indicates that almost one-third of Canadian companies conducting business with China ranked IPR practices as a major obstacle to doing business (APFC, 2014). *Business Week* Magazine has also criticized China for piracy in many articles (for example, see Einhorn and Ji (2007)).

system and local industries.

2. Existing Explanations of IP Protection Problems in Developing Countries

The introduction of new and stringent IP rules in the international system, mainly through the establishment of the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) in 1994, has made IPR a worldwide regime (Chang, 2001; Sell, 2003). TRIPS not only set minimum standards for IPR laws, but also requires each signatory country to put in place a reasonably effective enforcement mechanism for IPR. Under this background, over the past decades, there has been increasing interest from policymakers, academics, businesses, and civil organizations in understanding how the IPR system actually takes effect in different socio-economic contexts. There have been many attempts to explain the working of a transplanted IPR legal system in developing societies like China, especially the unsatisfactory enforcement of the western-derived IPR laws. I briefly review the major explaining frameworks as follows, but it needs to be noted that the various views I identify are not necessarily mutually exclusive, and there could be some overlap.

2.1 The "Wrong Perception" Argument

It is not a mainstream view, but some scholars argue that IPR enforcement in China is not as weak as claimed. From their point of view, the image of rampant IPR violations in China is somewhat distorted; this distorted image is either produced for political propaganda purposes or due to incorrect statistics. Two studies in particular represent this argument.

First, Schwabach studies music piracy and movie piracy as examples to reveal existing problems in measuring digital piracy levels (Schwabach, 2008). According to him, the problems include problems in reporting and in valuation; respectively, it is difficult to get reliable information on how much digital piracy takes place, and then to estimate direct economic losses brought on by piracy. Simply put, it is unknown if the free downloader may otherwise have been willing to buy the original version (i.e. not every unlicensed copy necessarily represents a lost

sale).

Later, in a survey of movie viewing habits among Chinese college students, with an empirical approach similar to a recent study of US college students,¹² Bai and Waldfogel find that three quarters of movie viewing in China is unpaid and each unpaid viewing displaces 0.14 paid viewings in the Chinese study (Bai & Waldfogel, 2012); the American study is compared to viewing habits in China, where the authors found that unpaid viewings made up less than a tenth of unpaid movie viewings and the displacement rate of 1:1 in a US college-student sample, which is to say that, according to these studies, piracy is creating less economic displacement in China than in the US (Rob & Waldfogel, 2007). They also claim that a survey of online Chinese consumers¹³ reveals a displacement rate of roughly zero, implying that the consumption of pirated material did not displace the legal consumption of music or movies. Although the specific numbers in these studies have been questioned, it suggests that the problem of piracy creating economic loss is not as great as sometimes claimed.

Nowadays, perhaps to make the reported numbers more impressive, most of the reported losses from IPR infringement in China are estimated with the presumption that the Chinese would be both willing and able to purchase the goods at the prices set by Western manufacturers if it were not available in pirated versions. However, the studies I mentioned here suggest that, taking the displacement rate difference into account, the loss due to piracy and counterfeiting is much smaller than claimed.

These studies suggest the difficulty of precisely determining IPR infringements levels in a given country; there is no common agreement as to which measures are most appropriate to measure it; likely there will always be debates about this. However, these studies come with their own problems; for example, they use the population of the whole country instead of the country's urban population as the denominator to calculate per capita piracy, keeping in mind that the

¹² In Bai and Waldfogel's study, the college student sample comes from a paper survey administered on the campus of a Chinese university in December of 2008; the survey was given to 372 students in two classes. In the previous US study of Rob and Waldfogel, the college student sample comes from a survey administered in about 500 University of Pennsylvania in 2005, with a sample size of 470 undergraduate students.

¹³ The internet user survey is conducted in July of 2009 and obtained data on 3852 individuals.

proportion of internet users is much greater in cities than in the countryside; another study draws conclusions from only one university's student sample. In addition, these studies only question the estimated value of piracy loss, but they do not deny the overall level of consumption of pirated goods;¹⁴ in fact, Bai and Waldfogel's study of unpaid movie viewing suggests that the scale of piracy overall is large. In any case, these factors are not, in themselves, satisfying answers to critics of weak enforcement of IPR laws in China.

2.2 The "Tradition and Culture" Argument

Following the Montesquieu tradition, comparative law scholars have long argued that laws transplanted from one society to another may not work the same due to different environmental obstacles including history and political culture (Kahn-Freund, 1974). Carrying this tradition forward, many recent studies stress the importance of understanding the historical and cultural contexts in which IPR laws operate; they argue that certain cultural or traditional elements of Chinese society are not compatible with a modern IPR system and have contributed to the weak enforcement of intellectual property law.

There are many general law studies pointing to the lack of a legal culture (rule of law) throughout Chinese history (Keith, 1994; K. G. Turner, 2015),¹⁵ The first serious scholarly analysis connecting IPR enforcement in China to cultural factors is William Alford's *To Steal a Book Is an Elegant Offense* (William P. Alford, 1995). Although he also mentions the lack of institutions, what he especially emphasizes in explaining China's unwillingness to protect IPR are three cultural legacies: the resilience of the Confucian culture (which apprises learning through copying and imitation),¹⁶ the legacy of the Mao era (when private property is criticized), and

¹⁴ See footnote 11 for numbers related to piracy.

¹⁵ Many studies about the rule of law in China challenge this argument by pointing out the huge improvement of legal institutions (Brown, 1997) and legal consciousness (Stanley B. Lubman, 1996).

¹⁶ According to Alford, in Confucian understanding, "the need to interact with the past sharply curtailed the extent to which it was proper for anyone other than persons acting in a fiducial capacity to restrict access to its expressions"; in this case, viewing literature as imitating nature (common heritage of all civilized persons) produces "a general attitude of tolerance towards the forging" (chapter two).

residual resentment of the West for forcing China to adopt IPR laws.

Following Alford, more cultural explanations of the weak IP protection in China emerge. Some discuss Confucianism and cultural practices in China with regard to IPR in detail (P. H. Hu, 1996; Pang, 2012); some compare the Confucian culture with a Pre-Romantic understanding of creativity in Western culture, where aesthetic quality was measured by the ability to follow the examples set down by ancient masters rather than by originality or individual self-expression (Fredriksson, 2014). Some extend the analysis to Neo-Confucianism¹⁷ and argue that the basic assumptions about the nature of intellectual property are fundamentally at odds with the traditional Chinese view of the role of intellectuals in society (Lehman, 2006).¹⁸ Some compare different societies to explore how a socialist legacy contributes to people's unwillingness to accept the idea of private intellectual property (Tiefenbrun, 1998),¹⁹ and some describe nationalist sentiments and scepticism of Western institutions in China as reasons for current attitudes (P. K. Yu, 2001, pp. 22-27). There are also some studies which focus on consumer behaviour, and claim that China's history and culture have hindered consumer support for IPR (Kshetri, 2009).

Culture-based analyses may provide some insight into the complications associated with law transplanting brought about by contextual differences, which is to say that a comprehensive account of IPR enforcement requires attention to cultural-historical legacies. However, the studies I mentioned focus on the use of historical records and legal documents, instead of other data. They assume culture to be the primary cause of the piracy problem in certain societies basing on only second-hand sources. This may lead to the neglect of other institutional factors that are more directly related. Cultural barriers may make it difficult for intellectual property laws to emerge or to develop, but it does not necessarily prevent a society from adopting IPR laws, as indicated in

¹⁷ Compared to traditional Confucianism, Neo-Confucianism is more systematic, and more integrated into the governing system and social hierarchy.

¹⁸ According to Lehman, in exchange for a position at the top of the social hierarchy, a basic duty of the Confucian scholar was to contribute to the overall social good via the promotion and dissemination of knowledge and education, both through direct teaching and through the production of edifying works of literature and art. The Neo-Confucian view is thus that profit as a goal is unethical, and doing something creative with the primary goal of profit is low-class (p5-6).

¹⁹ The socialist assumption about intellectual property is said to be this: It is impossible to separate the inventor's activity from the society the inventor is a part of; any innovation is the logical outcome of the inventor's role as a member of society, so the innovation is not the inventor's private property (Hsia & Haun, 1973).

the following cases.

For example, in the 19th century, British critics used to claim that Americans were culturally incapable of improving IP protection (M. Peng, 2013). But in the 20th century, after the U.S. economy became sufficiently developed, IP protection improved significantly in the United States, making the culture-based argument invalid. It also does not adequately explain why Taiwan, that shares the same Confucian culture with mainland China, has successfully improved IP protection in the last two decades (C.-S. Chen & Maxwell, 2007). Furthermore, Japan is also very influenced by Confucian culture, but this has not stopped it from developing an effective IPR system (Odagiri, Goto, & Sunami, 2010).

The culture-determinism element reduces the ability of these studies to explain relevant cases. This weakness in explaining empirical cases may be due to the ignorance of institutional factors, and it is exactly these factors that are the main focus of scholars concerned with the institutional aspect.

2.3 The Institutional Aspect: State Capacity and Bureaucratic Structure

This aspect carries forward the Weberian argument that bureaucratic structure is what makes law work. In China, an intellectual property owner can choose to have his IPRs enforced by either a civil court or by a special administrative body, or both. The right of both institutions to enforce IPRs are acknowledged in intellectual property law. This is called "the parallel forms of enforcement" or "the dual system of enforcement". (I elaborate this dual enforcement system of IPRs in chapter three.) The works focus on institutions and study the state capacity to enforce laws (either through judicial or administrative enforcement agencies) under Chinese bureaucratic structure.

Earlier analyses of China's policy-making and policy implementation institutions discuss how institutional problems such as bureaucratic fragmentation and decentralization affect the enforcement of policies and laws (Corne, 1997; Keller, 1994; Segal, 1994).²⁰ The most influential

²⁰ As for bureaucratic fragmentation, Keller (1994) points to the tangled administrative structure as an obstacle for legal development in China. Corne (1996) tries to explain the gap between law and reality in China by identifying the functional and

analysis is the "fragmented authoritarianism" concept (Lieberthal, 1992; Lieberthal & Oksenberg, 1988) and its extension (Mertha, 2009), which argue that the authority below the very peak of the Chinese political system is fragmented and disjointed.²¹ Following this tradition, some scholars connect these institutional problems specifically to intellectual property right enforcement. For example, Oksenberg, et al., using historical records and interview data with Chinese officials and foreign companies from 1994-1996, conclude that local officials place a premium on economic growth and employment, rather than the protection of IP; in order to advance (or maintain standing) politically, economic growth and employment are critical; furthermore, there are direct economic benefits flowing to local officials, when they have relationships with local enterprises IPR (Oksenberg, Potter, & Abnett, 1996). Similarly, Kolton, using legal document data in the early 1990s, and Berkman, conducting interviews with judges, explore how local protectionism plagues both the adjudication process and the enforcement process (Berkman, 1996; Kolton, 1996).²² More recently, there are two major political science studies addressing IPR enforcement in China that look at IPR enforcement and bureaucratic structures in a more systematic way; both of these studies focus on the structure of enforcement bureaucracies and how the bureaucracies are affected by foreign and domestic pressures.

Mertha (2005) studies administrative enforcements in China and compares enforcement of different IP types (patent, trademark, and copyright). He conducted fieldwork in different parts in

structural problems in its *administrative legal system*; he examined in depth the lack of clear delineation between legal and policy norms, the great scope of discretion accorded to bodies charged with legal interpretation and implementation, the limited scope of judicial review, and the resulting problems of legislative inconsistency and haphazard legal enforcement.

As for decentralization, although sub-national governments in China lack formal political autonomy vis-à-vis the centre, economic reforms, including financial autonomy and increased control for lower governments over their economies, have brought decentralization to Chinese political system (Montinola, Qian, & Weingast, 1995; Oi, 1992; Sharma, 2009; Shirk, 1993). In this case, local authorities can and do frustrate central policies, and even when the central state makes explicit demands, local compliance is not guaranteed (Economy, 2004; Hsueh, 2011; Sharma, 2009; Walder, 1998). With regard to law enforcement, Segal's study (1994) points out that local authorities can largely affect the result of legal disputes.

²¹ Initially the term fragmentation meant jurisdictional cleavages among bureaucracies, but later it was expanded by Mertha to include central-local cleavages. Inter-bureaucratic fragmentation should be distinguished from decentralization.

²² These studies focussed on the early 1990s. At that time, most private companies in China were not innovative. Even when there were innovative companies in a certain area, they were usually big companies with employers with good educations who could always find a job, while their smaller competitors were usually small operations comprised of unemployed individuals who could not otherwise find work. One or two IP infringements may not have been detrimental to the big companies but strict enforcement may be critical for smaller companies. To avoid social unrest, the local officials might choose to keep the small companies. Now with the growth of domestic IPs, there is less concern and less discussion about local protectionism like this.

China in 1998-1999, returning on trips over the following five years; during his fieldwork, he studied legal documents and interviewed dozens of officials and made cold-calls to some lawyers and business people as well as private investigation agencies. Mertha studied the behaviour of foreign businesses and private investigation companies that operate in China; he concluded that the pressure they exert on local governments facilitates interbureaucratic competition and so brings about a high volume of enforcement;²³ this contrasts with pressure exerted by foreign states on the central government of China; in this second case, the pressure does not lead to a high volume of enforcement because it does not necessarily lead to incentives for enforcement at the local level (Mertha, 2005).²⁴

Mertha only studies administrative enforcements and foreign IPR in China, and equates high-volume enforcement with effective enforcement. Dimitrov, on the other hand, compares judicial and administrative enforcements, focuses more on domestic IPR, and pays more attention to enforcement quality. His study covers the period between 2000-2008; the data he uses are drawn from public documents and interviews covering Beijing, Shanghai, and Guangdong in China, mainly with officials and legal professionals, as well as a few managers in companies. Similar to Mertha, Dimitrov points out jurisdictional ambiguity and interbureaucratic competitions among IPR-related bureaucracies;²⁵ he also admits that pressures may lead to high enforcement volume; but contrary to Mertha, he argues that in this case the high enforcement volume does not mean enforcement effectiveness (Dimitrov, 2009). Dimitrov brings up three criteria to indicate high-quality or "rationalized" enforcement: consistency, transparency, and procedural fairness.²⁶ He concludes that "rationalized enforcement" is most likely to emerge when the enforcement structures are given a chance to develop outside the spotlight of either foreign or domestic

²³ In another work, Andrew Mertha explains the mechanisms for interbureaucratic competition and claims that the previously widespread assumption that institutional redundancy necessarily leads to inefficiency is incorrect (Mertha, 2006).

²⁴ According to Mertha, external pressure over copyright and patents focused on legislation and top-down implementation, and pressure over trademarks appeared exogenous to the formal political system, but, in fact, endogenous to the social and commercial context in which the political system is inextricably linked.

²⁵ For example, anti-counterfeiting enforcement of trademark falls into the domain of different bureaucracies: The Administration for Industry and Commerce and the Quality Technical Supervision Bureau.

²⁶ He uses further measurements for the three criteria in the study: consistency – proxies related to judicial expertise and professionalism; transparency – frequency of open trials and open administrative hearings, as well as lengthy publication of decisions; procedural fairness – rate of appeal.

pressure.²⁷

Although very insightful, both Mertha and Dimitrov's studies, as the earlier institutional studies, treat state agencies as their focus. As for data usage, first, the time period over which they gathered data ended in 2008, but there have been major legal revisions since 2008;²⁸ the map of China's intellectual property apparatus and the companies' behaviours have changed a lot since then. Second, they gather data mainly through legal documents, newspaper articles, and interviews with officials; even though they interview companies on a few occasions, the focus is still on their interaction with officials in formal enforcement cases (i.e. cases brought to court or administrative agencies through formal procedure). Although the modern state is a primary locus of law enforcement, scholars in the sociology of law have argued that behaviours of non-state agencies are also quite significant for the protection of private property (Carruthers & Ariovich, 2004).²⁹ To focus only on state bureaucracies may lead to the neglect of other related agencies and informal factors, such as the behaviour of right holders ; those factors can play an important role in making IP protection work. Besides, this statist view alone cannot explain the varying effectiveness of legal IP protection across industries and time frames, under the same institutional environment. Scholars blaming state capacity need to confront the evidence that the IP protection related to the Beijing Olympics has been quite effective (Jianfu Chen, 2011);³⁰ in fact, not a single case of IPR violation of Olympic logos and mascots was reported during the Beijing Olympics (M. Peng, 2013,

²⁷ Dimitrov's major findings are: 1. Responsiveness to foreign and domestic pressures helps explain the high volume of IPR enforcement in China. 2. Enforcement under pressure is unlikely to be rationalized because agencies are compelled to supply quick and dry routine enforcement without concern for principles of consistency, transparency, and fairness; also, agents are encouraged to participate in enforcement campaigns, which are not aimed at providing rationalized enforcement either. 3. Rationalized enforcement exists in civil court enforcement (for all IPR subtypes) and in some types of patent administrative enforcement; the conditions are: free of pressure to enforce, the mandates of the IPR tribunals and of the patent bureaucracy (SIPO) are clearly delineated.

²⁸ Revised Patent Law in December 2008, revised Copyright Law in 2010, and revised Trademark Law in 2013.

²⁹ For example, Thompson (1975) argues that a lot of resistance in eighteenth-century England to private ownership of the former commons stemmed from the perception that it was illegitimate. Through studying cases in South Asia, Agarwal (1994) points out that de facto property rights diverge from de jure rights in the developing world due to gender discrimination.

³⁰ According to the journalist R. Callick, "One can gain a brief insight into how effective Chinese policing of intellectual property might become, by considering the zeal with which Beijing is protecting its great current brand the 2008 Olympic Games. This event is not exactly an invention, of course, but it is potentially a big earner, one in which the leadership is investing the prestige of the country and of its ruling Communist Party. The Games' lively logo, a version of the Chinese characters for Beijing reshaped as a running figure, and its mascots, the Five Friendlies, are being assiduously protected against piracy" (Callick, 2006).

p. 138). This fact leads to studies of the next aspect: the state-will aspect.

2.4 The State-Will Aspect

Some scholars and media in the West believe that leaders in developing countries lack the incentive to enforce intellectual property laws. Instead of attributing IPR problems in China to decentralization and local bureaucracies, studies from this aspect blame the central government in Beijing. They argue that the Chinese state is only paying lip service to IP protection through law and policy reforms, while it in fact lacks the will to enforce these reforms, due to rational-choice judgment, either because of the uneasiness about the potential conflict between intellectual property laws and national interest (Goodman, 2005; Peter K. Yu, 2000, pp. 136-137),³¹ or because the state leaders have been trying to reassert control while IPR reforms have been shifting the power over intellectual work away to society (Lynch, 1999).³²

The studies arguing this state-will explanation generally draw their conclusions only from historical record data and newspaper data; they also cover an early time period when there are less local innovations in China. They oversimplify the state by treating it as a unitary actor and ignoring the dimension of state ability shaped by institutional complexities inside it; the argument also makes an assumption that developing states with few domestic IPR would always find it disadvantageous to enforce intellectual property rights. Some studies from the same rational-choice tradition actually challenge this argument, by pointing out that IP protection will actually bring more benefit than cost even for developing countries, since a strong IPR system would encourage technology transfer, foreign investments, and eventually domestic innovation.³³ A

³¹ "Intellectual property" is usually said to be the protection of intangible assets for a specified period of time in order to induce innovation and creativity while at the same time allowing the public to enjoy the benefits of this innovation and creativity (Mertha, 2005, p. 24). The conflicting goals embodied in it have created tensions between ownership and use claims over intellectual property, which then bring cleavages between the developed world (the owner of IPs) and the developing world (the user of IPs). Based on this logic, the suspicion about developing the will of countries to enforce IPR prevails, both in the beginning of the establishment of IP laws (see Yu's description about the new trademark and patent laws in the 1980s) and at present (Goodman claims in the Washington Post that, "Far from an ally in a joint undertaking, China's government actively tolerates and even rewards the stealing of ideas as its anointed development strategy.").

³² Lynch argues that protection of private property rights in the cultural market will limit the state's power to control and use intellectual property.

³³ For example, the International Monetary Fund argues that the rewards that stem from domestic research and development as well as the country's heightened attractiveness as a location for foreign investors are expected to outweigh the need for counterfeiting

precise cost-benefit analysis is very difficult, because IPR regimes have so many different economic and social effects that are uncertain (P. K. Yu, 2007), so there is no common agreement in theory about whether protecting IPR per se is rational or not for developing countries. But, in practice, many developing countries have adopted strict IPR systems and have taken enormous enforcement reforms to attract foreign investments. This argument cannot explain the great measures adopted by the Chinese state to strengthen IP protection, especially those far beyond international requirements. This aspect is more and more discarded with the increase of China's own patents, but a more dynamic and extended version of it still prevails—the development aspect.

2.5 The Development Aspect

Similar to the political will argument, many development studies try to relate the IPR enforcement issue to self-interest of the developing countries. The difference is, they focus more on industrial growth and domestic companies instead of state leaders; they also see the problem in a more historically dynamic way, and take the status quo as a transitory phase.

Following the tradition of linking property rights with economic growth (North & Thomas, 1973),³⁴ development studies have paid a lot of attention to the link between intellectual property rights and economic catch-up (Chang, 2001; Odagiri, Goto, & Sunami, 2010; Rapp & Rozek, 1990). It has been pointed out that, while early developing countries, such as the U.S. and Japan, have had enough time (nearly a century) to accommodate the IPR system with their domestic needs (David, 2010; Odagiri & Goto, 1996; Odagiri, Goto, & Sunami, 2010), today's developing countries have to establish an IPR system fitting international standards, which may not fit their domestic needs, within one or two decades. Thus, from the development aspect, it is natural to have a transitory period when the IPR system does not work effectively in practice, and accusing

in more developed countries, and to allow for effective IP protection to become profitable (Scandizzo, 2001). Rapp and Rozek (1990) takes the pharmaceutical industry as an example and points out that the benefits to developing countries in terms of enhanced prospects for economic growth far outweigh the properly measured costs.

³⁴ North and Thomas have argued persuasively that both the pace and geographic pattern of pre-modern economic growth in the western world was shaped by property rights. The main proposition of the North-Thomas model is that efficient economic organization is the source of growth. Efficient organization entails institutional arrangements, particularly those that define and enforce property rights, that are enacted and enforced so that private gain serves as adequate incentive for the productive conduct of economic affairs.

these countries for not having strong IP protection at present is not fair (Chang, 2002).

Most development studies admit that strong IP protection, like the one demanded by the TRIPS, may bring very small benefits to most developing countries at their current stage of development. Some point to the imbalanced IP ownership and ability to innovate between developed and developing countries (Bettig, 1996; Drahos & Braithwaite, 2002; Shadlen, 2007);³⁵ some claim, based on historical analysis, that the opportunity cost is too high for developing countries due to their lack of technical, administrative and legal human resources (Chang, 2001);³⁶ some take a more anthropological method and analyse local resistance to TRIPS in developing countries to reveal specific conflicts of interest, especially with regard to accommodating IPR with public health and traditional knowledge (Francis, 2009; Krikorian, 2009; Sell, 2003).³⁷ In sum, from these aspects, most conflicts come from the fact that the developing countries have not developed enough of their own IP; they have not accumulated adequate political and social resources to support the IPR system, or that they have not had time to accommodate TRIPS with their local contexts. Studies from this aspect agree that there is a lack of local commitment to IP protection as long as the economy has not caught up; while some of them suggest reforms to make the IPR regime work better for developing countries (Shadlen, 2007; Sunder, 2012),³⁸ most of them claim that, as suggested by the historical experiences from the developed countries, with industrial catching-up, more and more local companies in developing countries will seek

³⁵ Bettig (1996) studies the expansion of IP, and claims that the control over intellectual and artistic creativity is mostly in the hands of transnational corporations based in rich countries. Drahos (2002) argues that IPR are a source of authority and monopolistic power granted to the few over informational resources on which the many depend, and TRIPS will perpetuate inequality between the developed and developing countries. Shadlen (2007) points out that importers and users of foreign knowledge overwhelmingly control IP in developing countries: more than 97 percent of patent applications in middle-income countries come from abroad, while in low-income countries, foreign applications account for all but one-fifth of 1 percent of the total.

³⁶ Basing on a study of historical cases, Chang (2001) argues that, stronger IPR may not encourage greater R&D in developing countries, because they do little truly "novel" R&D and a lot of the new knowledge that they generate is not readily patentable; on the other hand, the opportunity cost of running a strong IPR system may be considerable for them, given their lack of technical, administrative and legal human resources.

³⁷ Krikorian (2009) studies political conflicts around compulsory licensing of medicine patents, and finds that certain social, political, economic, and epidemiological factors are all needed to make use of the flexibilities of TRIPS, and it is not easy. Francis (2009) finds that the current IPR system contrasts with the community centred approach of indigenous people, and is unfriendly to traditional knowledge (which is already in the public domain). Sell (2003) studies the civil society resistance in developing countries after TRIPS; she believes that TRIPS should be preserved but it should be reinterpreted to allow developing countries adequate flexibility to develop a local production capacity.

³⁸ For example, reinvigorating national commitments to the multilateral trading system, clarifying international trade rules, and inspiring procedural reform to make the WTO more user-friendly (Shadlen 2007, P174).

protection against infringers under local IPR laws; IPR enforcement will eventually improve (Adelman & Baldia, 1996; Jianfu Chen, 2011; Massey, 2006b; M. Peng, 2013; P. K. Yu, 2007).³⁹

These studies have identified some domestic economic reasons for enforcement problems in developing countries, and have to some extent explained why foreign pressures do not work as predicted in pushing for more effective IP protection—mainly because local industries lack IP interests of their own. But this aspect is mostly based on the incentive or the functional argument of IPR laws—IPR will be desired and beneficial for industries in developing countries in the long run, either because they are the natural and best institution for promoting innovation incentives,⁴⁰ or because they will give domestic interest-groups monopolistic powers in the market. Based on this argument, most development studies assume a general pattern without doing empirical studies about the behavioural patterns of domestic industries (which I explore in the following chapters). They assume that as these developing economies and indigenous industries grow, IP protection will be desired and enhanced. The pattern described here suggests an oversimplified linear relationship between the needs of local innovation and IP protection, and ignores intermediating factors.

However, things may be more complicated than that. In fact, this type of argument, which in the end holds a unilinear evolutionary perspective, has been criticized a lot in many, more general,

³⁹ See Adleman (1995, P532): "There will, of course, be winners in India as well—the inventors who develop a local industry that creates rather than copies pharmaceuticals, as well as those who do not have to emigrate to work in the cutting edge pharmaceutical industry. Once India develops a viable and competitive world class pharmaceutical industry, then there will be more winners than losers in India". Also see Peng (2013, P138): "As these economies developed, indigenous industries grew, and IP protection was enhanced; if history around the world is any guide, someday when China and other leading counterfeiting nations will hopefully follow the same path by offering better IP protection". Massey (2006, P237) also claims that, in the long run, Chinese companies must come to recognize that the enforcement of China's IPR laws serves their interests as well as those of their foreign rivals; in an increasingly competitive and unified Chinese market, new interests are growing that look to the rules of the "Emperor" in Beijing for protection to keep the pirates far away. Yu (2007, p3) also confidently claims that China is now simply following the paths of Hong Kong, Japan, Singapore, South Korea, Taiwan; it is only a matter of time before China will be converted from a pirating nation to a country that respects intellectual property rights with economic development. Chen (2011, p313): "IP protection will improve when China has sufficient of its own IP interests to protect and IP protection improvement will only be in proportion to the weight of these interests."

⁴⁰ This assumption is not unchallenged. Despite the dominant discourse about the necessity of IPR in public media, more recent studies have challenged this functional view, and claim that it is not valid. Scholars have argued that current IPR may not provide the best possible mechanism to ensure the availability and dissemination of intellectual products; it is hard to justify IPR economically, philosophically, and socially (Hettinger, 1989). One recent challenge of current IPR comes from Boldrin and Levine (2008), who analyse IPR using economic models and market theories, and claim that they increase both revenues and innovation costs, while the incentive effect will depend on the net effect; they also cite empirical cases to point out that most creations have taken place without the benefit of intellectual property rights.

development studies (Escobar, 1994; P. a. J. S. Evans, 1988; Frank, 1998; Portes, 1973).⁴¹ In development studies of other economic institutions, it has been acknowledged that, in many cases, western institutions might not work in developing countries as they do in developed countries, because the political, economic, and social conditions there are different, or there is a lack of complementary institutions (Ferguson, 1994; James C. Scott, 1998; J. Stiglitz, 2002).⁴²

According to the logic of those development studies of IPR, the large quantity of patent numbers in today's China should be accompanied by much better law enforcement. But, in fact, the realization of this prediction relies on many assumed mechanisms, which may not be present in a certain society. First, the number of IPR may not be an indication of self-interest in IP protection; it is possible that it serves other functions, for example, attracting state subsidies or venture capital investments. Second, even if there is enough self-interest in IP protection, in industrial practice legal protection may not be the only means of IP protection, or even the most significant one; since IP-related legal institutions are often quickly established and have not been adjusted for local needs in most developing countries, local industries may have already developed other methods to protect themselves. If this is the case, the need for stronger IP law enforcement may not necessarily follow from the growth of indigenous industries and their own IPs.

3. What Is Lacking in Previous Studies and My Focus

3.1 What Is Lacking in Previous Studies

Of the aforementioned literature, the institutional aspect and the development aspect are the

⁴¹ It is usually criticized as “Eurocentric” or “market fundamentalism”, and categorized as “modernization theory”, which is dominant in 1940s and 1950s; social scientists holding this view are confident that development was a question of diffusion of modern Western orientation and institutional forms.

⁴² In Ferguson’s study of livestock management in Lesotho (Ferguson, 1994), she finds that an intentional development project (the Thaba-Tseka project) was frustrated because it tried to provide technical solutions to “problems” that were not entirely technical in nature, but were related to local conditions (a certain structuring of property and entrenched power relations) and a larger political-economic situation. In Scott’s study of state-initiated development projects (James C. Scott, 1998), he argues that, given their western origins, the modern schemes of agricultural planning inherited a series of unexamined assumptions about cropping and field preparation that turned out to work badly in other contexts. In comparing development projects in different countries in his study of the World Bank and the IMF, Stiglitz (2002) argues that the IMF’s project failed because it tried to apply the western model of privatization directly to developing countries, but it was not sensitive to the broader social context and did not realize that economic reform cannot work without establishing underlying institutions.

most prevalent and influential ones; however, as indicated, they still have some weaknesses: First, many development studies make use of extensive data formats, including historical records, legal documents, policy statements, newspaper articles, and judicial decisions, but they seldom use interviews. Some institutional studies make extensive use of interview techniques, but their primary focus is on members inside the formal institutions, e.g. state officials and judges. Second, even when some studies do interview company representatives, the focus is on their interactions with state officials; the information-collection focuses overwhelmingly on formal cases, i.e. the disputed cases which are brought to court or administrative enforcement agencies. This ignores IPR disputes that are never brought to formal institutions, which may constitute the vast majority of IPR-related conflicts.⁴³

Due to data collections limits, as I pointed out before, they fail to adequately capture some important dimensions at work in China: (1) Most previous institutional studies of Chinese IPR focuses only on structural problems of IP-related bureaucracies (both judicial and administrative). They ignore the role of other, more general, factors related to the whole civil law system (for example, the evidence discovery system), and non-governmental supporting institutions (for example, corporate data management and accounting systems that are necessary for the calculation of infringement damage), both of which I consider in detail in chapters two and three. (2) Previous studies on IPR in developing countries seldom focus on the behaviour of local companies; when they do realize the importance of domestic companies, most treat them as a whole, simplifying their behaviour, and focusing on their conflicts with foreign companies. This view uses the total number of domestic IPs (especially patents) to measure the countries' self-interest in IP protection, and ignores the fact that companies do not always get IP for the same reasons. It equates IP protection with simple IPR law enforcement (including both judicial and administrative enforcement based on IPR laws); it assumes that larger innovators will automatically be supporters

⁴³ A lot of legal studies have found that, even in modern legalistic societies, some studies show that the vast majority of conflicts are addressed without actually using the law (Black, 1984, 1989; Galanter, 1983). Only some experiences escalate progressively to reach the stage of court proceedings (Bussani & Infantino, 2015; Felstiner, Abel, & Sarat, 1980; Kritzer, 1991; Kritzer, Bogart, & Vidmar, 1991; Murayama, 2007; Nielsen & Nelson, 2005). Besides, as I have described in the beginning of this chapter, many local companies are reluctant to use formal enforcement methods, and therefore the number of these cases should be large.

of stronger legal IPR enforcement; it ignores the fact that there may be alternative protections that can help companies protect their IPs.

Due to this ignorance of the perceptions and behaviours of companies, the aforementioned views about IPR enforcement in China cannot satisfactorily deal with the puzzling observations I mentioned in the beginning of this chapter: despite the widely criticized and weak IPR law enforcement in China, most domestic companies are aggressively expanding their IP portfolios;⁴⁴ the average damage compensation for IPR infringement is low and judicial enforcement is weak, but there are large number of IPR lawsuits in China; companies invest a lot in IPRs, but they do not worry about infringement and have little motivation to push for stronger IP protection. Here the simple functionalist logic that private innovation will lose steam without effective IPR legal enforcement does not hold, and neither does the development logic that more self-owned IPR will lead to strong incentives to strengthen legal enforcement. Explaining the situation in contemporary China will require a more detailed understanding of the perceptions and behaviours with regard to IPs of Chinese companies, as well as the interaction between the IPR legal system and the right holders in industries.

3.2 My Focus

To avoid the limits I outlined, and to better explain the working of the IPR system in China, I take a different approach in my study. Besides using documentary resources, I conducted interviews mainly with representatives of companies, and the interview contents are focused on the companies' behaviours and attitudes, instead of that of government officials. I did not select companies according to their involvement in formal enforcement cases, so I also collected data about privately-solved disputes. Based on this method of data-collection (which will be elaborated in chapter four, on methods), my study focuses on local companies' IP-related perceptions and behaviours in industrial practices, including why they apply for patents, and which alternative IP-protection methods are effective for them in practice. I pay attention to the interaction within the

⁴⁴ For more reports about the recent IP-expanding behaviour of Chinese companies, see for example (Cyranoski, 2010) and Yoshida (2012).

IPR legal system, the industry, and the alternative protections in different industries, and explore how and when companies use (or do not use) legal protections. To provide a background for understanding Chinese companies' IP-related behaviours, I also explore the weaknesses of the supporting institutions that undermine the IPR law enforcement in China (chapters two and three).

In general, my starting point and focus is based on the understanding of strategic decisions taken by companies within a specific IP environment. I briefly discuss them in the following paragraphs.

3.2.1 Relevant Literature

In fact, many studies about organizational behaviours in the West have already discussed IP-related strategies of companies; this is to say that although the primary function of IPs is to exclude others from exploiting the companies' creation or to collect licensing fees, there are also many alternative uses of IPs used for strategic reasons; these studies also have explored the adoption of such alternative strategies by companies as a way to protect their IPs without using litigations.

A well-known example of alternative functions of IPs is described by Cohen et al. (Cohen, Nelson, & Walsh, 2000), based on a survey questionnaire administered to 1478 R&D labs in the U.S. manufacturing sector in 1994; they conclude that companies take out patents for reasons that go beyond directly profiting from a patented innovation. They argue that a company may patent to protect itself against infringement suits, to prevent rivals from patenting related inventions, to secure the freedom to move ahead on similar technological efforts, and to strengthen the companies' position in negotiations with other companies. Similar phenomena have been found in France, too, where a survey indicates that companies patent mainly to build a strong negotiation position and to avoid litigation (Duguet & Kabla, 2000). Kingston reviews previous studies and points to the prevalence of the strategy of "saturation patenting" (Kingston, 2001, p. 409) as self-defence strategy, meaning companies patent any incremental improvement they might want to use in the future to prevent being locked out by a competitor's patent.⁴⁵ More recently, (Hanel, 2006) surveys empirical literature regarding the use and management of IPRs and concludes that the use

⁴⁵ There have been many studies criticizing this strategy for leading to monopolies instead of technology development (Arora, 1997; J. S. Turner, 1998), but the social costs of these strategies are out of this range of discussion of this study.

of legal IP instruments is more related to their usefulness in blocking competition and providing bargaining chips for cross-licensing, than in protecting IPs for the purposes of commercialization of the IP itself.

Alternatives have been discussed in the corporate strategy literature about how these IPs can be protected. For example, (Ordovery, 1991) uses historical data to compare the patent system in the U.S. and Japan; he argues that the weaker protection provided by the patent system in Japan has led to more frequent alternative appropriability mechanisms, i.e. mechanisms that are used to exclude others from exploiting the innovation;⁴⁶ these include technology alliances in high-tech industries. (Arundel & Kabla, 1998) survey patenting by the 604 largest companies in Europe in 1993, and conclude that legal IP rights are relatively unimportant compared to alternative methods for excluding others from exploiting their innovations; examples include first-mover advantage and technical barriers. (Boldrin & Levine, 2008) mention first-mover advantage as a sufficient protection method in ensuring innovation profits among the companies that they studied. Two well-known studies based on company surveys are (Levin et al., 1987) and (Cohen et al., 2000), which point out that, even in the US, in most industries (except pharmaceuticals), companies did not report patents as one of the important ways in which they profited from their innovations. Levin et al. mention first-mover advantage, complementary sales, service capabilities, and secrecy. In a later study, Cohen et al. (2002) emphasize three strategies for companies to appropriate innovation-related profits⁴⁷: legal mechanisms (patents), complementary capabilities (often linked with lead time), and secrecy.⁴⁸

Recently, the focus has been shifted to alternative strategies used by multi-national enterprises (MNEs) to protect IPR without recourse to the legal enforcement system in "weak-appropriability regimes" (Keupp, Beckenbauer, & Gassmann, 2010, p. 109), defined as regimes where IP protection is weak. Two recent literature surveys (Hoecht & Trott, 2014; Kumar & Ellingson, 2007) have reviewed related literatures, summarizing a few strategies foreign companies can use

⁴⁶ The word "appropriate" is used a lot in scholars' discussions of intellectual property, to indicate the act to monopolize commercial profits and to exclude exploitation of others. See Tidd, Bessant, and Pavitt (1997, p. 181); WIPO (2003, p. 2).

⁴⁷ "Appropriating innovation-related profits" in this context suggests seizing all the profits from the innovation.

⁴⁸ Based on a survey of companies in 1994.

in China, including distribution channels, economy of scale, first-mover advantage, rapid intervals of product upgrading, and relationship with governments. Despite the aforementioned studies on Western companies, there have been very few studies about the strategies domestic Chinese companies adopt to protect their IPs, possibly because it is only in recent years that Chinese companies have started to own independent IPs. One study that explores different IP-strategies that Chinese companies use is (M. Zhao, 2010), where the author applies western corporate IP strategy theory to China. Zhao interviewed more than 50 companies, including both MNEs and domestic companies. The study argues that companies tend to use strategies that do not take advantage of the judicial system to protect their IPs; such strategies include internal management of human capital and information, technological or technical barriers, market positions and channel controls.

3.2.2 The Applicability of This Literature

Applying these arguments directly to Chinese industries helps to focus the study of IPR enforcement and protection at the corporate level; nonetheless, because they are based on Western companies, they can be misleading. Most importantly, these alternative uses of IPRs and various strategies of IP protections (section 3.2.1) may not always be present in Chinese companies and they may not be the only relevant ones. Beyond that, there are two points that need to be noted about the implied assumptions of the existing literature.

The first consideration is that corporate strategy studies assume companies would intentionally adopt certain alternative protection methods to appropriate innovation profits; according to my fieldwork in China, IPR-related decisions and protection methods may not be motivated by the standard IP concerns of appropriation. For example, companies might prevent IPR infringement through government market access control, or reputation concern in a close-knit social network, but they do not do it with the express purpose of protecting their IPR. (I explain these alternatives in detail in Chapter five.) Because they are already benefiting from these alternative protections, many Chinese companies may not even realize that they have to adopt IP strategies to cope with IPR infringements. To survey companies by asking them to choose from a list of preselected IP-strategy options may leave out important alternatives that are not motivated

by the standard IP concerns but do serve to protect companies from IP infringement.

The second consideration is that previous studies have tended to treat legal institutions as an external and relatively-fixed context, and look at how companies make strategies under legal changes. However, in my research, by studying the practice of law-related behaviours, I found that legal institutions are constantly shaped by companies as well, and there is a continuous dynamic interaction between companies and legal institutions; this interaction constantly gives the IPR system new roles, and yields alternative mechanisms of IP protection.

In the analyses in the following chapters I challenge certain assumption of the existing literature; I explain how companies perceive the current IP environment in China and how their perceptions interact with institutions related to IPR. This strategy enables me to explore elements and patterns that are very important but have not been discussed in previous studies.

4. General Questions and Possible Contributions

Based on previous discussions and starting from a focus on company strategies and behaviours, the general research questions I explore are as follows. (1) Is legal IP protection in China as weak as it is perceived to be? (2) Why do people bring lawsuits in China when enforcement is questionable and expected compensation is small? (3) Why do Chinese companies invest in IPRs? (4) How do Chinese companies protect themselves from potential losses caused by IPR infringement? (5) Why do Chinese companies with their own IPs lack incentives to push for stronger law enforcement? In sum, how exactly does the intellectual property rights legal system interact with industries in China?

With regard to these questions, by focusing on the perception and behaviour of companies from different industries, some preliminary conclusions can be made. (1) Legal protection varies greatly according to factors such as the type of IP, industry, technology, time and location. The effectiveness of IP legal protection is not only related to IP law enforcement bureaucracies (both judicial and administrative), or exogenous pressures, but also more complicated factors. (2) The choice of whether or not companies sue over IPRs is not always based on immediate financial calculations related to one or two specific IPs, but may be related to other incentives. (3) In many

cases, intellectual property rights are acquired by local companies not because of the need for legal protection of innovation appropriability, or the advantages they can bring to market competition, but other functions IPRs can serve for companies. (4) Aside from legal protection, various alternative protections may be available to ensure innovative appropriability for local companies.

Thus, specific questions this study explores include the following. (1) Previous studies have demonstrated the varying effectiveness of Chinese IPR enforcement; the question then becomes which factors most shape the effectiveness of IP law enforcement in China, and are these factors systematic? (2) What is the role of legal IPR enforcement in different industries in China? When will domestic companies use IPR laws? (3) In a society accused of weak legal IPR enforcement, which functions do IPRs serve besides the legal protection of innovation appropriability? How important are they to different companies in China? (4) Which alternative IP protection methods are protecting Chinese companies from infringement in different industries? (5) Which industrial characteristics are shaping the effectiveness of IP protection and available alternatives? In sum, how does the legal IPR system, the companies, and the industries interact in Chinese society?

Although the study focuses on IPRs, it also can be instructive for general implementation problem of laws, something that is always of interest to social science scholars. In fact, the scholarly consensus is that there is a huge gap between laws on the books and the actual implementation of these laws and regulations; there are many studies on this problem (Jianfu Chen, 2002, 2008; Donald C. Clarke, 2008; Stanley B. Lubman, 1999; Stanley B. Lubman, 2006; Peerenboom, 2002). This study also contributes specific examples to the area of study pertaining to the implementation of law. In addition, despite some unique characteristics, the Chinese case is generalizable because China is also similar to many developing and post-socialist countries; it is therefore possible to make inferences from the Chinese example to explain intellectual property rights development in many other countries.

In this case, this study can lead to more general sociology-of-law questions, as follows. How does a western-generated legal institution take root in a developing country? Which difficulties can occur when transferring Western institutions to a developing society? When would the exogenous legal system be effective or ineffective, and why? How would domestic companies

make use of the exogenous legal system? Which factors affect how important IPRs are in different social contexts? Which alternative methods of IP protection are available aside from legal enforcement? What are the differences, and why would right holders choose a certain method over another?

Chapter II. General Institutional Background of China

Intellectual property rights institutions do not exist in a vacuum: they are embedded into the Chinese political, legal, and economic systems. Before analysing the specific intellectual property right (IPR) regime in China, it is necessary to give a brief overview of the institutional background of China. This provides a context but a mutable one, that has changed a lot since the 1978 economic reform (or Reform and Opening-up, which introduced market economy and opened China up to the West). I focus on the elements that may affect the working of the intellectual property regime; I discuss how many institutional contexts of the Chinese IPR system are different from those of the US. These differences may be a starting point to understand why the IPR system works somewhat differently in China.

1. Political Institutions

1.1 Decentralization

As introduced in chapter one, one of the most discussed institutional backgrounds that affects IPR enforcement in China is political decentralization. China has a long history characterized by alternations between centralization and decentralization efforts, dating back to the Imperial Era (221 BCE-1911 CE). In fact, the recent dilemma of persistent decentralization has its historical precedents which could not easily change in a short time; it has been embedded in the development of a modern market economy in China (see following paragraphs). The history of decentralization is the contextual background in which Chinese IPR has evolved.

During the Imperial Era, China had a long history of centralized bureaucratic rule. Even then, the imperial Chinese state undertook a minimal range of functions compared to the modern political system (Balazs, Wright, & Wright, 1966), leaving a lot of space to informal institutions. After the Qing dynasty collapsed in 1911, the early republican era following it was characterized by decentralized, regionally-based warlordism; there was a nationwide attempt to reconsider the form of government and the basic ethics of society, represented by the May Fourth movement.

The CCP's rise to power marked a more drastic change from the tradition. Mao believed the weaknesses of the country were rooted in the traditional culture of Confucianism and polity (the hierarchical system) (Lieberthal, 1995, p. 61; Shapiro, 2001). Although he created massive institutional structures to run China, he also severely undermined the integrity and legitimacy of those same structures through intervention toward anti-bureaucratic hierarchy (Blecher, 1997, pp. 66-82). During Mao's era, there had also been multiple rounds of alternative efforts to decentralize and re-centralize decision-making power. Usually the devolution of decision-making power was aimed at avoiding rigidity in the planned economy and at stimulating growth, but this led to chaos and disorder, which then created the need for re-centralization.⁴⁹ Mao struggled between the two extremes and never found a proper balance. During this process, the local governments gradually accumulated some practical power but, in theory, their source of power was still the delegation of the central government (G. Wu & Zheng, 1995).

In Deng's era, great efforts were made to reform Maoist-period policies. Deng believed that previous events such as the Cultural Revolution had eroded social support of the CCP; as such, the Party had to show economic progress in order to create a new sense of legitimacy (Lieberthal, 1995, p. 127; Shirk, 2007). Deng introduced reforms to replace Stalinist-style central planning with a market economy and to open the country to foreign trade and investment. Since then, more and more decision power has been decentralized, and, in practice, local governments have gained more power, especially financial power. National laws or policies are often broadly drafted by the central administration while their implementation is left to the discretion of regional and local administrations (Holtbrügge & Berg, 2004). As mentioned (chapter one, section 2.3) and as developed later (this section and section 4.1 in this chapter), this has created potential central-local tensions in IPR enforcement.

The increasing level of decentralization since Deng may be related to the eagerness of the state to push economic reforms. To this end, previous studies have discussed the positive role of decentralization in pushing China toward a capitalist economy (Nee, 2012). With more decision-

⁴⁹ The pattern can be seen in historical incidents such as the Great Leap Forward and the Cultural Revolution; see for example, (Joseph, 1986).

making power at hand, local governments can promote local economies and investments more intensively and effectively than before. To develop efficiency and give local officials incentives to join Deng's political reform coalitions, Deng had to allow deeper decentralization of power and give lower governments more control over their economies (Shirk, 1993). Although regional governments in China still lack formal political autonomy vis-à-vis the centre, financial autonomy had brought further decentralization (Montinola et al., 1995; Oi, 1992; Sharma, 2009).

There were two other important aspects to the decentralization that followed Deng's reforms. Economic growth was so important in the years after the 1978 reform that it became a significant part of the performance evaluation of local party and government officials. Overemphasizing economic development gave local cadres more flexibility and incentives to circumvent laws and policies that might constrain local growth; they could exercise large discretion with the excuse of taking local variations into account (Economy, 2004; Hsueh, 2011; Sharma, 2009; Walder, 1998). Some scholars argue that the central state decentralizes many responsibilities (for example, the responsibility of providing public goods) to avoid being responsible for potential conflict and social instability caused by economic reforms (Cao & Zhou, 2013).

The problem related to centralization and decentralization does not ever fully resolved over the course of this history; local desires for flexibility and incentives to have some autonomy continue today and they bring many uncertainties for the implementation of various laws (Stanley B. Lubman, 2006, p. 6). One of the most representative examples is the tension in law enforcement between the central government and the regions in the area of environmental law; here, conflicts of interest are caused by the fact that local governments are often major shareholders of polluting enterprises (Schwartz, 2003, p. 69). Although the State Environmental Protection Agency has formal authority over lower-level agencies, it does not have much leverage to ensure that national regulations and standards are enforced at the local level (Beyer, 2006, pp. 207-208). According to related studies, it is common practice that environmental issues are treated more as a matter of moral principle rather than law in local areas, and negotiations with companies instead of authoritarian decisions are commonly used when deciding fees and fines by local governments (William P. Alford & Shen, 1997, p. 137; Palmer, 1998, p. 806).

As stated, similar central-local discrepancy could happen for IPR laws:⁵⁰ local governments often benefit from the large number of jobs created by IPR-infringing companies (which brings higher employment rates), so they may have less incentive to strictly enforce IPR laws issued by Beijing.

1.2 The Matrix of the Current Chinese Political System

1.2.1 The Hierarchy of Administrative Divisions

In a federation such as the US, the central government is a historical or juridical creation of smaller territorial states or both, but in China the various regional governments are creations of central planning (Blecher, 1997, p. 117). The Chinese system is divided into three nationwide bureaucratic hierarchies, the Party, the government, and the military. Here, given to the focus of this study, I only discuss the first two hierarchies, i.e. the government and the Party. Each hierarchy is comprised of a few levels of administrative rank below the national level: mainly the provincial level, the prefecture level, and the county level. Ranks are assigned to governments and functional departments at each territorial level of the hierarchy. Usually the local leaders' ranks in the national political administrative hierarchy correspond to the territorial entity's rank. A government agency of lesser rank has no bureaucratic authority to compel compliance from one of superior rank; nor can government units of equal rank issue binding orders to each other.⁵¹

In mainland China (here "mainland" excludes the two special administrative regions of Hong Kong and Macao), the provincial level is comprised of 22 provinces, five "autonomous regions" (located on China's borders and populated heavily by minority nationalities, such as Xinjiang), and four "direct-controlled municipalities" including Beijing, Chongqing, Shanghai and Tianjin (that are administered like provinces directly under the central government). The term province refers to a rank in the national political administrative hierarchy that is fully equal to the rank of a ministry in the central government. Because all territorial units with the rank of province are formally equal

⁵⁰ For more examples of local discretions, see (Berkman, 1996) and (Kolton, 1996); also see footnote 19 in chapter one for others.

⁵¹ For more information about the importance of bureaucratic rank in the Chinese political system, see (Lieberthal & Oksenberg, 1988, pp. 142-145), (Lieberthal, 1995, pp. 159-170).

to each other and to central government ministries, none of these units can issue binding orders to any others; this has caused many policy coordination problems.

Below the provincial level, the prefecture level consists of prefectures and prefecture-level cities; since 2000, most prefectures have been transformed into prefecture-level cities; there are currently 334 prefecture-level territorial entities. Below the prefecture level, the county level entities include counties and county-level cities, there are 2851 county-level entities in China as of 2016 (XZQH, 2016). Below the county level there is the village level; most leaders of this level are selected and paid locally, and thus are responsible to a significant extent to their localities rather than to the wider state. What needs to be specified here is that, as I have indicated, cities can plug into the national political administrative hierarchy at any rank or level, depending on their size and importance.⁵²

Within such a large and complicated hierarchical system, government agencies that lack high administrative ranking are often forced to develop their own means, on an individual basis, to attain the nominal levels of authority necessary to do their jobs. Because it is almost impossible for any local agency to have a higher rank than any other government department, legal consistency and policy consistency are hard to secure. For example, with regard to environmental law, since environmental agencies in many locales have equal bureaucratic rank with finance bureaus and administration of industry and commerce, they are unable to issue binding demands (Jahiel, 1998, pp. 782-783). Another example is tax policies: in territorial entities below the provincial level, there are no specific provisions about how local tax jurisdictions are distributed among agencies; in this case, conflicts would happen among different agencies with equal ranks (Q. Wu, 2014). One example from the area of Land Use also demonstrated this. According to a news report in 2016 (Yijie Lu & Yao, 2016), an intermediate-level court decided that the mandatory demolition of a certain factory was not legitimate and the local Zone Administration who carried out the demolition should compensate the company who was harmed by the demolition. The

⁵² As noted above, four direct-controlled cities have the rank of provinces, some have the rank of prefectures and some counties; there are also 15 cities which are prefecture-level by administrative division, but in practice their leaders' rank is half a level higher than correspondents in prefectures; so, they are called "sub-provincial cities".

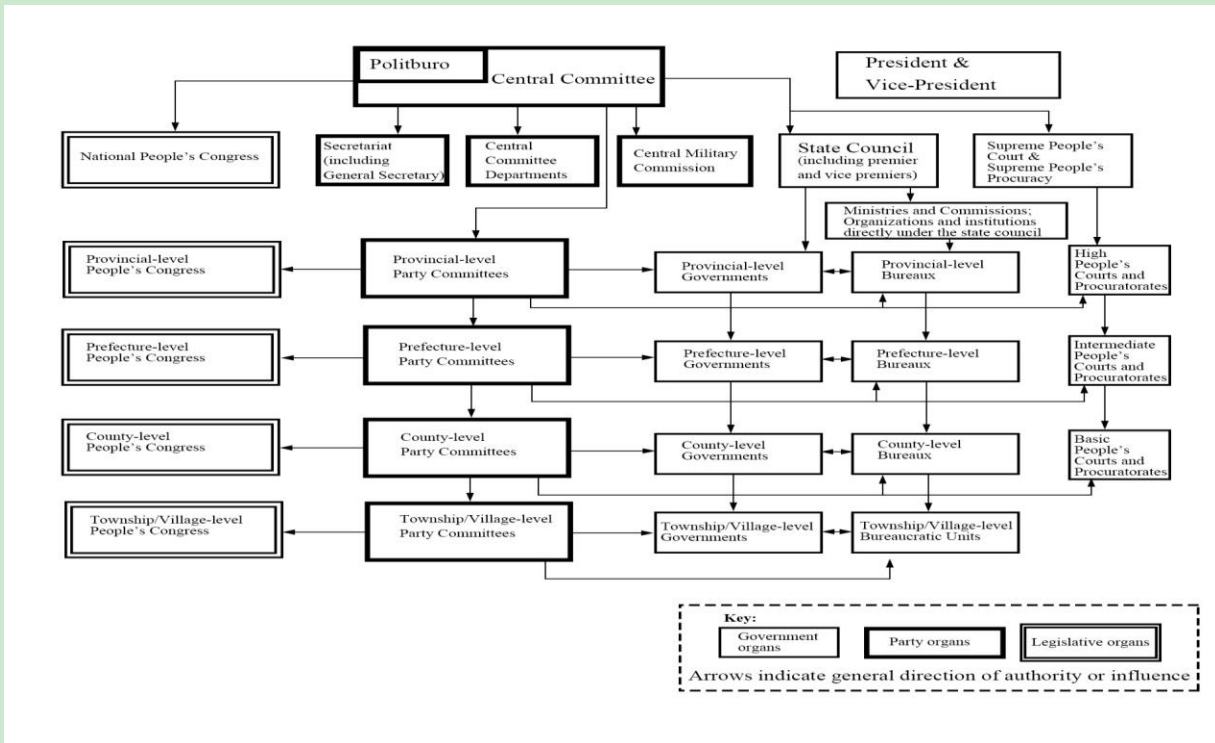
Administration did not pay compensation in time. However, because the administrative rank of the Zone Administration is higher than that of the issuing court, the court worried that its decisions would not be binding to the higher-rank Administration; as such, it did not carry out the mandatory enforcement, but tried to seek help from a higher-level agency to coordinate enforcement. As demonstrated by previous studies, similar consistency difficulties also exist in IPR area (Mertha, 2005).

1.2.2 Formal Organizational Structure of The Government and The Party

Below the national level, the basic organizational structure on both the government and the Party side duplicates itself at every level of the national administrative system. At the same time, the Party structures always exercise ultimate authority over their government counterparts. The specific structures are indicated in Figure 2.1.

Inside the central administration, the major Party organs are, in ascending order of importance, the Party Congress with about 1500 members, the Central Committee with hundreds of members, the Politburo with 14-24 members, and the Politburo Standing Committee, which is the most powerful inner circle and consists of 4-6 members. The general secretary is the top bureaucratic official in the Party. As for the government, the National People's Congress (NPC) with about 3000 delegates (elected every five years) serves as the legislature; it meets every year for a period of about a week, while its standing committee meets more frequently. The State Council is headed by the premier and is in theory chosen by the NPC; a number of commissions and ministries are subordinate to the State Council (most ministries and commissions head their own nationwide vertical bureaucratic hierarchies with offices at each subordinate territorial level of administration). The actual organization is more complex than described here because numerous additional bodies are established for particular purposes, for example, the central discipline inspection commission.

Figure 2.1: Chinese party-state organization in brief



Sources: Chinese government websites,⁵³ compensated by analysis in (Lieberthal, 1995), (Blecher, 1997), and (Mertha, 2005).

It needs to be noted that, although I separate party organs and government organs in Figure 2.1 for the sake of convenience, in reality they are not completely separated but are only partially detached. In fact, major officials (department leaders, for example) at each level of the hierarchy are usually also members or leaders of the corresponding party commission. A major proportion of judges and representatives at the People's Congress of each level are also party members. Thus, law is subject to party influence in the two dimensions of legislation and enforcement, analogous to the division between the legislative and executive branches in many Western democracies. The issue of legal dependence is further discussed in section 3.4.

⁵³ For example: http://www.china.org.cn/english/features/state_structure/64411.htm; http://english.gov.cn/archive/china_abc/2014/08/23/content_281474982987300.htm.

1.2.3 Dual Bureaucratic Subordination and Fragmentation

China's cross-hatching governmental authority, the penetration of the Communist party at every level of the political system, and the overlapping administrative functions have made the Chinese political system a complicated matrix. Power relations inside the criss-crossing structure can be divided into two different kinds: lines (tiao) and pieces (kuai); "tiao" refers to the relationship between central and local bureaucracies, while "kuai" refers to the relationship among administrative bodies at the same level. This is called "dual rule". There are different directions of reporting lines throughout the system, while many government functions are shared by multiple agencies; in this case the officials of any given office can have a number of bosses in different places. It is in this sense that many scholars refer to the Chinese polity as "fragmented" (Lieberthal, 1992). This dual-rule status and fragmentation of power have been criticized a lot as the reason for many difficulties in implementing laws and policies.

For example, in the area of environmental protection, a prefecture-level Environmental Protection Bureau (EPB) has two formal reporting relationships (Ma & Ortolano, 2000, p. 154): it is subordinate both to the head of its local government (to which it has a kuai relation) and the corresponding provincial-level EPB (to which it has a tiao relation); it must also answer to the corresponding Communist party committee prefecture. In this case, many government functions requiring cooperation among various agencies within a locality may not be carried out, because no agency is able to issue binding orders to any other. It is also uncertain whether an institution should mainly obey the "tiao" authority, or the "kuai" authority. (According to my fieldwork, this issue is determined case-by-case, but factors such as control of budgeting or staffing, as well as historical traditions can all play a role.) In the meantime, multiple agencies share the function of the Ministry of Environmental Protection (MEP), for example the Ministry of Land and Natural Resources, and the Ministry of Water Resources; in addition, virtually every other government ministry or administration has at least one environmental section, for example the Department of Environment and Natural Resources in the Ministry of Agriculture (MOA) (McBeath & McBeath, 2010, pp. 249-250). These situations create ambiguous spaces no formal institutions necessarily cover,

increasing the likelihood that agencies will shirk dealing with troublesome enforcement, and increasing the chance of conflicts when enforcement requires agreement by all related agencies.

A more specific example comes from water allocation. I use environment-related examples because there are many related reports and studies in this area when compared to others. At each level of government, water management requires cooperation from different agencies, each with its subordinate bureaus; these agencies include: the Ministry of Water Resources, the State Environmental Protection Administration, the Ministry of Geology and Mining, the State Price Bureau, the Ministry of Construction, the Ministry of Agriculture (Michael Webber, Jon Barnett, Brian Finlayson, & Wang, 2008, p. 622). These agencies must cooperate within the government and they have corresponding agencies within each province, prefecture and county. For each specific agency, power flows from high ranking agencies and a demand for cooperation flows from equivalent ranking agencies in the same government. The agencies have to comply with instructions from their superiors, but also fit their activities into the goals of social and economic development set by the corresponding government agency. In this case, conflicts can be generated between different users (served by different agencies), between different sources of supply (because, for example, ground and surface water are administered separately), between national, provincial and local levels of government; and between the agencies' various goals such as flood protection, water supply and pollution control (X.-Y. Lu et al., 2000). Similar scenarios exist in various law or policy areas, including, for example, road safety, food security, urban construction.⁵⁴ As discussed in chapter three, previous studies have pointed out (Dimitrov, 2009, p. 48), that IP protection is also subject to these problems.

2. The Legal System

China has developed a fairly complete legal system in a very short period of time, starting with the reforms in 1979. These included laws governing various areas, a four-level court structure, and the training of a large number of legal professionals. All these provide basic conditions and

⁵⁴ For more information on these areas, see (B. Chen, 2015) and (C. Wu, 2003); also see http://cgzfwzh.bjcg.gov.cn/llyt/t20151230_762831.htm

the context for the development of legal institutions specifically for intellectual property. However, the impressive speed of institutional development comes with certain drawbacks, which can only be dealt with gradually. In this section, I introduce the evolution of the Chinese legal system in general, evaluate their limits, and how they might affect people's behaviours facing infringement disputes; the specific evolution of IPR laws and institutions is addressed in chapter three.

2.1 Historical Legacy

In China's Imperial era (221 B.C.E.-1911 C.E.), the law was always treated as a policy tool (effective or not) serving the interest of the state instead of protecting individual rights (W. C. Jones, 1994). Management of disputes still relied heavily on informal local practices, which tended to reflect local priorities around relationships and community socialization (Van der Sprenkel, 1962). During the later years of the Qing dynasty (the end of the Imperial era), reformers were affected by Western culture, and proposed legal reforms by borrowing from Japan and Germany (Potter, 2013, p. 9); these attempts were continued by the KMT Nationalist Government after 1912. The reforms introduced Western law and legal systems into China for the first time; they broke down traditional systems and laid down a foundation for further Western-style law and legal systems to be developed in China (Jianfu Chen, 2008, p. 37). However, these reforms had no substantial impact on the society at large (Tay, 1968, p. 165).

In Mao's era, ideological and policy preferences were key determinants in legal development (Potter, 2013, p. 32). The status and importance of the legal system rose and fell in accordance with changes in the Party officials' attitude (V. H. Li, 1971). Overall, for the first 30 years of the PRC's existence the Party ruled without any legal codes and with little regard for law at all; many laws and administrative regulations were not even made known and were for internal circulation only; there was a complete disregard for formal enactments and for formal procedures (Leng, 1967). Bureaucrats relied on internal rules and Party policies, all usually drafted in very general terms so that they could be applied flexibly in practice (Stanley B. Lubman, 2006, p. 7). There was still no separation between the judiciary and the state; the courts were always required to

follow Party policy and the Party regularly determined the outcome in specific cases (Peerenboom, 2002, pp. 45-46). Eventually, during the Cultural Revolution of 1966-1976, virtually all laws and the entire legal system were destroyed (Tay, 1976).

The historical legacy, described above, demonstrates the subordination of law to political will. Without experience of an independent legal system, it is not easy for modern China to break from previous norms, especially those of the Mao era. Consequently, although a fairly complete system has been developed since Deng's reforms, it is by no means perfect and can only be improved gradually.

2.2 The Emergence of the Modern Legal System

2.2.1 The Legal System in General

In the post-Mao era, in conjunction with China's economic reform there was a massive legislative reform (Lichtenstein, 2003; Xin, 1999). Whole areas of law, including civil law, appeared for the first time since the Nationalist codes were abolished in 1949; whereas Western legal institutions took centuries to develop, Chinese law reformers have constructed core elements of a legal system in an extremely short period of time (Stanley B. Lubman, 2006). In 1978, the third plenum of the Eleventh Central Committee specified the need for the construction of a socialist legal system to support economic development. After that, beginning in the late 1970s, China entered a period of building a modern legal system after Mao had abolished the legal system that had developed from the end of the Imperial era until 1949 (W. C. Jones, 2003, p. 39).⁵⁵ Since 1979, various laws have been publicized, including an extraordinary number of laws specifically made to regulate economic and commercial relations (Potter, 2013, pp. 31-32). For example, the first laws enacted included foreign investment law, a draft civil procedure law, the first contract law, a preliminary civil code that allowed broader rights, foreign business laws, taxation laws, and intellectual property laws.

The new Chinese legal system is a civil law system in theory, based on the General Principles

⁵⁵ See the official record in Chinese at <http://cpc.people.com.cn/GB/64162/64168/64563/65371/4441902.html>

of Civil Law (GPCL, enacted in 1986 and amended in 2009) but, because many formal laws can be interpreted differently according to context, sometimes precedents do have influence. For example, due to the judiciary's lack of experience in interpreting intellectual property laws and the pace of technological change, in IPR cases today the role of precedents is highly regarded; in fact, recently, the use of precedents in IPR law has become a heated area of discussion with regard to reform, as revealed by the forums in Beijing, attended by China's most prestigious judges and lawyers. If this trend continues, it could reasonably be expected that legal enforcements in this area becomes more predictable.

Despite the establishment of a modern legal system, laws in present-day China do not always acquire the status as a legitimate basis for dispute resolution. In a democratic system, law-making procedures generally include a consensus-building process, where different principles and specifics are debated and legitimized by votes. In comparison, Chinese laws and policies are drafted and imposed from above by the ruling elites, not legitimized through a democratic process; as such, in practice they often encounter disapproval and conflict. For example, (Jing Zhang, 2003) studies rural land disputes in various places and finds that state land laws or policies are not always used as a basis for determining land-use rights. Instead, different bases besides state policy could be adopted in local land-use issues, including decisions by village cadres, the collective will of villagers, and agreements among related parties. Which one is adopted is determined on a case-by-case basis and depends on the outcome of struggle and competition between various forces. The existence of conflicting principles of dispute resolution also act as a general background for IPR discussions; as I found in my field research, there are various informal methods to find solutions to IPR infringements in China; these are discussed in detail in later chapters.

Beyond the lack of legal tools for dispute resolutions, the Chinese legal system has other problems. One of them is the aforementioned issue of judicial independence (Peerenboom, 2009); one recent example is that, when thousands of children were poisoned by melamine tainted milk, a former journalist who urged parents to sue was convicted and sent to jail for disrupting social harmony (Jacobs, 2010). Another problem is the lack of transparency with regard to the operations of the legal system: opinions explaining how cases are decided are rarely published, and the

ultimate resolution of disputes is often unclear (Johnson, 2011). Besides, as mentioned in section 1.1, China now has a decentralized governmental structure and laws or policies are often broadly drafted at the national level but their implementation is left to the discretion of regional and local administrations (Holtbrügge & Berg, 2004). All these problems affect the IP holders' trust regarding legal protection methods, and this affects their behaviour when facing IPR disputes.

2.2.2 Broad Legal Principles Related to IP Rights

A law does not exist alone; its effective enforcement usually depends on many other related laws. Besides the general legal system, a few specific laws provide a basis or precondition for intellectual property laws to work, including tort law (that pertains to the liabilities caused by infringements), property law, contract law, and civil procedural law (that sets out the rules and standards that courts follow when adjudicating civil lawsuits). The following paragraphs are a brief review of these (and a review of IPR laws is in chapter three).

2.2.2.1 Civil Law Obligations Created by Torts

Tort law is very strongly connected to the enforcement of liabilities caused by IPR infringements. It includes provisions about who should be liable due to an infringement, and provisions about how the liability should be determined; as such, it can affect both the incentives of the infringer and those of the right holders in seeking judicial help. Before 2010, tort related issues were regulated by the General Principles of Civil Law (GPCL). In Article 106, the GPCL states that "citizens and legal persons who, through their own doing, encroach upon state or collective property, or the property or person of others, shall bear civil liability"; this article is commonly held to be the Chinese definition of "torts" (Jiafu Chen, 1994, p. 411). On the basis of this article, GPCL classifies liabilities according to the infringement of specific rights, including intellectual property rights (Section 3 of chapter six);⁵⁶ it also empowers the court to make use of admonitions to order the signing of a statement of repentance, and to confiscate unlawfully obtained property (Article 134). According to legal scholars, the provisions on torts in the General

⁵⁶ It provides that those who are infringed "have the right to demand that the Infringement be stopped, its ill effects be eliminated and the damages be compensated for".

Provisions are fairly complete, as civil codes go. However it is still too broad to be used directly in practical tort enforcements, because, in contrast to its German model, it lacks detail on substantive areas, such as property, contracts, and civil responsibility (W. Jones, 1987).

Considering the limit of the GPCL, Chinese jurists and law-makers have pushed ahead in developing separate laws (e.g. on contracts or property) to better guide judicial practices, including the Tort Law which became effective in July 2010. The 2010 Tort Law addresses a wide range of issues, clarifying both the basic principles of tort liability and the rules that apply to particular types of losses (Johnson, 2011). It provides a basis for determining what constitutes liability, who should be responsible, and how to assume liability in infringement cases. It provides the legal basis for clarifying liability in intellectual property infringements (Cui, 2009), but how it works in practice would still be restricted by the weaknesses of the general legal system, especially with regard to evidence collection (K. Zhao, Lu, & Zhao, 2011).

2.2.2.2 Property Law

Intellectual property is considered to be a special type of property. Without acknowledging private property rights in general, there would not likely be respect for intellectual property rights. Property law is among the most important civil and commercial law institutions; it imposes standards on relationships between market actors in respect to things, lands, ideas, and business interests. But despite some rules on property in traditional China, there was no systematic codification of property rights until the introduction of Western law at the turn of the 20th century (Jianfu Chen, 2008, pp. 364-365).⁵⁷ A modern legal system of property rights was established by the KMT Civil Code in 1929, but it had little practical effect in mainland China.

For many years after the CPP rose to power in 1949, the socialist ideology concerning public ownership further prevented the development of property law (Jianfu Chen, 1995, pp. 144-149). Thus, until very recently, there were only fragmented and elementary laws regarding property. As noted in Table 2.1, in 2004 the Constitution was also amended to guarantee that “the lawful private property of citizens may not be encroached upon” (Article 13); however, there are also provisions

⁵⁷ While there were rules on property in traditional China, they were scattered in different legal sources and customary law and practice, and property was neither securely nor systematically protected. See for example, (Powelson, 1990) and (C. Liu, 1990)

indicating that the state can expropriate or take over private property for “the public interest”. To encourage the development of a private economy, a systematic Property Law was enacted in 2007,⁵⁸ which was "for the purpose of safeguarding the basic economic system of the state, maintaining the socialist market economic order, clarifying property ownership, giving play to the utility of property and protecting the real rights of the right holders".⁵⁹ It very clearly specifies that property rights shall be protected by law and shall not be infringed by any entities or individuals (Article 4).⁶⁰

2.2.2.3 Contract Law

Contract law imposes standards on the formation and performance of agreements around market activities. Since IPR licensing and transferring arrangements in the market are generally made through contracts, the status of contract law is relevant to this analysis. For example, contracts about technology transfer usually include regulations about the use of patents and trade secrets; in cases when related disputes arise, both company strategies and legal judgments will be affected by Contract law.

In China, contracts in the form of customary law has a long history (Yuhong Zhao, 1997), and relevant state regulation appeared very early in this history (before 771 B.C.) (Z. Li, 1988). However, a comprehensive code on contracts did not appear until the KMT Civil Code, which was put into effect between 1929-1930 (Jianfu Chen, 2008, p. 443); as noted before, the KMT laws were completely abolished during Mao's era. The domination of public ownership in the Mao era reduced contracts to a means of implementing state economic plans (J. Wang, 1986, pp. 141-147). After Deng's reform, to regulate contractual relationships among business entities, there emerged a lot of fragmented and ad hoc legislation about contracts (for example, the 1981 Economic Contract Law, and the 1985 Foreign Economic Contract Law), until the final adoption of a uniform Contract Law in 1999 (Potter, 1992), which is still effective today.

⁵⁸ Property rights, including intellectual property, were also recognized in the 1986 General Principles of Civil Law (GPCL), but in it they are subject to general limitations on the need to protect social interests and state plans.

⁵⁹ Property Law of the People's Republic of China, Article 1; see pkulaw.cn for the complete text.

⁶⁰ Although there are also articles stating that the exercising of property rights should not damage public interests, and that property can be expropriated to meet the needs of public interests.

The uniform Contract Law establishes equality of the parties, compliance with law, and enforcement of contract obligations; with its adoption, business men paid more attention to contracts. In certain cases, IPR disputes that occur in the process of IP licensing or IP transfer can be settled privately according to initial contracts. However, most Chinese companies are still much less experienced in elaborating possible disputes in contracts; for them, contracts play a much less important role in settling business disputes, including IP ones. In addition, the uniform Contract Law also echoed the tension found in previous laws between private rights and state regulation or control (Ip, 2004; Potter, 2013, p. 96). In theory, the effectiveness of contracts is still secondary to state interests and administrative regulations. For example, article 7 includes prohibitions against disrupting social and economic order and provisions on compliance with applicable law and regulation (these permit State agencies to intervene in creating and executing contracts in certain cases). Compromises like these could harm the predictability of law, affect people's trust in commercial laws in general, and reduce the authority of contracts in settling IP disputes.

2.2.2.4 Civil Procedural Law and Evidence Discovery

Another law that significantly affects IPR cases is the Civil Procedural Law (2012 revision), and one major aspect is the rule of evidence discovery. The possibility for rights holders to win disputes through legal processes is highly affected by the evidence discovery system. As often noted, there has always been an important difference between the scope of common law evidence discovery and civil law evidentiary systems (Elsing & Townsend, 2002; Ewert, 1995; Rubinstein, 2004).

In the American legal system, discovery is both routine and extensive (Cotter, 2013, p. 82). According to the US Federal Rules of Civil Procedure, parties can serve each other sweeping requests for production of documents; they can require any non-privileged information relevant to the litigation (for example internal company emails, documents, records, and policies) from opponents or third parties (even if disclosure would be adverse to the producing party); they can also obtain oral deposition testimony of witnesses in advance of trial. Actually discovery and related arguments in the US can take one to three years, and it is the most costly part of US litigation; it can cost millions of dollars ("How to obtain effective evidence in china," 2016). But

in civil law countries, such discovery is rarely permitted, and is viewed by many as an affront to the expectations of privacy and confidentiality that private parties have in their business information; there is usually no pretrial discovery procedure. For IPR litigations, the US Federal Rules of Civil Procedure fully apply; the procedures governing the discovery mechanisms and court supervision of discovery are identical to those in other civil litigation. Evidence discovery in the US has been a key procedure in determining the infringing fact and in establishing the appropriate measure of damages (Coggio & Gordon, 2005).

As a civil law country, the evidence system in China is similar to other civil law countries such as Germany, but is very different from litigation in the US. Although the Civil Procedural Law of the PRC has confirmed the right of lawyers to investigate and collect evidence, and has provisions such as cross-examination of evidence and evidence preservation, compared to the American-style evidence discovery system, it provides more limited rights for one party to get infringing evidence from another. With regard to IPRs, the lack of any substantive discovery process in China can be a significant obstacle to proving a case. A party is rarely required to produce evidence to support the other's claim or defence, and third parties generally are under no obligation to provide any evidence for the litigation; judges can order the production of such evidence under strict preconditions but obtaining it is often difficult (Yanrong Zhao, 2011). All this means that, if an IP rights holder in China cannot obtain the evidence it requires to win the case on its own, generally neither the defendant nor the court will assist.

The comparatively limited scope of evidence discovery in China may have a great influence on IPR disputes and a company's IP-protection choices. As my interviews with companies, scholars, and legal professionals reveal, this institutional gap is probably behind two problems frequently criticized by the foreign press, local companies, and lawyers: First, in many cases, proving IPR infringement of a specific rights claim can be very difficult; second, the amount of compensation for IPR infringements is usually low without strong evidence indicating the actual benefits the defendant gets from infringing. Both will discourage companies from using legal methods to solve IPR disputes.

2.3 Current Court System and Legal Professionals

2.3.1 The People's Courts

China's court system consists of four levels of courts, as depicted in Figure 2.1: (a) Supreme People's Court at the national level, (b) High People's Court at the provincial level, (c) Intermediate People's Court at the prefecture level, and (d) Basic People's Court at the county level.⁶¹ Courts are theoretically under the supervision of the People's Congress at the corresponding levels. Besides solving disputes, the Supreme Court has also undertaken to issue interpretations of legislation that clarify and fill gaps in enacted laws. Judges at lower levels of the people's courts often attempt to follow the legal interpretations decided by the Supreme People's Courts (Brown, 1997). According to *the Organic Law of the People's Courts*, other than for simple civil and minor criminal cases, trials are usually conducted by a collegiate panel consisting of judges or (in certain places) people's assessors, or both,⁶² with only limited exceptions, judgment at second-instance trial (in contrast to first-instance, or non- non-appellate trial) is final, and judgments rendered from these are immediately effective.

Internally, Judicial Committees⁶³ are established inside the courts at various levels, consisting of senior judges and heads of divisions.⁶⁴ The Judicial Committees may decide or review difficult or major cases and direct the trial's outcome,⁶⁵ an internal procedure for post-"final" decision discretionary review, known as "judicial supervision" (or adjudication supervision), also permits a collegial panel or the Judicial Committee to re-examine previously decided cases under certain situations. This means that, as opposed to traditional common-law

⁶¹ The translation is commonly used in western studies, for example, in (Jianfu Chen, 2008) and (Brown, 1997). But the courts of provincial level and county level are also translated as the Higher People's Court and the Grass-roots People's Court, for example at the website www.china.org.cn, which is a partner of *China Daily* and *Translators Association of China*, and the website lawinfochina.com, which is an authoritative source for legal studies in China.

⁶² People's assessors, also translated as layperson assessors, are selected much like jurors, from citizens in the community. They do not rule on matters of law but can allow or deny objections. When the trial is completed the judge and people's assessors decide on a verdict. Since 2015, reform attempts to further formalize and systemize the "people's assessor system" has taken place in certain territorial areas.

⁶³ Also translated as "adjudication committee".

⁶⁴ The members are nominated by the president for appointment by the People's Congress at the same level; the committees are generally chaired by the Party Secretary of the court and are comprised of senior judges who are Party members subjected to Party disciplinary controls (Xin He, 2012).

⁶⁵ See Article 11 of the Organic Law of the People's Courts.

approaches, cases might be resolved through the court's internal review. In fact, for a large proportion of cases in China, the judgment is not announced in court (Shao, 2015). With regards to external forces, PRC courts have been weaker and less independent institutions in China than in the West. They lack the authority of formal legal institutions in the Western legal tradition; they also lack the practical capacity to compel the production of evidence and enforce awards (Potter, 2013, p. 69). Both The Communist Party and the administrative authorities in corresponding-level governments exercise some very significant power over the judicial branches, particularly in financial allocation and appointment of personnel (Jianfu Chen, 2008, pp. 148-149; Lieberthal, 1995). All of these can significantly affect rights holders' trust in the trial system when they face disputes.

However, since the decision of judicial reforms at the Third Plenum of the Eighteenth Central Committee in 2013, many previous weaknesses are gradually being addressed. For example, since 2014, in some provinces,⁶⁶ experiments to reduce local protectionism, finance and personnel of courts under the provincial level are consistently managed by the provincial government (instead of the governments under the provincial level);⁶⁷ a few circuit tribunals and trans-regional courts are also set up (F. Guo, 2016). In addition, there are reforms of the Judiciary Committee's working process, for example reducing the number of cases going to the judicial committee, and promoting the openness of the committee's decision-making process.⁶⁸ These reforms might change people's behaviour in complying with the law.

The court's ability to enforce its own judgments and rulings ultimately defines the authority of law. In general, every court in China has an enforcement chamber or at least several judicial personnel responsible for enforcement (who can represent the court to enforce the judicial rulings if the winner of a court case applied for enforcement – for example, to confiscate infringing goods).

⁶⁶ The initial experimental reform in 2014 started with six provinces: Shanghai, Guangdong, Jilin, Hubei, Hunan, and Qinghai. Since 2015, the reform has been expanded to other provinces, but the exact information about which provinces are adopting this reform has not been publicized yet.

⁶⁷ Of course, this can only reduce protectionism at the Provincial level, but does not reduce the risk of protectionism from the High People's court. However, there is always a presumption with this reform that provincial level High People's courts are more professional (see section 3.3 for their qualifications) and are less likely to be influenced by a single party's interest.

⁶⁸ The first experiment of a Judiciary Committee's open trial happened in September, 2015 in Beijing. For a Chinese news perspective, see <http://cpc.people.com.cn/n/2015/0928/c83083-27641661.html>, accessed at November 21, 2016.

But the difficulty in enforcing civil judgments, decisions, and rulings has always been one of the most persistently publicized issues in Chinese legal circles and the media.⁶⁹ Both the central government and the people's courts have expressed their concerns about the difficulties in enforcement for the courts (China Daily, 2015; S. He, 1999). Some of the difficulties come from external sources, including local protectionism and other administrative interference (Donald C. Clarke, 1996; Peerenboom, 2002), as well as violent resistance;⁷⁰ some are due to internal obstacles, especially in civil cases, including the lack of enforcement personnel and competence, the reluctance of the courts to use coercive measures for civil cases (Donald C. Clarke, 1991, pp. 286-288),⁷¹ or poor professional qualifications (China Daily, 2015). Another reason might be that, with the judicial cadre evaluation system, courts officials are evaluated according to criteria measuring such things as "fairness", "efficiency" and "impact"⁷²; these three factors are among the considerations for government superiors when they score the court officials; as a result, court officials have incentives to pressure judges to resolve disputes as quickly as possible without unduly angering litigants or other actors (Kinkel & Hurst, 2015). Enforcement inconsistency across districts is also an issue of much concern for the Chinese court system. The inconsistency could be due to conflict of interest, local protectionism, or simply the range of professionalism in legal institutions (for example, courts in Shanghai are supposed to be more professional⁷³ than courts in a less developed western provinces) (Gan, 2015; C.-A. Gu, 2010).

According to my interview with judges and lawyers, enforcement in patent cases is much better than in other civil areas, and is not considered to be very serious. As discussed in later chapters, this might be due to either better institutional construction or cooperation of the defendants. But the enforcement problem is still significant in copyright and trademark cases, especially when the defendant is an individual (who has both less ability to pay and less risk when

⁶⁹ See, for example, (Supreme People's Court, 2015), (Tong, 2005); it is also indicated by the seminars I attend inside the Chinese legal network. In terms of numbers, in 2006 courts in China identified 1.64 million cases whose enforcement had been overdue for more than a year, involving 468.8 billion yuan, i.e. US\$68.9 billion (Ni, 2006).

⁷⁰ There are multiple news articles about violent resistance to law enforcement in China, see, for example, <http://news.sohu.com/20070405/n249226773.shtml>, accessed at November 22, 2016.

⁷¹ Probably due to the Maoist tradition of using persuasion and education for contradictions "among the people".

⁷² The impact score is negatively related to the rate of citizen petitions against the court.

⁷³ Which is to say, they have more experience or training, perhaps having law degrees from more prestigious institutions.

not paying). I describe the IP court system more fully in chapter three.

2.3.2 Judges

There are around 200,000 judges in present day China, or more than 14 per 100,000 inhabitants, compared to 11 judges per 100,000 citizens in the litigious US (The Economist, September 26th 2015). Before 1995, Chinese judges were often without any formal training, but were mostly appointed based on political factors such as the strength of political allegiances (Diamant, Lubman, & O'Brien, 2005; Mühlhahn, 2009). However, the 1995 Judge Law, revised in 2001, clearly stated that judges should have law degrees⁷⁴ and specific professional experience; higher level judges should have a master's degree or a PhD in law with 1-3 years of professional experience (Article 9, Judge Law).⁷⁵ All new appointees as judges have to pass the uniform judicial state examination (Article 12, Judge Law). The judges who were appointed before 1995 also have to get a law degree or complete special training through university-level courses; otherwise they would be relegated to work in administrative roles in the court. The selection criteria for IPR judges is usually even stricter,⁷⁶ making them relatively more professional. (I explain more on this in chapter three.) Judges are divided into twelve grades (Article 18); the first grade is the President of the Supreme People's Court (the Chief Justice), and judges from the second grade to the twelfth grade are composed of associate justices, senior judges and judges. Grades of judges are determined on the basis of their posts, their actual working ability and political integrity, their professional competence, their achievements in judicial work, and their seniority (Article 19).

A judge's basic pay is determined by his or her status as a civil servant (with a variety of bureaucratic grades or ranks), which is usually around 40,000 to 80,000 yuan (US\$5882, to US\$11,765) per year;⁷⁷ in some small provincial towns this is a comfortable salary, but it is

⁷⁴ Or "have degree outside of law from a college or a university but possessing professional knowledge of law".

⁷⁵ Or "have a Master's or a Doctoral degree in a field other than law but possess professional knowledge of law".

⁷⁶ According to the Supreme Court, selection of judges for IPR courts requires more professional law degrees, and longer period of trial experience (six years), see: http://www.lawtime.cn/info/zscq/gnzscqdt/201411053308984_2.html, last accessed at November 22, 2016.

⁷⁷ For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early

extremely difficult in a place like Beijing with a higher cost of living. However, civil servants including judges usually enjoy many benefits, such as housing subsidies and food subsidies (which could worth more than the annual salary), making it workable because a lot of the costs of living are due to housing;⁷⁸ in addition, since 2015, there have been attempts at reform that try to increase the salaries of judges by around 43% (Hao & Huang, 2015).⁷⁹ Still, recently, a surprising number of judges are choosing to leave their positions (mostly to be lawyers or work at corporate legal departments), due to a combination of heavy caseloads, considerable stress from pressure at work,⁸⁰ low pay, limited opportunity for promotion, and government interference (Chin, 2014; Lau, 2015; S. Lubman, 2015; X. Wang, 2014). These situations, combined with the "efficiency" evaluation criteria I mentioned (Kinkel & Hurst, 2015), could reduce the quality of legal cases in general, as well as the judges' incentive to help in evidence discovery in infringing cases (which could be time-consuming). There have been efforts at reform trying to convince experienced judges to stay; for example, a pilot program in Shanghai has started to grant judges special bureaucratic status distinct from other civil servants, raise their salaries, and give them more power over trials and decisions (Chin, 2014). The results are still to be seen, but the reform efforts might serve to improve the quality of court decisions.

2.3.3 Lawyers

Since Deng's reform, the number of licensed lawyers have quickly grown. By early 2016, there have been more than 297,000 practicing lawyers in China, and more than 24,000 law companies, compared to about 102,000 practicing lawyers and 11,000 law companies in 2005

2017 (about 6.8, i.e. 1 US dollar equals to about 6.8 RMB).

⁷⁸ To put this in perspective, the average annual salary for urban workers in the public sector is 62,029 yuan (US\$9,121), and that for urban workers at private units is 39,589 yuan (US\$5,821) (Sina Finance, 2016).

⁷⁹ According to available data (see <http://news.china.com/2014lh/news/11151572/20140312/18388294.html>), pay for judges at Intermediate People's Courts is still less than 100,000 yuan (US\$14,706) per year, and pay for judges at the Supreme Court is less than 200,000 yuan (US\$29,412) per year. The average salary of judges in Beijing and Shanghai is about 150,000 yuan (US\$22,059), much less than the average lawyer's salary in Beijing (400,000 yuan, i.e. US\$58,824) and Shanghai (500,000 yuan, i.e. US\$73,529) (Ye, 2015).

⁸⁰ The number of judges has barely grown since 2007, while the number of cases has swelled by almost 50% since then (S. Lubman, 2015); but the most recent legal reform has tried to alleviate this problem through various measures, see, for example: http://news.ifeng.com/a/20160807/49731904_0.shtml (in Chinese), <http://www.chinacourt.org/article/detail/2015/08/id/1678073.shtml> (in Chinese).

(Sun, 2016). Since the introduction of a national judicial examination system in 2002, an average of nearly 20,000 people have attained certificates to engage in legal careers each year ("China's Legal Services Market: Survival of the Fittest," 2007). According to 2012 data, the ratio of lawyers to total population in China is 1.6:10,000, and Beijing has the highest ratio at 11.7:10,000 (ACLA, 2013).⁸¹ The ratio is still much less compared to North American ratios, such as 44:10,000 for Toronto in 2006 (Baxter & Yoon, 2011, p. 17) and 87:10,000 for New York in 2014 (Leichter, 2015). However, many legal service jobs taken on by lawyers in the USA, Canada or Europe (especially legal services in fields like finance, securities, futures trading, corporate mergers and acquisitions, and IT) are, in China, shared by lawyers, notary publics, corporate counsellors, and low-level legal service staff (G. Shen, 2010), so the lawyer to population ratio cannot be accurately used to compare China's rule of law to other countries.

Lawyers in China are subject to the regulation of the Ministry of Justice and the All China Lawyers' Association (ACLA); ACLA was established in 1986. The new Lawyer's Law in 1997 and its three revisions in 2001, 2007, 2012 further professionalized China's lawyers, with provisions about qualifications and licensing requirements for both lawyers and law companies.

A lawyer's income can be either from salary, based on working hours, or commission, based on caseload revenue (where the commission can be either a fixed amount or a percentage of the client's billing); most law companies in China use a commission structure to pay their lawyers (R. Jia, 2015). According to information from the All China Lawyers Association, in 2013, a lawyer's average annual income in China was about 70,000 yuan (US\$10,294); there is a huge income disparity among lawyers, ranging from around 10,000 yuan (US\$1,471) to more than 500,000 yuan (US\$73,529) (W. Wang & Wang, 2014; Ye, 2015). Lawyers' per capita income is highest mainly in big cities, especially Beijing and Shanghai, and provinces with more developed economies.

The huge disparity of income among lawyers, where the baseline is very low, and the fact that lawyers face fierce competition from other legal service providers has put a lot of pressure on many lawyers to be more competitive. This in turn has led to many lawyers taking on cases with

⁸¹ In 2012, the total number of lawyers in mainland China is 232,384, and the total number of law firms is 19,361.

contingency fee (or conditional fee) arrangements, i.e. they do not charge any initial fees but take a proportion of what the plaintiff wins;⁸² as such, plaintiffs can start a lawsuit with very little upfront costs. This happens a lot in the area of IPR, and it may be one of the reasons why there are a large number of IPR cases even though the average amount of compensatory damages is low.⁸³ The prevalence of contingency fee arrangements instead of by hourly rate also makes lawyers less willing to spend time on difficult issues such as evidence discovery (unless they are certain this could bring much higher commission). This may be one reason for difficulties in IPR cases: compensatory damages based on high-quality evidence is very rare. Phenomenon like this may put an opportunistic layer on right holders' IPR legal dispute decisions.

2.4 Judicial Dependence

As a policy instrument, law in China is constantly subject to interpretation and intervention by central and local level officials of the government or the Party. In principle, as mentioned in section 1.2, the legislature, the judiciary, and the legal professionals are all subject to influence from the Party or the government. The Party can exert influence in the area of ideology, policy and personnel matters; this can be done externally through the Party Committee, the Political-Legal Committee, and the Organizational Department, and internally through, for example, the Party Group, Party Institutional Organ, Party cells, Political Department. (Peerenboom, 2002, p. 302). What needs to be noted here is that this issue is not unique to China; although western scholars argue that law should be distinct from politics in rule of law (Tay, 1990), actually, as in the West, all legal systems are politicized to some extent.

Other entities that may have influence include the People's Congress, include some powerful members of society, or even directors of various internal departments. Under these circumstances, it could be said that judicial independence in China is threatened from undue interference from various sources at different levels of government and the Party, among others. Both national-level and local governments might intervene and mediate once disputes happen; the government has

⁸² This is also a common option in the West, but not as frequent as in China.

⁸³ Interview 20160517C with a lawyer in Beijing.

both the incentive and the ability to stop big companies from suing each other. Their incentive is to maintain social stability and avoid unemployment caused by company bankruptcy, and the ability is provided by the fact that it controls many administrative resources.⁸⁴

In practice, direct intervention in court cases from external parties is more and more rare, but nowadays it is taking a subtler form. In recent years, when any external entity (such as the CCP, the People's Congress, the government, administrative agencies) or internal superior want to intervene, the court or the responsible judge receives written instructions that tell the receiver to "emphasize" a case, or to handle a case "according to law", rather than dictating outcomes. However, when the court understands conflicts between related interests, even instructions in this form are enough to communicate the desired outcome. Sensitive cases that are usually subject to intervention include not just major political or criminal cases, but also those involving the financial interests of the state or the Party, powerful individuals, or high-profile companies; others examples are cases that involve a large number of plaintiffs or those receiving media coverage (Liebman, 2007, pp. 625-626).

Recently, president Xi has been launching reforms to improve the rule of law and reduce extra-legal interference. For example, to further reduce the effects of such corrupting interference, the responsibility for determining judges' salaries and job assignments will shift from governments at the same level to higher-level ones, that are considered less likely to "have a stake in the verdicts" (The Economist, September 26th 2015). The situations where there have been cases of external, corrupt, interference may still have important implications for interested parties; the new reform efforts may start to change people's expectations, so that they may be more willing to trust the courts in the future.

3. Economic Transition

The economic reform and "opening-up" policy spearheaded by Deng Xiaoping in 1978 reversed the course that Mao had initiated and started to transform China from an autarkic,

⁸⁴ This is more evident in the telecom equipment sector where there are large domestic firms.

centrally planned economy toward an open market economy; at the current state of development, the changes are not uniform throughout the country but, instead, are sorted according to industrial sectors and geographic regions. The western-derived intellectual property system seems to work best in a market economy where private property is respected; this is in contrast to the Mao-era idea that everything should be public property, something to which no individual can claim ownership. Thus, the economic transition in China, resulting in a fast-growing economy, expanding private sector, and growing domestic market, provides a significant context for studying the workings of the intellectual property system, creating both opportunities and challenges.

3.1 Market Reform and Ownership Changes

The whole market reform process has followed a trial and error approach. At first, Deng only wanted the market to complement and support state planning; the Party made it clear that socialist modernization had to be carried out within the framework of mandatory central planning and state ownership (Nee, 2012). However, by the early 1990s, there was a growing realization that the planned-market strategy would not work (Naughton, 1996). Then a bolder reform towards a market economy started after Deng's "Southern tour" in 1992. An overview of the main reform steps can be seen in Table 2.1, in which it can be clearly seen that more and more freedom has been given to the private economy. But it also needs to be noted that both the market economy and the legal concept of private property rights developed very late in China; in fact, private property rights were only acknowledged officially by a Constitutional amendment in 2004.

Table 2.1: Major reform steps in China: 1978-2004

1978	- "Four modernizations (agriculture, industry, national defence, and science and technology)" initiated at the Third Plenum of the Eleventh Central Committee
1979	- "Open-door" policy initiated, foreign trade and investment reforms began, and law on Joint Venture Companies passed
	- Decision to turn collective farms over to households
	- Three specialized banks separated from the central bank

- 1980 - Special economic zones created
- 1984 - Individual enterprises (*getihu*) officially allowed
 - Replace of profit delivery of state-owned enterprises (SOEs) by tax
- 1986 - Provisional bankruptcy law passed for SOEs
- 1987 - Contract responsibility system introduced in SOEs
- 1988 - Tax-sharing system reform (decentralization of fiscal power): sub-national governments were required to finance their own expenditures through self-generated and shared revenues
- 1989 - Tiananmen Square Movement triggered retrenchment policy
- 1992 - Deng Xiaoping's "Southern Tour" reignites reforms
- 1993 - A "socialist market economy" established (the Third Plenum of the Fourteenth Central Committee), which paved the way for fiscal, financial, and SOE reforms
- 1994 - Company Law first introduced
 - Tax sharing system reforms introduced (transferring the role of tax collection back to the central government)
 - New “policy” banks were established to take over the government-directed spending functions and to be responsible for financing economic and trade development and state-invested projects
- 1995 - Laws to commercialize state-owned banks.
 - Shift to contractual terms for SOE staff.
- 1996 - Full convertibility for current account transaction
- 1997 - Comprehensive plan to restructure SOEs adopted
- 1999 - Constitutional amendment passed that explicitly recognizes private ownership
- 2001 - China joined World Trade Organization
- 2002 - CCP endorsed role of the private sector and invited entrepreneurs to join
- 2004 - Constitution amended to guarantee private property rights

Source: Compiled from (Sharma, 2009), (OECD, 2005), and (C. Shen, Jin, & Zou, 2012).

In China, whatever form of proto-market economy existed, it was essentially interrupted by revolution in 1949; this is quite different from in the West where the market economy has continuously developed over centuries. Today’s China is still in the process of transitioning to a

market economy, and the market economy, in the Western sense, has been developing in China for no longer than three decades; private property rights have been acknowledged for less than two decades. This short history of having a market economy and private ownership has provided an important background towards understanding the working of IPRs in present-day China. In fact, from my observations during fieldwork, many patterns and problems in IPR-related practices can be partly attributed to the lack of experience in various agencies with regards to operating in a modernized market economy; these observations are further discussed in later chapters.

3.2 Trial-and-Error Approach and Changing Rules

Over the years of reform since 1978, there has been a gradual process of reducing restrictions and control. As I have noted, the government takes a trial and error approach regarding the Reform and Opening-up; which is to say, the government has proceeded cautiously in liberalizing foreign trade and investment regimes. The government has incrementally replaced administrative controls on imports and exports with tariffs and quotas; once these were in place, it gradually abolished the quotas and reduced the tariff rates until tariffs were finally reduced to 14 percent when China entered the WTO in 2001 (Sharma, 2009, pp. 66-67). The establishment of the Special Economic Zones (SEZs) as a test in 1980 was a crucial step. SEZs are allowed to operate with considerable administrative and fiscal autonomy; they can have lower tax and tariff rates and flexible investment rules; foreign investors can also enjoy various preferential treatments, based on both national measures and local rules, such as 100 percent ownership, simplified administrative processes. (Jianfu Chen, 2008, pp. 624-625).

This pattern of trial and error represented by SEZs helped to test policies and make adjustments, and it turned out to be very successful in attracting foreign investments. However, it has also created an environment where regulations and rules have been constantly issued as "interim" or "provisional" measures, which are subject to revision from time to time. Adding further confusion, the rules can be issued not only by the national legislature and the State Council, but also by various departments under the State Council, as well as by local governments. In this environment it is hard to establish a unified national legal system (Jianfu Chen, 2008, p. 625), and

local actors may get used to seeking special treatment rather than just abiding by existing rules. As stated in section 1, this kind of flexibility, made necessary by economic goals, contributed a lot to fragmentation and decentralization, and thus has affected law and policy enforcement. Another effect of this trial-and-error approach is the difficulty for investors and companies to make long-term plans (including long-term plans for IP development or IP protection); this is because policy experiments and unexpected trials happen frequently, and include industrial policies.

3.3 Reform Results: Fast-Growing Economy and Expanding Domestic Market

The reforms moving China over to a market economy and opening-up to western investments has paid off and generated fast economic growth. China's GDP growth has averaged nearly 10 percent per year from 1978 to the 2010s (these statistical data need to be treated with caution of course, although there is no doubt that China's growth has been impressive).⁸⁵ With a population of 1.3 billion and a GDP of 10.866 trillion US dollars in 2015, China is now the second largest single-country economy in the world (WB, 2016). As argued in the conclusion of this chapter, this fast economic growth provides the background for the sharp increase in IPs generated inside China, but also presents challenges for laws and policies to catch up with the pace of economic and industrial changes.

With regard to the issue of "opening-up", Foreign Direct Investment (FDI) in China increased from US\$4.4 billion in 1991 to US\$28 billion in 1993; by the late 1990s, China was already the largest recipient of FDI in the developing world (Sharma, 2009, p. 67). By 2014, it became the largest recipient of FDI in the entire world, with inflows reaching US\$129 billion (UNCTAD, 2015). Some may expect that, with such a large amount of FDI, the Chinese economy would become more internationalized, and that local use of IPRs would be similar to the international standard. However, what needs to be noted is that, although China's initial growth can be, to a large extent, ascribed to foreign investments and exports, domestic consumption and investment have become more and more important recently (WB, 2015). In China's 12th Five-year Plan (for 2011-

⁸⁵ The GDP annual growth slows down to around 7 percent since 2012, according to World Bank data.

2015), one objective has been to promote economic growth mainly based on internal demand. Some scholars argue that the growth of present-day China's largest companies has been based on its expanding home market (Nolan, 2012). This increasing reliance on domestic markets may have a strong influence on the attitude of local companies toward the TRIPS-standard Chinese IPR system and their IPR-related strategies. With the increasing importance of local markets, some might expect that increasing attention be paid to local IPR legal protections. However, as will be revealed through my fieldwork data, the reality may be more complicated.

4. Summary

A complete review covering all aspects of China's IPR-related legal institutions is out of the purview of this chapter, however, I have mentioned those most relevant to the workings of the IPR system. It seems clear that, the growth of IPRs in China is compatible with its fast growth, but various institutional conditions are bringing many challenges in the meantime. In this summary, I first sketch a few general characteristics of China's institutional environment from the previous sections, which are the most important for understanding the Chinese IPR system. Then (in section 4.2), based on this review and my fieldwork experience, I elaborate on what the characteristics mean for companies in general, and for the working of IPR systems in Chinese industries.

4.1 General Characteristics

There are three general characteristics of China's institutional background that significantly influence the interaction of IPR systems and local industries, as follows.

(1) The short history of a market economy and the rule of law

As illustrated in Table 2.1, China started its market reforms in 1979, and a market economy, with acknowledged private property rights, has existed for only about 20 years; the transition is not yet complete.

(2) Rapid law/policy/economic change

As I mentioned before, China has adopted a trial and error approach in both economic and legal reforms. This has led to continuous revision of laws, legal interpretations, and economic

policies. Since the Cultural Revolution ended in 1976, the whole legal system has been built from scratch, and there have been continual reforms to make the system work more effectively. In addition, rapid economic growth has created a society of constant change, which requires frequent adjustments to legal institutions. This is a necessary process of development, but can cause confusion to those who may want to use legal methods to solve disputes.

(3) Decentralization

Previous sections indicate that there are significant forces creating both political and economic decentralization in China. Decentralization initially benefits market reform by reducing nationwide restrictions and allowing local development of private economies; but it has also introduced inconsistency in law and policy enforcement, as well as people's acceptance (or even expectation) of exceptions to national regulations.

4.2 Effects of the General Characteristics

The aforementioned characteristics have a great role in shaping companies' behaviours, which in turn affect the interaction between industries and the IPR system in China.

(1) The lack of experiences with regard to market strategy

Accumulation of experience requires time and a stable environment; in China the market economy has existed for only a short time, and it has frequently gone through rapid changes (see Table 2.1). In fact, even the oldest modern companies in China have only existed for about 30 years (J. Yang, 2014), not to mention the fact that that constant market reshuffling has produced large numbers of new companies with histories of only a few years. Given these facts, companies in China have to adapt to environments and keep changing their strategies, and they may not have either time or opportunity to develop experience, or mature these strategies. As I elaborate in later chapters, this has brought many frictions to the workings of the transferred IPR system, which functions in the west with the support of a mature market economy.

(2) Short business time horizons

As mentioned, the rapid economic and social changes since China's economic reform have led to frequent changes in policy and legal environment. These changes can be arbitrary too;

according to my field study, in China the state can change industrial-related policies without any previous notice or discussion with companies.⁸⁶ Many studies have pointed out that an unstable policy environment reduces long-term investments and affect business strategies (Jeong, 2002; Kisunko, Brunetti, & Weder, 1998); this is especially obvious in developing countries and transitional economies like China, where policy surprises happen frequently (Yi Feng, 2001; Yizhong Wang, Chen, & Huang, 2014). The concerns about uncertainty that companies have come from the following sources: the possibility that the development of new institutions may be stalled or reversed (Frye, 2002), and the uncertainty generated by the process of change itself (Hellman, 1998; Prezeworski, 1991).⁸⁷ Furthermore, (Kenyon & Naoi, 2010) point out that, in non-democratic regimes, an absence of credible information regarding possible policy changes also contributed to concerns about uncertainty.

In my field study, I found that in some industries, policy regulations change every few months, possibly undermining or fully negating the value of a company's previous strategies or investments. In this case, companies tend to focus on short-term strategies and investments to avoid potential risk; they might lack both the ability and the incentive to consider long-term strategies. Another effect of rapid change and high economic growth in the previous decades is that it has shaped VC investors' expectations of "high return in a short period of time".⁸⁸ In this case they would not be willing to invest in programs where only long-term returns are possible (for example programs aimed at IP development); thus, new companies seeking investments would also be less willing to devote themselves to long-term programs. Short business time horizons caused by these factors have led to a popular mode of entrepreneurship, where companies develop impressive ideas and IPs only to attract the first-round investments, without thinking about long-term competition. This has reduced the importance of long-term IP protections for companies.

(3) The changeability of law or policies, and space for informal solutions

Rapid legal and policy changes create confusion around legal concepts. As can be shown

⁸⁶ Interview 20160708, with the Chief IP Officer at the IP department of a local biomedicine company.

⁸⁷ They argue that, like other systems transitions, market reform involves the substitution of one set of rules for another. Until the new rules are broadly accepted, however, there is likely to be uncertainty over both their content and how they are implemented.

⁸⁸ Interview 20160614, with a manager at a VC company.

throughout the whole reform process, rapid economic changes have brought social changes and frequently render legal concepts or policies obsolete and unsuitable for practice; the laws and policies are then adjusted to reflect the economic and social reality. For example, as mentioned in the historical review in this chapter, a lot of fragmented and ad hoc legislation about contracts were made to cope with the increasing necessity of signing contracts brought about by the market economy (for example the 1981 Economic Contract Law, amended in 1993, and the 1985 Foreign Economic Contract Law); then further market development made it necessary to have a uniform law governing all contract-related business, thus the adoption of the uniform Contract Law in 1999, with the interpretations of the Supreme People's Court published in 1999, 2004, 2009, and 2013. As described in chapter three, IPR laws changed a lot too. Each IPR law changed two to three times within the last three decades; in this time, major things were changed to reflect industrial change (for example, the inclusion of pharmaceutical products as patentable products in 1992, and the various changes about patentability of software in patent examination guidance due to IT technology development).

This state of change brings mixed results. As mentioned, the need to carry out market reforms allows decentralization, i.e. allows discretion in applying national policy and laws. All these create the impression of inconsistency in law and policy enforcement (across time and across regions), and also the expectation that formal laws and regulations can be gotten around. This may produce distrust in law but it also provides space for alternative informal solutions while facing disputes. This become evident with my analysis in later chapters about IPR dispute resolutions.

Chapter III. Intellectual Property Right Regime and Industry Background in China

This chapter provides a more specific institutional background for later analysis. I briefly review the evolution of the Intellectual Property Right (IPR) regime in China, its status quo, and the industrial environment in which it operates. This contextual information will provide a basis for understanding the analysis and case studies in the following chapters. There are three problems that I address: (1) what is the historical evolution and current status of Chinese IPR legal institutions; (2) what are the characteristics of China's IPR enforcement systems and how often are they used; (3) what is the scope of industrial activities and what are the implications of these IP activities on industrial needs with regard to protecting IPRs in general? To explore these questions, I first review the development of IPR laws, then I introduce related enforcement institutions and, in the end, I analyse the general industrial structure changes and IP activities in China.

1. IPR Laws

1.1 IPR Laws before 1979

In the Imperial Era (221 B.C. - 1911 A.D.) in China, certain forms of intellectual property were recognized and protected at various times, and there is evidence of restrictions on unauthorized reproduction of certain books, symbols, and products (C. Zheng & Pendleton, 1987). But it would be wrong to see these as intellectual property as modern western scholars understand it to be;⁸⁹ the purpose of these restrictions was to prevent unacceptable ideas from being disseminate and to maintain imperial legitimacy and power, rather than protecting private property or interests (William P. Alford, 1993; Zimmerman, 2013).

At the end of Qing Dynasty, with the introduction of foreign technologies and techniques into China, and the development of domestic modern industries, Emperor Guangxu approved the 10-

⁸⁹ It should be noted that, in the West, the beginnings of IPR are also due to a grant from feudalist royal privilege; only with the rise of capitalism in the 17th century was the previous view of IPRs gradually replaced by a justification rooted in the rights of European citizens (Bettig, 1996, pp. 9-13; Kaufer, 2012, pp. 1-7).

year protection of industrial techniques for some manufacturers starting from 1882 (M. Liu, 1996, p. 169).⁹⁰ He also enacted the first patent regulations in Chinese history (*Reward Regulations on the Development*) in 1898, and the first trademark regulations (*Provisional Regulations on Trademark Registration*) in 1904; but both were invalidated right after the announcement and never implemented, due to opposition from other political groups (C. Zheng, 1997, p. 242; 1999, p. 10). In 1910, under foreign pressure, the first copyright law based on the Berne Convention was put into effect (Y. Li, 2006), but the Qing government was overthrown only one year after its coming into effect (C. Zheng & Pendleton, 1987, p. 87).

Between 1911 and 1949, the KMT nationalist government announced the first Patent Law in Chinese history (1944), but it was never implemented in mainland China because the KMT was defeated soon after (Yuanguo Zhao, 2003). A trademark law was also published in 1930 and amended in 1935 (Willard, 1995, p. 414). The "Law on Authors' Rights" was published in 1928 and provided copyright registration as well as the protection of the works of foreign authors, on the condition that each particular foreign author's country also protected Chinese works (C. Zheng & Pendleton, 1987, p. 87).

Although both Imperial and Republican regimes recognized some IP rights, intellectual property laws were largely nominal, enforced infrequently due to political uncertainties, including various Japanese invasions, the Second World War, and constant civil wars (Willard, 1995; Yuanguo Zhao, 2003, pp. 7-9). As mentioned in chapter two, when the CCP rose to power, it eliminated all previous regulations and laws, including IPR laws (Folsom & Minan, 1989). The Communist government introduced a reward system for inventions and creations, where rewards were given to inventors and creators, but the ownership of their creations and inventions belonged to the state (D. Yang, 2003, p. 134; Yuanguo Zhao, 2003, pp. 9-12).⁹¹ As for trademarks, regulations were implemented only for the purpose of identifying product source and controlling

⁹⁰ The protection covered mechanized techniques in weaving (1882), paper making (1889), winemaking (1895) and yarn spinning (1895).

⁹¹ According to the Provisional Regulations on the Protection of Invention Rights and Patent Rights in 1950, inventors can get a "certificate of invention", which allowed them to get recognition and monetary rewards; but the state retained the right to exploit the invention (La Croix & Konan, 2002, p. 760).

product quality in the planned economy; supervisors used the trademarks to identify the source of low-quality products and punish the producer.⁹² However, the regulations were not about defending private rights, and there were no stipulations on trademark protection (Handong Wu, Hu, Dong, & Zhang, 2009, p. 521; C. Zheng, 1997, p. 244). Later, the Cultural Revolution (1966-1976) led to the destruction of China's legal system,⁹³ resulting in a dismantling of virtually all formal IP protection (Zimmerman, 2013, p. 144). Thus, before Deng's reforms, there were not many legal institutions that addressed IPRs.

1.2 The Development of the Modern IPR Legal System after the 1979 Reforms

In this section, I review the evolution of modern laws about patents, copyrights, trademarks, and trade secrets in post-1979 China. Here I include trade secrets alongside the three traditional IP types, because they have been more and more protected as an IP in many countries, either by the Trade Secrets Act (such as in the US),⁹⁴ or through Anti-Unfair Competition Law (such as in Japan and China). Trade secrets are also treated as an IP category in various World Intellectual Property Organization (WIPO) reports and in most IP-related textbooks.

Since the market reform and opening up of 1979, China has made extensive progress in joining international IPR conventions and passing domestic IPR laws. During the last few decades, China has joined almost all major international IPR conventions. It has passed laws to protect patents, copyrights, trademarks, trade secrets, and other types of IPs (see **Figure 3.1** for a brief review). Besides reforms in written laws, China has also progressed in establishing enforcement procedures; to unify adjudication for civil, administrative and criminal IP cases, since 1993 special IP tribunals have been established in various local courts (Kolton, 1996). Since 2014, specialized IP courts in Beijing, Shanghai, and Guangzhou (H. Wang, 2015)⁹⁵ have been in place and they

⁹² In 1950 the State Council announced the *Provisional Statute on Trademark Registration* and its implementation statute; in 1963 Regulations on *Trademark Administration and its Implementation* was put into effect. The *Regulations on Trademark Administration* Article 1 stated that "This regulation is made to regulate trademarks and enhance product quality." Article 3 stated that "Trademark is a sign of product quality, and administrative agencies should monitor and regulate product quality".

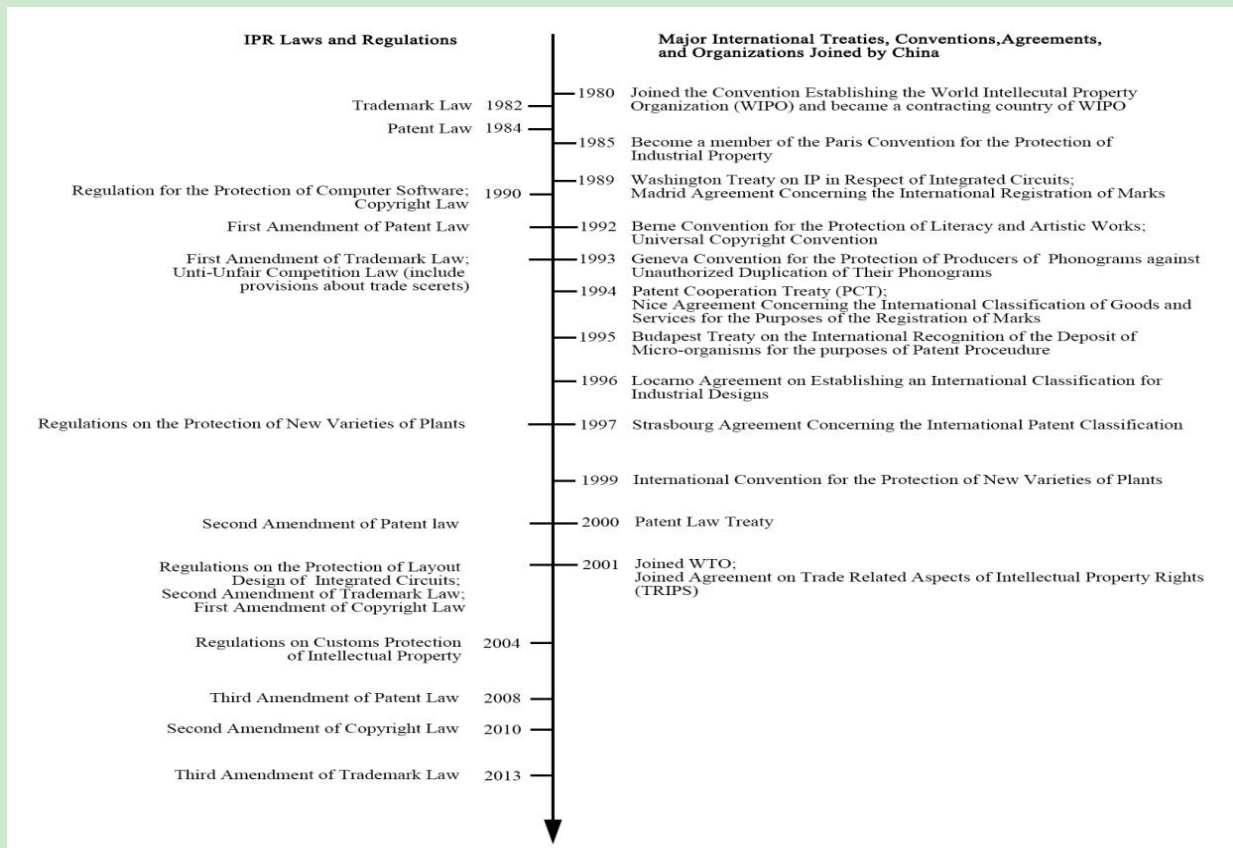
⁹³ See for example, (Jianfan, 1983).

⁹⁴ In contrast to the other three types of intellectual property that are governed primarily by federal law, trade secrets are primarily governed under state law in the US.

⁹⁵ Specialized IP courts sit as first-instance in civil and administrative cases involving patents, computer software, trade secrets of

are supposed to be more aggressive with regard to the amount of damage, while being more inclined to use provisional measures, and to employ technical investigators to resolve problems around complicated technologies. Related administrative institutions, databases (especially patent databases), and personnel training programs have also gradually been developed (La Croix & Konan, 2002, p. 762). I return to the details of the enforcement institutions in section 2.

Figure 3.1: Timeline of major national and international IPR laws and regulations



Source: (OECD, 2008, p. 410); Pkulaw.cn.

technical nature, new plant varieties and integrated circuit design, civil cases for the recognition of well-known trademarks and administrative cases against decisions of provincial and municipal governments with respect to IP rights. They also hear appeals on first-instance decisions in IP cases decided by basic courts located in their jurisdiction. The Beijing IP Court also has exclusive jurisdiction with respect to administrative cases against decisions of the state administrative authorities involving the determination of IP rights. The IP Court position in the hierarchy of the Chinese judicial system is similar to that of an intermediate people's court; appeals on the decisions of these new IP courts are to the High Court located in the same province as the relevant IP court.

During this process, the US has always been a major source of pressure on the implementation of IPRs, since the US-China Bilateral Trade Agreement of 1979. It initiated multiple negotiations aimed at convincing China to improve patent, copyright, and trademark laws (Zimmerman, 2013). Since US added China to the Special 301 watch list in 1991, there have been multiple rounds of trade sanction threats, each resulting in some agreements but never settling the problem (Kshetri, 2009; La Croix & Konan, 2002). Since 1997, and with China's accession to the WTO in 2001, there has been less bilateral tension between the US and China. The United States Trade Representative (USTR) 2012 report even admits that China has enacted a relatively good set of IP laws since its accession to the World Trade Organization (USTR, 2012). But, recently, foreign pressures like this have been transferred to law enforcement. For example, the most recent USTR report (2016)⁹⁶ maintains that, although China made progress in legal and regulatory IPR reform, as well as in their court system, effective protection and enforcement of IPR are still undermined by other problems, and that China needs to further improve IPR enforcement (USTR, 2016, p. 29).⁹⁷

To a large extent, the development of modern Chinese IPR institutions have been advanced because of foreign pressures, especially pressures from the US (Hong, 2013). However, we should not underplay internal drives when we think about the development of the IPR system in China. During the reform era the CCP leaders knew that their legitimacy depended on the success of modernization and economic development, which more or less requires IP protection (Mertha, 2005, pp. 78-79). In sum, the development of IPR institutions in China has been related to many factors, including domestic needs to promote innovation, attract foreign investment, and the need

⁹⁶ The Special 301 Report is prepared annually by the Office of the United States Trade Representative (USTR) under Section 301 as amended in the Trade Act of 1974. The annual report identifies a list of "Priority Foreign Countries", containing the countries judged to have inadequate intellectual property laws; these countries may be subject to trade sanctions. The report contains a "Priority Watch List" and a "Watch List", containing countries whose intellectual property regimes are deemed to be of concern.

⁹⁷ For example, the problems the report mentions include: unchecked trade secret theft, market access obstacles to ICT products raised in the name of security, measures favouring domestically owned intellectual property in the name of promoting innovation in China, rampant piracy and counterfeiting in China's massive online and physical markets, extensive use of unlicensed software, the supply of counterfeit goods to foreign markets, obstacles that restrict foreign companies' ability to fully participate in standards setting, and acute challenges in protecting and incentivizing the creation of pharmaceutical inventions and test data.

to be accepted by international society (Yuanguo Zhao, 2003, pp. 35-37).

It should be noted here that, the fact that the Chinese IPR system has mainly been developed due to foreign pressures makes its trajectory different from early developing countries, like the US, Canada, the U.K. and Germany. Legal discrimination against foreigners was common in the beginning for early developing countries such as the US and Japan, where domestic inventors enjoy more formal IP protection at first (Odagiri, Goto, Sunami, & Nelson, 2010). For example, as (Khan, 2005) notes, the US patent system established in 1790 did not allow patents on imported inventions. Legislation passed in 1793 restricted patents to inventors who were US citizens, although this requirement was gradually relaxed, and noncitizens still faced higher application fees until 1861. The Copyright Act of 1790 denied copyright protection to foreign works; only in 1891 was US copyright protection extended to cover works by foreign artists. Similarly, the 1888 Japanese Patent Law refused applications by foreigners (Odagiri, Goto, & Sunami, 2010, pp. 98-99).

When the Chinese modern IPR system was just established, on the contrary, it was often criticized for giving more protection to foreigners than domestic nationals (X. Feng & Huang, 2001a; P. K. Yu, 2006).⁹⁸ For example, in 2001, works originating in WTO member countries, whether or not their content is illegal according to Chinese Law, could have their passive rights protected automatically; in contrast, domestic Chinese works do not enjoy copyright protection if “the publication or dissemination of which is prohibited by law” according to the 2001 Copyright Law (Dong & Gu, 2009).⁹⁹

⁹⁸ Feng and Huang point out that, while the drafters of the 1990 Copyright Law had taken international standards into consideration, there were still some significant discrepancies between the enacted law and international conventions. After China acceded to these conventions, the State Council put a special administrative act in place to ensure that the interests of foreign nationals would not be adversely affected by these discrepancies. As a consequence, foreign nationals enjoy better treatment under international conventions than Chinese nationals. Of course, this double standard was eliminated gradually in later revisions of the law, but the impression is still there.

⁹⁹ Works of Chinese citizens enjoy copyright in accordance with domestic law, but work of a foreigner enjoys copyright under international agreements. So, although Article 4(1) of the Copyright Law and relevant provisions violated the WTO law, China may still keep the validity of this provision for domestic authors, and set up a mechanism of “super-national treatment”. But in recent years, with legal revisions meeting international standards, when Chinese judges make decisions they stick more and more to Chinese law and less to international agreements.

1.3 Current IPR Laws and Major Types of IPRs in China

The traditional "intellectual property" tripod encompasses patents, copyrights, and trademarks; recently, business secrets also became an important IPR issue, especially for foreign companies.¹⁰⁰

1.3.1 Patents

Patents provide inventors with the right of exclusion from unauthorized use, production, sales, or import of the product or technology in question for a specified period of time, to increase their incentives to innovate. Exploitation of a patent without permission of the patentee constitutes an infringement upon that patent right. According to current Chinese Patent Law (2008 revision, Article 2) and its Regulation for Implementation, patents can be categorized into inventions, utility models and designs. "Invention" refers to any new technical solution relating to a product, a process or an improvement thereof. "Utility model" is a category that does not exist in the US system, but it exists in many other countries, including Germany, France, Italy, Spain, Japan¹⁰¹. It refers to any new technical solution relating to a product's shape, structure, or a combination thereof, which is fit for practical use; it is supposed to encourage local small technological improvements (Z. Liang & Xue, 2010). "Design" refers to any new design of a product's shape, pattern or a combination thereof, as well as the combination of the colour and the shape or pattern of a product, which creates an aesthetic feeling and is fit for industrial application; there might be legal overlap between design patent and three-dimension trademark.¹⁰² What needs to be noted here is that, since 1992, Chinese patent protection has extended its coverage to (processed) food, beverages, flavouring, pharmaceutical products, and substances obtained by means of chemical processes.

Patent application files are submitted to the State Intellectual Property Office (SIPO). Patent applications for inventions are subject to successive processes, as follows: preliminary

¹⁰⁰ See USTR reports from recent years.

¹⁰¹ Note that "utility model" as a category should not be confused with the examination standard of "utility" that is used in the US (see below).

¹⁰² Three-dimensional marks are treated as borderline between industrial design patents and trademarks, and the owner can seek protection from both. There have been many discussions recently about the legal overlap created by three-dimensional trademarks.

examination, application publishing, substantive examination, announcement of the granting of the patent right (if it passed the examinations). From the date of publishing an application for a patent for an invention until the date of announcing the grant of the patent right (the "public notice period"), contending patent holders or other parties can file objections. Utility models and design patents only need to go through preliminary examination (by examiners working for SIPO) to be granted; there is no requirement for substantive examination or a "public notice period". Preliminary examination of an application only needs to ensure that it contains the necessary documentation in terms of the required forms and that it does not violate the provisions of the Patent Law.¹⁰³ Substantive examinations are considered against the standard of "novelty, inventiveness, and practical applicability" (and can be compared with the analogous US terminology of: novelty, nonobviousness, and utility).¹⁰⁴ This examination system is quite different from the US system, where there is no category of utility model and therefore every patent application in the US must go through substantive examination; in contrast, in China, only patents for inventions go through such substantive examinations.

The duration of patent protection for inventions is 20 years, and, for utility models and designs, it is 10 years, counted from the date of the application. The Chinese patent system adopts the "first-to-file" principle, which is now the dominant system across Western countries, while foreign patents are protected under a "right of priority" system authorized under the WIPO. This model allows patents filed abroad to retain priority in China for 12 months pending registration in China; utility models and designs retain priority for 6 months pending Chinese registration.

1.3.2 Copyrights

Copyright protects the expression of ideas with the goal of providing positive incentives for

¹⁰³ For example, Article 5 states that patents should not be granted for inventions that are detrimental to public interests.

¹⁰⁴ Patent Law (Article 22): Novelty means that the invention or utility model is not an existing technology and, prior to the date of application, no entity or individual has filed an application with the patent administrative department of the State Council for the identical invention or utility model and recorded it in a patent application documents or patent documents released after the said date of application. Inventiveness means that, as compared with the technology existing before the date of application the invention has prominent substantive features and represents notable progress and that the utility model has substantive features and represents progress. Practical applicability means that the invention or utility model can be made or used and can produce effective results. "Existing technology" refers to the technologies known to the general public both at home and abroad prior to the date of application.

creators. It gives the owner of a creative work¹⁰⁵ rights against certain unauthorized explorations, such as: duplication, publication, alteration, distortion, mutilation, distribution, dissemination, exhibition, performance, projection, recording, broadcast, translation, adaptation, or compilation (see the Patent Law of the PRC). Copyright infringement can refer to the violation of different parts of the rights mentioned here. Accordingly, relevant rights can be held by different parties; for example, for a novel, copyright of the novel includes many parts, including the right of authorship (the right to attach one's name to the work) and adaptation rights; while the right of authorship always belong to the writer, adaptation rights can be sold to film production companies. According to current Copyright Law (2010 revision, Article 2) and its Regulation for Implementation, works of Chinese citizens, legal entities or other organizations, foreigners whose works are first published within Chinese territory, and foreigners whose works are protected because of international agreements, whether published or not, shall enjoy copyright in accordance with the Copyright Law.

To deal with many new issues generated by developments in technology, especially Internet technology,¹⁰⁶ since 2012 there has been preparation for another legal revision in China.¹⁰⁷ In China, as in the West, although copyrights don't require an application and examination process, copyright owners can register their copyrights, at copyright administration departments¹⁰⁸ or the Copyright Protection Centre of China (CPCC).¹⁰⁹ In case of infringements and disputes, these

¹⁰⁵ Recently, computer software is also included in copyrightable works. In China, and many other countries, software can be protected by either copyright or patent, depending on the right owner's choice. Usually copyright protects source code or object code, patent protects functional systems, process, or method of operation. Usually patent protection is stronger because copyright law does not protect ideas, just expressions of ideas; this allows competitors to design around the idea by expressing it differently, i.e. by rewriting the underlying code differently to achieve the same functionality. Patent law can protect the underlying processes and inventive features, thereby offering a more robust protection to the actual invention expressed in the source code and the object code.

¹⁰⁶ For example, "inline linking" or "embedded linking" are becoming common in present-day China; this is a practice whereby one website can show content by using another website's resources. In a legal case explained to me by a judge in China, film producer A authorized the right for information network dissemination to website B, while a third website C, cooperating with B, put a link on its homepage that targeted (and streamed) film producer A's content on website B while keeping the viewer on website C. Film producer A then sued website C for copyright infringement. There has been no legal basis for how to deal with cases like this.

¹⁰⁷ On March 31, 2012, the National Copyright Administration put a revision of the Draft of Copyright Law on its website for comments, see (in Chinese) <http://www.gapp.gov.cn/govinteract/1081/84480.shtml>.

¹⁰⁸ Mainland China citizens can register at provincial-level copyright administration departments; foreign citizens and citizens in Hong Kong, Taiwan, and Macao can register at the National Copyright Administration.

¹⁰⁹ CPCC is directly under National Copyright Administration of China (NCAC); NCAC also operates as State Administration of Press, Publication, Radio, Film, and Television (SAPPRFT).

registrations make it easier for copyright owners to provide evidence of ownership.

1.3.3 Trademarks

Trademark provides protection to a distinctive mark used to identify a product, company or service. It needs protection because consumers view the mark as a reliable indicator of desirable product characteristics and are willing to pay a premium for it; this premium compensates the company for the cost of developing and advertising the trademark, and distinguishing its products (Maskus, 2000, p. 47). Recently the scope of "mark" has been considerably expanded. According to the current Trademark Law (2013 revision) in China, "any sign capable of distinguishing the goods of a natural person, a legal person, or any other organization from those of others, including but not limited to word, design, letter, numeral, three-dimensional symbol, combination of colours, and sound, as well as a combination of the above, may serve as a trademark for registration application". Certain images cannot be trademarked, such as national symbols, signs bearing ethnic discrimination, and the name of specific places where a central state organ is located.

Trademarks are registered at the Trademark Office of the State Administration for Industry & Commerce (SAIC) of the People's Republic of China. Trademark registration applications need to go through the processes of preliminary examination, the three-month preliminary approval publication period (during which opposition can be raised), and the decision to approve registration (if approved). Violations of trademark could be in the form of either duplicating the mark or using a similar mark with the intention to confuse the consumer.

Usually only trademarks approved to be registered by the Trademark Office can be protected by law, but after China joined the WTO, to be consistent with the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) standard, the Trademark Law extended protection provisions to some unregistered trademarks in certain cases (with the goal of preventing intentional rush registrations).¹¹⁰ The period of validity of a registered trademark is ten years (renewable), commencing from the date of approval of registration.

¹¹⁰ For example, Article 32 states that "No application for trademark registration may infringe upon the existing prior rights of others, and bad-faith registration by illicit means of a trademark with a certain reputation already used by another party shall be prohibited."

Different from the US "first-to-use" system for trademark protection, the Chinese trademark system mainly adopts the "first-to-file" concept,¹¹¹ while foreign registered trademarks are protected under the "right of priority" system (the same as for patents) under the WIPO. The "first-to-file" system has caused a phenomenon called "trademark squatting", meaning the act of registering other people's marks as their own in order to gain benefits from the original marks or the real mark or trademark owners, for example by blackmail. Internationally it means registration by a squatter in a different country (for example, Apple's dispute over the iPad name with Proview in China is suspected to be a result of squatting, so is Starbucks's dispute with Zuykov in Russia). Domestically, since any trademark registration has a limited category range, squatting commonly focuses on registering a famous trademark in a different category, either to blackmail the original owner, or just to limit the development of a certain competitor. A large proportion of trademark lawsuits are related to squatting in present-day China.

1.3.4 Trade Secrets and Other Legal Protections

Besides these three major IPR types, trademark is becoming a more and more important IPR type. Under the US Uniform Trade Secret Act, "trade secret" refer to "information, including a formula, pattern, compilation, program, device, method, technique, or process, that: (1) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (2) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy." In China, the 1993 Anti-Unfair Competition Law provides protection for business secrets, which are defined as "technical and business information unknown by the public but used to create business interests or profit for its legal owners, and also that which is kept secret by its legal owners" (Article 10). Since trade secrets do not require registration, in cases of dispute, there are a lot of uncertainties with regard to whether a technology will be acknowledged by the court as a "trade secret"; in this case, whether a company can win a trade secret case significantly depends on its experience in taking precautions to prove the existence of trade secrets, as well as

¹¹¹ when two applications are filed on the same day, the mark which is first used will obtain priority (Cheong, 1999, p. 20).

its financial ability to hire effective lawyers.

In the meantime, Section 7 of the Criminal Law can be applied to all the above types of IPRs when certain infringements constitute a crime (usually when the scale of infringement is large or when the amount of the illicit income or loss is substantial). When IPR infringement constitutes a crime is further explained by Supreme Court interpretation.¹¹²

Aside from this, the 2007 Anti-Monopoly Law can be used by companies in IPR-related cases, usually as a defence.¹¹³ Article 55 of the Anti-Monopoly Law states that "this Law shall apply to the conduct of business operators to eliminate or restrict market competition by abusing their intellectual property rights"; when facing an infringement prosecution, the defendant can possibly call for a counter suit against the plaintiff by arguing that the plaintiff is abusing its IPRs. This has been used by companies in the US; for example, Apple countersued Creative when facing a patent infringement charge in 2006 (Burton, 2006), Psystar countersued Apple citing Anti-Trust law in 2008 (Krazit, 2008), while Arista filed a counterclaim facing Cisco's copyright infringement suit citing Anti-Trust law in 2016 (Duffy, 2016). There is a much shorter history of Anti-Monopoly Law in China, so companies have just started to learn about its importance and its effects; but recently Chinese companies have also started to use it to defend themselves from IPR-infringement lawsuits, such as when a company in Guangzhou faced Microsoft's infringement suit in 2012 (Jiang, 2012).

1.4 Summary of IPR Laws in China

One of the basic characteristics of Chinese IPR laws is that they are highly affected by international standards and Western IPR laws. Through various legal revisions, the IPR laws in China have progressed a lot in providing a basis for formal IP protections, and the current versions

¹¹² For example, as indicated in Interpretation II of the Supreme People's Court and the Supreme People's Procuratorate of the Issues concerning the Specific Application of Law in Handling Criminal Cases of Infringement of Intellectual Property Rights, the "serious circumstance" mentioned in Article 217 of the Criminal Law shall refer to any for-profit duplication or distribution or both, without permission from the copyright holder, of the literal, musical, cinematic, television or video works, computer software or other works of the copyright holder with at least 500 copies of duplicates in total; and the "especially serious circumstance" mentioned in Article 217 of the Criminal Law shall refer to any for-profit duplication or distribution (or both) above with at least 2,500 copies of duplicates in total.

¹¹³ See for example, reports about the Intel-Dongjin case: http://tech.sina.com.cn/focus/intel_DJQ/.

of IPR laws have been in accordance with international standards in most of its provisions (Jianfu Chen, 2011, p. 302; Devonshire-Ellis et al., 2011; X. Feng & Huang, 2001b, p. 946; S. Guo & Zuo, 2007; Yuanguo Zhao, 2003). However, the frequent legal revision also brings a problem of instability of law. For example, legal requirements of software patentability changed frequently along with three revisions of patent law and seven revisions of the patent examination guidelines (in 1985, 1993, 2001, 2006, 2010, 2013, 2014). As discussed in chapter two, regarding the general legal system, this instability can cause confusion and bring an impression of legal inconsistency to IP right holders.

2. Parallels in Judicial and Administrative IPR Implementation and Enforcement

In China, intellectual property owners can choose to have their IPRs enforced by either a civil court or a special administrative body, or both. These are done through different procedures, discussed below. The right of both institutions to enforce IPRs are acknowledged in intellectual property laws.¹¹⁴ This is called "the parallel forms of enforcement" or "the dual system of enforcement". This system was developed in the 1980s when a heavy caseload overwhelmed Chinese courts when the legal system underwent massive reforms and entirely new categories of legal rights came into existence (P. Feng, 2003, p. 157). It is also a legacy of the socialist organizations that existed prior to the 1979 reforms; those organizations were structured to protect public interests through administrative agencies rather than to protect individual rights through courts (Chow, 2000).

Judicial protection is usually used for private enforcement, and administrative law-enforcement is usually used for public enforcement. Both these systems have been frequently used in IP disputes (Endeshaw, 1996). In 2015, first-instance IP civil cases admitted and closed by all local courts in China were 109,386 and 101,324 respectively (Supreme People's Court, 2016), compared to 13,420 first-instance IP civil cases admitted in 2014 in the US (The Administrative Office of the U.S. Courts, 2015). There are differences in court structures and statistical measures

¹¹⁴ For legal provisions about administrative enforcement of IPR, see Patent Law Article 60, Trademark Law Article 69, and Copyright Law Article 48, Anti-Unfair Competition Law Article 3 and Article 25.

between China and the US but, even considering these, the gap is still large enough to indicate the large amount of legal IP cases in China. Among the cases accepted in 2015 in China, there are 11,607 patent cases (10.6%),¹¹⁵ 24,168 trademark cases (22.1%), 66,690 copyright cases (61%), 2,181 unfair-competition cases (2%), among others.

For specific numbers of total administrative IP cases, no official data is available but, according to available information, the ratio of cases dealt with by judicial institutions and cases dealt with by administrative institutions was about 2:1 in 2015 (SIPO, 2016); this suggests around 54,000 administrative cases in 2015. Specifically, according to information from various agency websites, in 2014, there were 7,671 patent infringement cases enforced by different levels of the intellectual property offices (1,010 for invention, 3,461 for utility model, and 3,200 for design), 37,219 trademark infringement cases enforced by the various industry and commerce administrations; at the same time there were 4,728 administrative-penalty copyright cases carried out by the various copyright administrations.¹¹⁶

It could be seen that judicial enforcement is used most frequently for copyright cases, while administrative enforcement is used most frequently for trademark cases. In this section, I briefly introduce both forms of formal IPR enforcement in the following texts, to clarify choices available to IP holders if they want to protect their rights through formal official channels, and to understand why a certain format is preferred for certain IP types.

2.1 Judicial Enforcement

2.1.1 Structure and Jurisdiction of IP-Related Courts

Before 2014, in China, IP cases were handled in the general civil court system; since 1993, they were heard by judges with specific IP backgrounds who formed a specialized IP tribunal within the court (including the IP tribunal of the Supreme People's Court). Starting from August

¹¹⁵ There is no specific data about distribution of the types of cases in total, but according to my interviews (for example, Interview 20160725) with judges and state officials, and some reports from local courts, a great majority of patent cases are utility model and design cases.

¹¹⁶ Data source, see: for patent - <http://www.sipo.gov.cn/tjxx/jianbao/year2014/h/h2.html>; for trademark - http://sbj.saic.gov.cn/ztbd/xsbfsxyzn/gzgl/201504/t20150422_155391.html; for copyright - <http://www.ncac.gov.cn/chinacopyright/contents/506/301597.html>.

2014, three specialized Intellectual Property Courts have been established in Beijing, Shanghai, and Guangzhou. This was partly due to the large number and the rapid growth in the number of IP cases heard by Chinese courts. Equipped with more experienced judges and technical investigators, these specialized IP courts are expected to deal with IP cases more efficiently and consistently. They receive first-instance civil and administrative cases involving certain IP types; they also hear appeals on first-instance decisions in IP cases involving other IP types decided by basic courts located in their jurisdiction;¹¹⁷ the Beijing IP Court will also have exclusive jurisdiction with respect to nationwide administrative cases against decisions of the administrative authorities involving the determination of IP rights (Supreme People's Court, 2014b). Decisions from these courts can be appealed at the High People's Court located in the same province as the relevant IP court. It is also notable that the lowest IP courts are at the intermediate level, having a higher basic professional level than for regular civil cases.

With regard to territorial jurisdictions, civil cases regarding patent infringement are within the jurisdiction of the court in the place where the infringing act is committed, or the place where the defendant resides. The conditions of civil cases of copyright and trademark infringement are largely the same but they can also be adjudicated where the offending goods are stored, or where they are under seizure (The People's Court News and Communication Agency, 2011).¹¹⁸ When there are several defendants in different jurisdictions, the plaintiff also has the right to choose from any of the related jurisdictions (Jianfu Chen, 2008, p. 615).

Until now domestic right holders are the major source of IPR court cases. In 2015, among the 101,324 closed first-instance IP civil cases in China, 1327 (1.3%) involved foreign parties; the proportion is higher in more open economic areas such as Shanghai, where the proportion is 13.5%. In a majority of the cases related to foreign parties, foreign companies instead of Chinese companies are the plaintiffs (Supreme People's Court, 2016; Yuan, 2011). The fact that there are

¹¹⁷ Specifically, the new IP courts will sit as first-instance courts in civil and administrative cases involving patents, computer software, trade secrets of a technical nature, new plant varieties and integrated circuit designs, civil cases for the recognition of well-known trademarks and administrative cases against decisions of provincial and municipal governments with respect to IP rights. See judicial explanation from the Supreme Court about more details: <http://www.court.gov.cn/zixun-xiangqing-13655.html>.

¹¹⁸ For other IP types, see <http://www.chinacourt.org/article/detail/2011/12/id/1461.shtml>.

relatively few cases involved with foreign parties could be because local companies pay more respect to foreign IPRs, or because they are not willing to engage in disputes with foreign companies, or both. In addition, foreign companies are more cautious about bringing lawsuits in China. In fact, foreign companies seldom bring up lawsuits without serious preparation, and this is probably why foreign patentees have a higher rate of legal victories than Chinese patentees.¹¹⁹

2.1.2 Court Mediation of IP Cases

In China, formal non-litigation dispute resolution procedures include court mediation as a judicial process, civil mediation by state-approved civil organizations, and arbitration by arbitration commissions (usually under the government). The workings of these systems are based on legal provisions,¹²⁰ and this is why I define them as "formal" procedures. With regard to intellectual property cases in practice, the roles of both civil mediation and arbitration are very limited (Z. Chen, 2014; L. Wang & Zhang, 2011).¹²¹ However, the role of court mediation is more significant. According to current Civil Procedure Law (2012 Amendment) Article 9, when trying a civil case, the courts need to conduct mediation before making a judgment; this mediation is to respect the principles of legality and of free will of the parties; the case will go to judgment only if mediation fails. In 2014, more than 70% of IP civil cases brought to court were settled through court mediation (Court, 2015). Mediation can happen at any point during a lawsuit, and the government has been active in encouraging it to solve IP cases.¹²²

Whether mediation works or not depends on the extent to which both parties can compromise and reach an agreement in a specific case. The more room for compromise there is, the more likely the mediation will succeed. According to my interview with a judge in Shanghai's IP court,¹²³ foreign companies are usually less willing to accept mediation. One reason is that international companies usually have a long "reflex arc", meaning that every proposal has to be reported from

¹¹⁹ Judge Gang Feng of the Beijing Intellectual Property Court in a presentation given June 2 2016 noted that, of 63 first-instance (trial level, non-appellate) civil litigations with foreign plaintiffs, 100% were won by the plaintiff.

¹²⁰ For example, the Law of Civil Procedure, the Arbitration Law.

¹²¹ According to government documents and my interviews with local scholars and professionals, this is probably due to the highly technical and professional characteristics of most IPR cases.

¹²² Probably with the purpose of reducing caseload pressure.

¹²³ Interview 20160704, with a judge at an IP court.

their attorney to company managers, and then reported to their headquarter outside China, and then a decision or a counter offer comes back down the chain to the attorney again. Mediation consumes too much time and energy in this situation. Another reason is that foreign companies usually do not trust Chinese judges as mediators and prefer a verdict based on the text of the law. With regard to IP types, usually mediation is used more frequently in copyright cases, where a large number of infringements are unintended (for example, many scriptwriters I interviewed indicate that they may unintentionally write phrases that they later realize are from works they had read before). According to one experienced IP lawyer I interviewed, many patent cases are too technical to resolve by common-sense evaluation; as such, it is very hard to reach an agreement without involving more authoritative processes, such as evaluation from technical experts in courts.¹²⁴ For trademark cases, infringement, especially trademark counterfeiting, is more often done intentionally and, in this case, the right holder plays tough and does not want to accept mediation and compromise.¹²⁵

2.1.3 Remedy Rules

Although at an abstract level there is fairly widespread international agreement regarding IPR laws, there are also varieties when it comes to specifics. Some of the most important varieties are the methods by which monetary awards or infringement compensations are determined, and the conditions under which injunctions may be issued (Cotter, 2013, p. 3). These differences in turn can affect the decisions of private actors on where, when and against whom to seek IPR enforcement.

In China, each IPR law contains provisions of relevance to injunctive relief, where the administration departments for related work and the court could order the infringer to cease the infringement. Injunctions include both preliminary and permanent ones; preliminary injunctions happen between the prosecution and the adjudication, whereas permanent injunctions are usually part of the adjudication itself. Injunction is frequently used as part of the final decision but, based

¹²⁴ Interview 20160726B, with an IP lawyer from one of the most prestigious IP law companies.

¹²⁵ Ibid.

on legal documents¹²⁶ and previous cases¹²⁷, Chinese courts might not give an injunction on the grounds that doing so would harm the public interest (Cotter, 2013, p. 349).

As for infringement remedies, Chinese IPR laws adopt a hierarchy of techniques for this calculation. First, the amount of compensation for a patent, trademark, copyright, or business secret infringement should be determined on the basis of the actual losses incurred to the right holder as a result of the infringement. If it is difficult to determine the actual losses directly, the amount of compensation may be determined on the basis of the gains that the infringer has obtained from the infringement.¹²⁸ But the infringement's effect on sales are not always straightforward.¹²⁹ When it is difficult to determine the losses incurred to the right holder or the gains obtained by the infringer, the amount of compensation should be determined by reference to the royalties, if they exist. If the above cannot be calculated, the court may, by taking into account factors such as the seriousness of the act of tort, the type of IP, or nature and particulars of the infringement, decide a compensation in a specified range. This is called "statutory damage". The range for statutory damage is between 10,000 yuan (US\$1,471) and 1 million yuan (US\$147,059) for a patent, not more than 3 million yuan (US\$441,176) for a trademark, and not more than 500,000 Yuan (US\$73,529) for copyrights.¹³⁰ These number might sound ridiculously small by Western standards but, it is important to remember that, if there is adequate evidence, there is no upper limit to the compensation.

The frequent use of statutory damages has been one of the major reasons for low average damage awards in Chinese IPR cases (M. Cheng et al., 2009). According my field work, the high reliance on statutory damages is mostly due to the lack of evidence provided by right holders. In fact, according to the reports of the judges in a forum I attended in China, in 2015, 98% of IP-case

¹²⁶ See for example, Article 15 of (Supreme People's Court, 2009)

¹²⁷ For example, *China Environmental Project Co., Ltd. v. Fujikasui Engineering Co., Ltd, Huayang Electric Power Co., Ltd*, discussed by Clark at length (Clark, 2011, pp. 151-152).

¹²⁸ In addition, the compensation shall include the reasonable expenses that the patentee has paid for stopping the infringement.

¹²⁹ According to Interview 20160704 with a company representative, "in fact it is very hard to calculate how much the infringement affected our sales, but at least we know how much royalties we should get (其实很难计算侵权对销售的具体影响, 但是是知道我们应该拿到多少许可费的)"

¹³⁰ For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early 2017 (about 6.8, i.e. 1 US dollar equals to about 6.8 RMB).

plaintiffs directly asked for statutory damages in the Changsha Intermediate People's Court; 98.73% of IP cases in the Nanjing Intermediate People's Court decided statutory damages, mainly because the right holders did not provide evidence related to the determination of damages. The plaintiff usually would not bother collecting evidence for the determination of damages for two reasons: first, it is difficult to collect evidence about benefits and losses related to the infringement (see chapter two, section 3.2 for a discussion of the evidence discovery system); second, they do not want to spend too many resources on this. This may indicate that many Chinese companies do not put enough emphasis on remedies from infringement lawsuits. As discussed in chapter five, many companies use lawsuits as a strategy to harass competitors, or to increase publicity, or to push for cooperation, or even as a means of speculation.¹³¹

The result is a low average damage compensation rate for IP cases. For example, according to data from the Changsha Intermediate Court in 2015, 97% of IP cases get damage awards of less than 100,000 yuan (US\$14,706); for the Nanjing Intermediate Court, according to 2015 data, the average damage award per case was 22,000 yuan (US\$3,235) for copyright violations, 53,000 (US\$7,794) for trademark infringements, 278,000 yuan (US\$40,882) for patent violations, and 156,000 (US\$22,941) for business secret losses.¹³² Even in specialized IP courts such as Beijing's IP Court, the damage award for about 55% cases was less than 300,000 yuan (US\$44,118) in 2015, and about 22% of cases get damage claims of less than 100,000 yuan (US\$14,706).¹³³

As above, the low average is caused by the large amount of statutory damage requests; it does not mean that better prepared prosecutions would not lead to a larger damage compensation. When the plaintiff offers sufficient evidence for damage calculations, the court does not need to resort to statutory damages, i.e. if the plaintiff's claim can be fully supported, the compensation rate can be much higher. For example, in 2015, the Nanjing Intermediate Court awarded a remedy of 3 million RMB (US\$441,176) for a patent case; this was the highest infringement compensation that year for any IP case from that court. The highest award in 2015 from the Beijing IP Court was 3.2

¹³¹ For example, patent trolls are taking advantage of the fact, as discussed in chapter two, section 2.3.3, that many lawyers work under contingency fee agreements.

¹³² These data come from a seminar I attended in Beijing, where judges from various courts gave presentations.

¹³³ Ibid

million RMB (US\$470,588, also a patent case).¹³⁴ In both cases, the plaintiffs' claims were fully supported. However, the figures are still much smaller than even medium damage awards in developed countries such as the US, where the overall median award for patent cases in 2014 was US\$2 million (already the second lowest point in 20 years) (PwC US, 2015, p. 4).

What needs to be noted is that, most of the time, the reason companies come to Chinese courts to enforce patents is not about monetary damages but about court injunctions. Injunctions can be very important due to China's preeminence as a manufacturer of technological goods. One judge from the Shanghai IP Court told me that, "claims from most companies are about injunctions; after all, this is very important for market competition".¹³⁵ A company representative said that, "the reason we sue the infringers in China is not for the damage award we can get, but for the victory itself, i.e. to confirm the fact that the competitor is infringing".¹³⁶

2.1.4 IP-Related Legal Professionals

All IP court judges must meet the general requirements of the Judges Law, as discussed in chapter two, section 3.3. Beyond that, they must be judges above a certain grade,¹³⁷ have more than 6 years' trial experience, have a bachelor's degree or graduate degree in Law, and have a "strong ability to preside over trials and write adjudicative documents" (Supreme People's Court, 2014a). As for judges working at IP tribunals at the People's Courts, they are not limited to IP-related trials, thus are not subject to special requirements, but they are usually required to take extra training.¹³⁸ However, since neither special IP tribunals (that began to be established in 1993) nor IP courts (that began to be established in 2014) have a long history, highly experienced IP

¹³⁴ Ibid.

¹³⁵ Interview 20160704 with an IP Court judge. Original Chinese: "企业大部分都是要求停止侵权的, 这个对市场竞争特别重要嘛。"

¹³⁶ Interview 20160702 with a representative from a telecom equipment company. Original Chinese: "在国内诉讼也不是为了多大赔偿, 更多的是要取得一个胜利的结果, 就是确认他们侵权。"

¹³⁷ The grade is a determination based on experience, position, loyalty, morality, and "professional traits" (REF); IPR judges need to have a similar grade as the judges in the Supreme People's Court, or for the vice president of the Intermediate People's Court, or the president of the Basic People's Court. See (Supreme People's Court, 2011), available at <http://www.scxsls.com/a/20110916/53563.html> (Chinese), accessed at Nov 29, 2016. For the details of court management system based on grades, see: http://english.court.gov.cn/2016-03/03/content_23724636_10.htm.

¹³⁸ Interview 20160831A with a judge; also see: http://zscq.court.gov.cn/sfzc/201304/t20130426_183679.html (Chinese), last accessed at Nov 29, 2016

judges are rare.

With regard to lawyers, as in many other countries, there are no strict boundaries between "IP lawyers" and other lawyers; any lawyer can start taking IP-related cases at any time in his or her career.¹³⁹ In China the phrase "IP lawyers" refers to those whose IP cases take up a large proportion of their practice.¹⁴⁰ There is no authoritative data on the proportion of IP-related cases taken on by lawyers but, according to some local scholars and lawyers, in China, very few lawyers focus their practice only on IP; most lawyers who specialize in IP diversify their caseload (J. Chen, 2010; J. Chen, 2015). This may be because IP cases alone cannot provide adequate income for them. One reason for the situation is that commissions from IP lawsuits are often small; this is partly due to the aforementioned low average compensation rate of IP cases, which would lead to a low commission (Yun Wang, 2010). On the other hand, even though lawyers diversify their caseload, their IP-related services are not very diversified, but are limited to litigation services. The market for other lucrative IP services is not well developed in present-day China; an example of this is IP financing, some of which uses IP as collateral. However, with the increasing number of IPs, some lawyers or law companies are trying to provide such lucrative services, either independently or by means of cooperation with other agencies.

As mentioned in chapter two, limited commission and limited service types have pressured many IP-related lawyers to provide free litigation services to gain more income, i.e. they require only a portion of the damages recovered in the future. This may be one of the reasons why, recently, there have been a large number of IPR litigations every year even though the average damage compensation is low.¹⁴¹

2.1.5 A System Lacking Supports

In sum, it could be argued that the IP court system is already well developed. Nevertheless, legal professionals are all relatively new in China and still lack experience in general. Because the judicial IPR enforcement system has just been developed, many companies have not learned the

¹³⁹ For example, interview 20160517C, with a lawyer majoring in IP cases.

¹⁴⁰ The lack of strict division between IP and non-IP lawyers may be partly due to the fact that most universities only started to provide IP-law majors in recent years.

¹⁴¹ Interview 20160517C, with a lawyer majoring in IP cases.

value of professional legal services and a supporting management system. These features have led to three results relating to IPR disputes.

First, according to interviews with lawyers, patent agents, patent examiners, among others, IP applications and rights claims from Chinese companies are often written in a much less professional way than those from international companies. This leads to problems when the right holders are trying to seek legal protections. For example, lacking suitable language, patent right claims are often either too narrow so that the scope of the innovation is insufficiently covered or too wide so that they are easily invalidated. In some cases, the application may even unnecessarily reveal technological secrets.

Second, two considerations rely heavily on the judges' subjective judgment, that is in turn based on experiences; these are 1) determining whether or not a case constitutes an infringement, and 2) determining the compensation amount for IPR infringement when evidence is insufficient. For example, one judge said that:

If the plaintiff asks for statutory damages without providing financial evidence, we can only go by gut instinct—likely following the general damage awards of previous cases. There is an approximate amount for different types of patents; for example, damage awards for design patents may be less than 100,000 RMB; those for utility models may be from 100,000 RMB to 200,000 RMB, while invention patent damage awards may be more than 200,000 RMB, or amounts like that.¹⁴²

Because the current Chinese IPR law system has only existed for a relatively short time in China, many cases cannot even find precedents. Consequently, the judges themselves are still exploring the relevant boundaries facing various cases. This legal uncertainty reduces the consistency and deterrent effect of the law and sometimes encourages infringers to take their chances.

Third, lawyers are less capable of, or would like to spend less effort on, evidence collection in China. In many cases, the lawyer representing the plaintiff would simply shift all of the

¹⁴² Interview 20160704, with a judge at the IP Court. Original Chinese: “如果没有财务证据的情况下申请法定赔偿，这个时候我们就是看感觉了，沿袭之前的大概水平吧，一般专利大概多少钱这样看，有一个档次的，比如外观可能就是10万以下，实用新型就是10到20万，专利可能20万以上，这类的档次。”

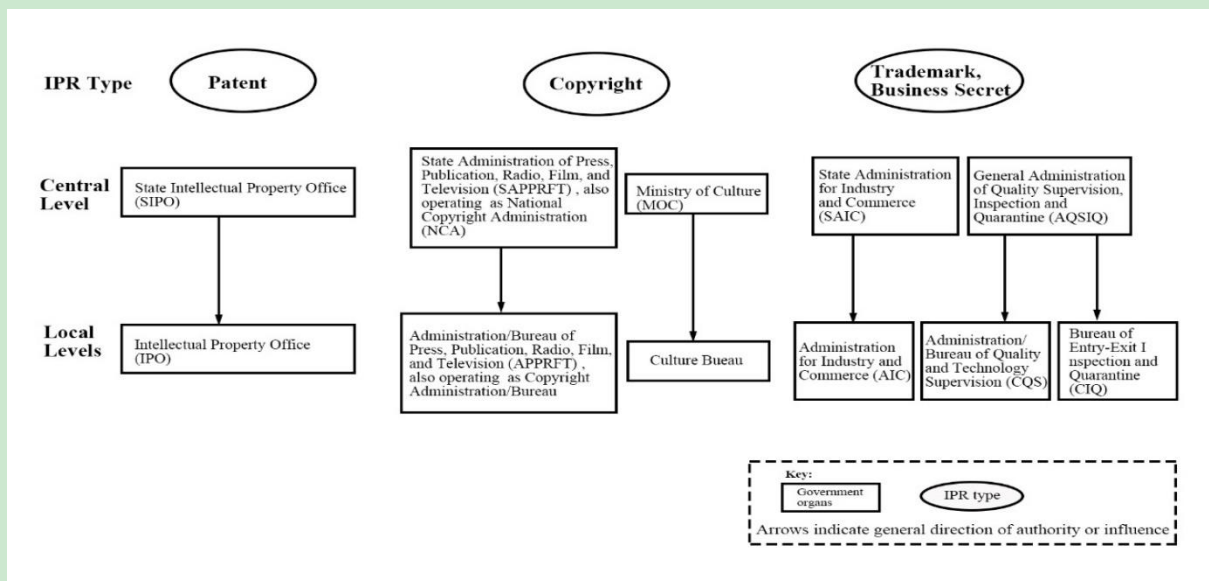
responsibility to the court, but the court does not have the obligation to collect evidence. This lack of capacity is coupled with a lack of motivation and both may be due to an overall lack of experience, or the fact that most lawyers in China are paid by the case (through contingency fees) instead of by the hour. Also, many companies have accounting, reporting, and management systems that are not well developed; the lack of better data management systems increases the difficulty for lawyers to collect such data and evidence; it also reduces their incentive to try.

2.2 Administrative Enforcement

2.2.1 Multiple Agencies

Although there are Intellectual Property Offices (IPO) at various territorial levels in China (for the ranking of territorial levels, see Figure 2.1), they actually only enforce patent-related cases; the administrative enforcement of other IPR types are the responsibility of various other agents. Figure 3.2 briefly demonstrates the structure of IPR-specific enforcement agencies in China:

Figure 3.2: China's administrative enforcement agencies - by IPR type



Source: Chinese government websites, with by analyses in (Chow, 2000), (Mertha, 2005), and (Dimitrov, 2009).

Specifically, at the central level, major IP administrative agencies are all organizations directly under the State Council (see Figure 2.1 for their position in Chinese political structure); these include: (1) the State Intellectual Property Office (SIPO),¹⁴³ whose responsibilities include coordinating nationwide programs of formal IP protection, carrying out administrative enforcement of patent laws, and drafting patent-related codes and policies; (2) the State Administration of Press, Publication, Radio, Film, and Television (SAPPRFT)¹⁴⁴, also operating as the National Copyright Administration (NCA),¹⁴⁵ whose duties include drafting related codes and policies, handling "serious" copyright infringements and disputes. (3) the State Administration for Industry and Commerce (SAIC), that is responsible for: market supervision; drafting related codes and policies about trademark and business secret protection; managing trademark registration; and handling trademark disputes.

Aside from these major agencies, many other institutions are related to different types of IPR enforcement. For example, with regard to copyright, the Ministry of Culture (MOC) has the responsibility of investigating pirated audio-visual products, while the Office of the National Anti-Pornography and Anti-Piracy Working Committee (NAPWC) is responsible for setting up and coordinating Anti-Pornography and Anti-Piracy Campaigns. With regard to trademark enforcement, the Ministry of Health (MOH), the China Food and Drug Administration (CFDA), and the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ)¹⁴⁶ investigate counterfeit trademarks when these come with substandard and mislabelled food and drugs; the State Tobacco Monopoly Administration (STMA) has the right to confiscate and destroy counterfeit tobacco-related products and impose fines; the Ministry of Agriculture (MOA) can

¹⁴³ Its predecessor is the Patent Bureau, which changed to the SIPO in 1998.

¹⁴⁴ These used to be two separate institutions: The General Administration of Press and Publication (GAPP), and the State Administration of Radio, Film and Television (SARFT) and these were integrated into institution in 2013.

¹⁴⁵ This is called "one organization, two signboards"; although the institutions organizationally share the same unit, they can operate with different "signboards", either SAPPRFT or NCAC. Analogous cases exist at various local levels.

¹⁴⁶ Merged from two previous institutions: The State Bureau of Quality and Technical Supervision, the State Bureau of Entry-Exit Inspection and Quarantine. For the history of how they merged, see http://www.gov.cn/zhengce/content/2016-09/23/content_5111101.htm. For its relevance to trademark enforcement, see, for example, the website provided to report counterfeit products: <http://www.ipraction.gov.cn/article/zxbs/tszn/bmts/201410/20141000025425.shtml>

handle cases of counterfeit agricultural supplies (including seeds, veterinary medicine, machines). Different forms of administrative enforcement are discussed in the next section.

In parallel to agencies at the central level, at local levels, enforcement of patent rights is usually available through the local branches of SIPO, the local intellectual property offices. The primary administrative bodies with jurisdiction over copyright disputes include the local-level offices of the following: (i) the Administration of Press, Publication, Radio, Film, and Television (which usually also operates as the Copyright Administration¹⁴⁷); (ii) the Culture Bureau (the local division of the MOC); (iii) the Anti-Pornography and Anti-Piracy Working Committees (APWC). Enforcements of trademark is available through many local-level agencies. The major ones are: (i) the Administration for Industry and Commerce (AIC, which also can enforce business secrets); (ii) local divisions of the AQSIQ (the Administration of Quality and Technology Supervision; (iii) the Bureau of Entry-Exit Inspection and Quarantine); (iv) there are many other specific product-related agencies, such as the local offices of the Tobacco Monopoly Administration.¹⁴⁸

Other general enforcement agencies, that do not have an IP-specific mandate but do administer IP-related issues, include the Customs Administration and the Public Security Bureau (PSB). China's Customs has the right to intercept goods that are known or suspected to infringe IPRs recognized in China, including registered trademarks, copyright and registered patents.¹⁴⁹ The PSB, as the principal police agency, has the authority to conduct raids if infringement at criminal levels are suspected; it can also act as a supporting unit for other administrative agencies enforcing IPRs.

When there are multiple administrative enforcement agencies at the same level, there's no given rule as to which one is responsible for certain cases; jurisdictional overlap and ambiguous

¹⁴⁷ Note that Administration is sometimes translated as "Bureau", sometimes for the same agency.

¹⁴⁸ Other related ones may be: China's local-level Food and Drug Administrations, and local-level Commissions of Health and Family Planning.

¹⁴⁹ Its authority is based on the Customs Law of the PRC, and the "Regulation of the PRC on the Customs Protection of Intellectual Property Rights" (2010 Revision). To have IPRs protected by China's Customs, an intellectual property right holder needs to apply to the General Administration of Customs for archival filing of his intellectual property rights, which is effective for 10 years once granted. However, the IPR holder has to pay a bond in an amount equivalent to the value of the goods to be seized, and there are a lot of uncertainties with regard to the effectiveness of the investigation (Cheong, 1999, p. 42); as such, the Customs Administration may not be a good choice in some cases.

mandates like this can, in practice, cause uncoordinated and inefficient enforcement. For example, according to Dimitrov's study (Dimitrov, 2009, pp. 234-236), agencies usually do not want to initiate raids on the request of copyright holders, because such raids are difficult and are often politically charged; in this case the agencies encourage the right holder to turn to other agencies, and this usually puts copyright holders in limbo. To address this, recently, following international practices,¹⁵⁰ there have been some attempts in certain provinces to merge these different administrative agencies into one institution; these usually are continued to be called the Intellectual Property Office (also translated as Intellectual Property Administration) after the merger. For example, in Pudong district¹⁵¹ in Shanghai, copyright, trademark, and patent enforcements were integrated into the jurisdiction of the Pudong Intellectual Property Administration. Such a reform is called "three-in-one".

2.2.2 Forms of Administrative Enforcement

Generally, administrative enforcements can be categorized into two types: periodic public campaigns and routine enforcement.

First, with regard to IP violations, campaign-style enforcement is usually comprised of ad hoc "crackdown" campaigns featuring raids of local markets during selected periods of concentrated enforcement; they are mainly used for trademark and copyright enforcement and last, on average, a few weeks. A familiar example is the campaign during the Beijing Olympics, in which the Beijing Administration of Industry and Commerce increased inspection frequency and thoroughness in the market of Olympic-related brands. They also increased their monitoring of advertisements, and removed many outdoor advertisement signs. These enforcement measures returned to their normal levels after the Olympics. Another example is the "100-day crackdown campaign" on pirated movies and computer software in 2006, during which about 50 million CDs and DVDs were confiscated, 15,000 shops and street vendors were shut down, with infringing profits confiscated,

¹⁵⁰ Most members of the WIPO adopted patent and trademark "two-in-one" or patent, copyright, and trademark "three-in-one" management system. Also note that most members of the WIPO rely mainly on judicial protection systems, which are only complemented with administrative protection and multiple dispute resolution mechanisms.

¹⁵¹ It's a prefecture-level district, see Figure 2.1 for the structure of territorial ranks.

and about 8,500 fines were issued as administrative penalties¹⁵² (Handong Wu, 2007, p. 65); for stores with more than 100 pirated products, their business licenses were revoked (and the store would not be able to register for a license again); for stores with more than 500 pirated products, the stores owners were charged criminally (H. Zhang, 2006). Recently, such campaigns are becoming more regular. For example, since 2004, "IP protection Week" has been initiated by the SIPO, the SAIC and the NCA on an annual basis, during which there is a lot of media promotion of ideas around IPRs. There is also a lot of publicity of major cases and many academic seminars, as well as crackdown campaigns.¹⁵³

Second, routine enforcement mainly includes scheduled and unscheduled inspections. These two types of inspection are initiated differently. Scheduled inspections are proactive actions, which occur when enforcement officers inspect businesses for compliance to policies and regulations; in the process of these inspections, agencies may investigate IP violations (with the exception of patent cases).¹⁵⁴ Unscheduled inspections come in the form of unannounced raids in response to complaints. These raids come about when IP right owners submit a complaint and evidence of infringement to any related administrative agency.¹⁵⁵ In either case, when an infringement is found, the agencies have the right to order the infringer to cease the infringement; they may also confiscate the illegal gains, confiscate or destroy the infringing products and related equipment, and impose a fine on the infringer. The Public Security Bureau possesses powers that the other enforcement agencies do not, including the power to force entry and to detain and arrest suspects.

This kind of administrative enforcement in China is not available to the same degree in the West. IP-related administrative agencies do not directly enforce these laws in the West, but they can provide some IP legal services that may help in enforcement, including public information, consulting, participation in international meetings. For example, besides taking charge of IP

¹⁵² Each fine was between 10,000 RMB to 50,000 RMB, i.e. \$1,471 to \$7,353.

¹⁵³ See, for example, events in 2016's "IP protection Week", at <http://www.iprchn.com/zt/xqz2015/>.

¹⁵⁴ Enforcement of patents must be activated on the initiative of the patentee or any interested party. The alleged infringer will be notified of the patentee's request for administrative action, and a security deposit must be given by the applicant. This deposit must represent the value of the goods to be seized as anticipated damage compensation for the defendant, in the event that infringement is not established (Devonshire-Ellis et al., 2011, pp. 32-33).

¹⁵⁵ This type of enforcement is exceedingly rare according to existing research (Dimitrov, 2009, p. 13).

registration, the US Patent and Trademark Office (USPTO) also provides policy advice, as well as training, education, and “capacity building programs”. Similarly, besides copyright registration, the US Copyright Office also provides services including domestic and international policy analysis, legislative support for Congress, litigation support (preparing reports), participation in US delegations to international meetings, and public information and education programs.¹⁵⁶ They charge a fee for some of their services; for example, USPTO charges US\$100 to US\$600 per patent search, while the US Copyright Office charges US\$100 to US\$500 for document recordation¹⁵⁷ and record searches. In sum, it can be said that in China administrative and judicial enforcements are alternatives to each other, whereas in the West administrative services and judicial enforcements are seen as complements to each other (as opposed to being alternative paths to the same function).

2.2.3 Strength and Weaknesses of Administrative Enforcement

Administrative procedure, compared to judicial procedure, has its own advantages and disadvantages, that affect right holders' choices when facing a dispute. On one hand, to stop an infringement as soon as possible, a company may choose administrative processes to protect its IPRs because agencies can act with speed and efficiency unattainable in court, often with lower costs;¹⁵⁸ administrative enforcement action is also more likely to be reported in the newspaper, providing the company with free promotion (Priest, 2006, p. 817). These advantages may be why administrative enforcement is used more frequently for trademark infringement cases, where stopping infringing products as soon as possible is the most urgent thing. However, administrative agencies usually do not order civil compensations (P. Feng, 2003, p. 23) so no damages can be recovered. In addition, as discussed in chapter two, section 1.2, the jurisdictional ambiguity and

¹⁵⁶ See official website of USPTO and US Copyright Office for more details: <https://www.uspto.gov/about-us>; <https://www.copyright.gov/about/>. For fees only, see: <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule> (accessed September 7, 2017) and <https://www.copyright.gov/docs/fees.html> (accessed September 7, 2017)

¹⁵⁷ Documents pertaining to a copyright, including documents that transfer copyright ownership, may be recorded in the Copyright Office; a document must bear the actual signature of the person who executed it, or be accompanied by an official certification that it is a true copy of the original signed document. This is called recordation.

¹⁵⁸ According to <Law of The People's Republic of China on Administrative Penalty (2017 Amendment)>, Article 8, types of administrative penalty include warning, fine, confiscation of illegal gains or unlawful property, ordering for suspension of production or business, revocation of permit or license, or even administrative detention. Ignoring an administrative agency's order can bring substantial risks such as additional fines, frozen deposits, and compulsory enforcement from the Court.

coordination problems created by fragmentation can seriously hinder the consistency of administrative enforcement.

The proportion of mainland Chinese citizen right holders involved in administrative enforcement (as opposed to foreign right holders) is dominating, as that found in judicial enforcement (see section 2.1.1). According to 2014 data from SIPO, among 7,671 patent infringement cases considered by patent administrative agencies in China, only 6.7% (514) of them involved foreign right holders.¹⁵⁹ According to 2014 data from SAIC, among the 37,219 trademark infringement cases that the various levels of the Administration of Industry and Commerce dealt with, 9,636 (25.9%) of them involved foreign right holders.¹⁶⁰ According to 2014 data from National Copyright Administration, there are 4728 copyright cases closed by administrative penalty (unfortunately, there is no available data for copyright case distribution).¹⁶¹ Overall, there are more cases using administrative enforcement for trademarks than those using administrative enforcement for patents or copyrights. This is perhaps due to the known advantages of administrative enforcement for stopping trademark infringements, because speed and efficiency in stopping the production of infringing goods are most important here. Another reason may be that, trademark infringements, especially counterfeits, are more straightforward (thus can be easily determined by administrative agencies), while the determination of patent and copyright infringement require more professional judgement (e.g. from experts in court).

2.3 IPR Review Mechanisms: Interaction Between the Two Systems

Although the judicial and administrative processes of IPR enforcement are separate, in some cases coordination between them is required. An example of this is in the case of the validity review of the IPR. If one party questions the validity of another party's patent or trademark,¹⁶² the first party can appeal to relevant administrative agencies for a validation review, also called re-

¹⁵⁹ The proportion is again much higher in Shanghai at 71.3% (77 out of 108). See:

<http://www.sipo.gov.cn/tjxx/jianbao/year2014/h/h3.html> , last accessed at November 15, 2017.

¹⁶⁰ See: http://sbj.saic.gov.cn/sbjg/201504/t20150427_199292.html , last accessed at November 15, 2017.

¹⁶¹ See: <http://www.ncac.gov.cn/chinacopyright/contents/506/301597.html> , last accessed at November 15, 2017.

¹⁶² Because copyrights do not need to be registered at any state institution to be effective, it cannot be "invalidated"; there's also no articles about its invalidation in the Copyright Law.

examination. If this is during a lawsuit, the court may pause the trial and wait for the result. This procedure is for the purpose of limiting the abuse of IPRs but the procedure itself can be used to manipulate the system; which is to say, it is often used as a stalling tactic by the infringer to obtain a suspension of infringement proceedings or to push for reconciliation.¹⁶³ In any case, if a party is not satisfied with the administrative agency's decision, it can also appeal the administration agency's decision to the Beijing IP Court.¹⁶⁴

2.3.1 Patents

If any party questions the other one's patents, or if patent applicants are dissatisfied with SIPO's decision to reject their patent application, they can appeal to the Patent Reexamination Board under SIPO for review. If they are dissatisfied with the review decision, they can also choose to bring a lawsuit against the Patent Reexamination Board (usually at the Beijing IP Court).¹⁶⁵ During an infringement lawsuit, if the defendant challenges the validity of the infringed patent, the judge can stop the trial and wait for the Reexamination Board to make a decision (but the judge does not have to). Given the perceived ease of invalidating many Chinese patents (Cotter, 2013, pp. 360-361; M. Liang, 2011, pp. 499-501), and according to my interviews with company representatives, the strategy to appeal for validation review is preferred more and more by companies facing infringement disputes. Many companies in China mentioned the idea that appealing for invalidity can always be used as a defending strategy when being sued for infringement, because it can at least serve to stall the judicial process and postpone court decisions.¹⁶⁶ In fact, in recent years, about 40% of invalidation appeals during judicial IPR infringement cases are supported by the Patent Reexamination Board (Ningbo Intermediate People's Court, 2015). This to some extent can limit the abuse of intellectual property rights; however, the

¹⁶³ Interview 20160726A with a company representative, and 20160508A with a lawyer.

¹⁶⁴ For example, Apple once sued SIPO at the Beijing IP Court, more details at: <http://www.chinacourt.org/article/detail/2016/12/id/2366400.shtml> (accessed at September 7, 2017).

¹⁶⁵ According to the Patent Law, any entity or individual considers that the granting of the said patent does not conform to the relevant provisions of this Law, it or he or she may request that the Patent Reexamination Board under SIPO check the validity of the patent and invalidate the patent. See Patent Law Article 45: Where, as of the announcement of the granting of the patent by the patent administrative department of the State Council, any entity or individual considers that the granting of the said patent does not conform to the relevant provisions of this Law, it or he or she may request the Board of Patent Appeals and Interferences to invalidate the patent right.

¹⁶⁶ Interview 20160712 with a company representative.

frequent adoption of invalidity procedures can also make infringement prosecutions less intimidating for infringers.

2.3.2 Trademarks

The agency that reviews or reexamines trademarks is the Trademark Review and Adjudication Board of SAIC. Where a registered trademark does not conform to the relevant provisions of the law, or its registration was acquired by fraud or any other illicit means, the Board can declare invalidation of the registered trademark; any other organization or individual may petition the Board to declare invalidation of the registered trademark.¹⁶⁷ According to available data from the SAIC website, in 2014 the Trademark Review and Adjudication Board has closed 116,000 cases,¹⁶⁸ indicating frequent use of this right (although how many are supported is unknown).

2.4 The Overall Trend

The dual approach has been criticized for confusing administrative and judicial functions, undermining judicial independence, and causing overlap and conflict among administrative authorities (P. Feng, 2003; Qu, 2002). However, the system appears well entrenched and supported (by both the state and companies) for IPRs cases in recent years (Dimitrov, 2009; Su & Yang, 2015), due to its alleged advantage of efficiency and low-cost. According to the 2014 Investigation Report of Social Satisfaction about IP protections,¹⁶⁹ when patent holders face patent infringements, 43.4% choose administrative enforcement processes, 39.5% choose negotiation, and 13.6% choose judicial procedures (PPAC, CTA, CSC, & CMMR, 2015). Recently the government has been trying to further coordinate the two systems by “normalizing” administrative enforcement under the guidance of the judicial system, probably due to the TRIPS requirement that all final administrative decisions with regard to IPRs should be subject to review by a judicial or quasi-judicial authority (La Croix & Konan, 2002, p. 762). For example, an experimental cooperation agreement has been signed by the Beijing Supreme People's Court and the State

¹⁶⁷ According to the Trademark Law Art. 44.

¹⁶⁸ See SAIC's report at: http://sbj.saic.gov.cn/ztbd/xsbfxyzn/gzgl/201504/t20150422_155387.html, last accessed at January 4, 2017.

¹⁶⁹ Which collected data in various cities, and the sample includes 6636 IPR holders, 1236 professionals, and 8420 general public.

Intellectual Property Office (SIPO). The agreement indicates that the Court can entrust SIPO to mediate certain cases; if SIPO's mediation works, right holders can apply for a judicial confirmation from the court about the result (SIPO, 2011). Following this, more experiments like this have been taking place in various areas.

3. General Industrial Background

I have enumerated the state institutions related to intellectual property enforcement but, eventually, those that are affected by these institutions, and those that actually make use of IPRs are companies active in industries. Industrial growth, structure, and investments, among other factors, can affect the behaviour of companies with regard to intellectual property rights. Before further and more specific analyses, it is necessary to have a brief overview of the general industrial background in present-day China.

3.1 Industry Growth

Since the 1979 pro-market reforms and opening-up, China's economic expansion has been regarded as substantial. But besides the growth mentioned in chapter two, the Chinese economy has also undergone significant structural changes. What needs to be noted is that the Chinese government has always played an important role in stimulating economic growth. Under supply-driven economic growth, the government plays an indirect role by providing services and creating a beneficial environment for microlevel entities; under demand-driven economic growth, the government can exert direct influence by leveraging the effect of government investment and consumption to increase private demand (Taiyan, 2014).

With regard to economic sectors, the primary sector (including agriculture, forestry, fishing and mining) has declined as a share of GDP, while the tertiary sector (including services) has dramatically expanded (see Table 3.1). The secondary sector (including manufacturing) contracted in the early 1990s as a result of the restructuring of the state-owned enterprises (SOEs) but recovered a few years after that (Sharma, 2009, p. 91), and remains a much larger presence than in rich developed countries. Inside the secondary sector, the ratio of annual sales-value from state-

owned companies and from private (non-state-owned) companies has also changed from 3.99 to 0.12 (National Bureau of Statistics, 2015a), indicating an ever-increasing role of private ownership in the Chinese economy. In terms of the supply structure, services increasingly replaced the secondary sector as an engine of economic growth (Tongsan, 2016).

Table 3.1: China's economic structure 1980-2014 (as percent of GDP)

Sector	1980	1990	1995	2000	2005	2010	2014
Primary	29.6	26.6	19.6	14.7	11.6	9.5	9.1
Secondary	48.1	41	46.8	45.5	47	46.4	43.1
Tertiary	22.3	32.4	33.7	39.8	41.3	44.1	47.8

Source: National Bureau of Statistics of China (2015)

Since 1998, the general shortage of supply in China has given way to an excessive supply. In order to ensure the sustained and rapid development of the economy, China replaced the chief growth engine from supply-pulling to demand-pulling, as indicated in the 1999 Government Work Report. In terms of the demand structure, investment and exports have been significant engines of growth for the Chinese economy, while consumption used to have a weaker impact. However, recently, with the increasingly burgeoning income of Chinese individuals and their growing willingness to spend, expanding consumption has been emphasized more and more by both the government and by domestic scholars as a major driver behind economic growth in China (B. Davis, 2013). Since 2008, the government has implemented many policies to spur a domestic demand-driven economy (Atkinson, 2010), including policies to reduce housing problems, to increase infrastructure construction, to reform the medical and Medicare systems as well as the social security system, and to provide financial support to small and medium companies. This structural change is, to some extent, important for our understanding of the opinions of domestic companies regarding IPR. The companies that rely more on international markets usually have to

pay more attention to intellectual property issues (due to foreign buyers' strict requirements and foreign markets' strict enforcement), but with the expansion of the Chinese market, more companies heavily rely on domestic markets in contemporary China.

3.2 Innovation

As economists have pointed out, growth that is achieved largely as a result of increased input and not as a result of technological development cannot continue (Krugman, 1994). Thus, in recent years, the Chinese government has tried to make the economy move up the value chain, from production to innovation; more and more policies are also publicized to promote domestic innovation and advocate for the importance of IPRs. As a result, China's increasing industrial innovation capacity are reflected in swelling R&D spending and expanding numbers of patent. In 2014, total domestic R&D spending has reached 1301.56 billion yuan (US\$191.41 billion) in China, with a 9.9% growth compared to the previous year; R&D spending from business companies accounted for 77.3% of the total. Industries with the largest proportion of R&D spending are telecommunications, computer, and other electronic device manufacturing, followed by industries related to chemical materials, products or medical products (National Bureau of Statistics, 2015b).

In terms of output, both patent applications and granted patents have increased a lot since the 1990s when the IPR laws were established; the explosion in patent filings in China in recent years has been across almost all industries. This has been widely discussed and debated. The growth in numbers of patents can be seen from Table 3.2.

Table 3.2: numbers of patents in China, 2005-2014

Year	2,005	2,006	2,007	2,008	2,009	2,010	2,011	2,012	2,013	2,014
Domestic patent application received	383,157	470,342	586,498	717,144	877,611	1,083,997	1,504,670	1,912,151	2,209,600	2,186,500
Invention	93,485	122,318	153,060	194,579	229,096	293,066	415,829	535,313	704,936	801,135
Utility model	138,085	159,997	179,999	223,945	308,861	407,238	581,303	734,437	885,226	861,053
Design	151,587	188,027	253,439	298,620	339,654	409,124	507,538	642,401	644,398	548,428
Domestic patent application authorized	171,619	223,860	301,632	352,406	501,786	719,408	883,861	1,163,226	1,210,200	1,191,600
Invention	20,705	25,077	31,945	46,590	65,391	79,767	112,347	143,847	143,535	162,680
Utility model	78,137	106,312	148,391	175,169	202,113	342,256	405,086	566,750	686,208	699,971
Design	72,777	92,471	121,296	130,647	234,282	318,597	366,428	452,629	398,670	346,751

Source: National Bureau of Statistics of China (2015)

Invention patents are expected to represent higher innovation levels than "petit patents"¹⁷⁰ such as utility models and design patents, as opposed to invention patents. As can be seen, the number of invention patent applications had always been smaller than the number of utility model applications in China; but the proportion of invention patents in the context of total patent applications has become larger and larger. As for industrial distribution, in 2014, among all patent applications accepted by SIPO, those from industrial companies account for 60.5%; among patent applications from industrial companies, industries with the largest proportion of innovations are those related to "telecommunications, the computer industry, and other electronic device technology" (SIPO, 2015).¹⁷¹ Even though large companies are the major patent applicants in industry, the ratio of patent applications for inventions from large or medium companies and those from small companies changed from 2.83 in 2008 to 1.95 in 2014, indicating a growing role for small companies¹⁷² (National Bureau of Statistics, 2015a). My study covers both the telecom equipment and medical sectors, which have large amounts of R&D activity, and large numbers of patents; my interviews also cover small and medium companies.

Although domestic IP applications have increased rapidly in China, until recently, the number

¹⁷⁰ These refer to small improvements that do not require substantive examination.

¹⁷¹ There is no specific data by ownership-type about this, but it could be inferred that state-owned companies play a significant role. The most recent data is from 2010, when state and state-controlled companies accounted for about 30% of patent applications from large and medium industrial companies.

¹⁷² According to the Chinese national statistical standard, companies with an operating revenue smaller than 20 million yuan (about US\$2.9 million) are categorized as small companies; those with an operating revenue between 20 million yuan (about US\$2.9 million) and 400 million yuan (about US\$58.8 million) are categorized as medium-size companies; those with an operating revenue larger than 400 million yuan (about US\$58.8 million) are categorized as large companies.

of original Chinese IPs filed abroad is quite low (Williams, 2013). However, recently, this situation has started to change. Since 2013, China has become the third largest filer of PCT patents¹⁷³ in the world, with 29,846 PCT applications in 2015 (WIPO, 2016a, p. 27). Since 2014, the private company Huawei Technologies of China has become the world's top PCT applicant, with 3,898 published PCT applications in 2015 (WIPO, 2016a, p. 5).

This represents the changing structure of the Chinese economy and industry, where innovation is playing a more and more important role; in this case, according to many development studies, it may be expected that Chinese companies will begin to care more about the legal protection of IP.

3.3 Investing in Innovative Companies: The Capital Market

Investment is a crucial link in any innovation system, and the investor's preferences can largely shape the behaviours of innovative companies, including IP-protection behaviours. In China, with capital inflows increasing after the 1979 opening-up and market reform, efforts have been made to modernize the capital market. Since 1990s, a fairly-developed capital market has developed in China, consisting of banks, investment banks, venture capital companies (VC), and stock markets. For large companies, their own revenue could be used for R&D investments but, for most small and medium companies, VC investment is widely acknowledged as a powerful enabler of entrepreneurship and innovation (Florida & Kenney, 1988; Kortum & Lerner, 2000; Powell, Koput, Bowie, & Smith-Doerr, 2002).

Since Deng's economic reforms, China has developed a vibrant capital market. Private companies have especially benefited from this. The VC system was legitimized in China in the late 1980s (L. Cheng, 1999).¹⁷⁴ Since the late 1990s, venture capital investment has started to play a more and more important role in the development of private companies. Now the Chinese market

¹⁷³ Those applied by means of the Paris Convention Treaty in foreign countries.

¹⁷⁴ In March 1985, the Central Committee of the CCP put into effect the "Decision regarding the reform of science and technology systems," calling for the development of a venture capital industry to support high-tech development as a national strategy (White, Gao, & Zhang., 2005).

is the second largest VC destination in the world (after the US) (Xinhua, 2016).¹⁷⁵ Chinese companies attracted around US\$77 billion of VC investment from 2014 to 2016 (The Economist, September 23rd, 2017). By 2000, more than 90% of the VC-backed companies were private companies and most of them are in high-tech industries (F. Zeng, 2004, pp. 100-105). When an innovative start-up company is VC-backed, its strategies (including IPR-related strategies) would be affected by VC investor's preferences.

The PRC government, enterprises, and foreign funds account for the vast majority of venture-capital funding in China (Ding & Zhang, 2009). Foreign investors used to be dominant (Ahlstrom, Bruton, & Yeh, 2007),¹⁷⁶ but since the 2008 global financial crisis¹⁷⁷, domestic VC companies have been developing exceptionally. Recently, both the invested capital stock of domestic VCs and their amount of investment have exceeded those of foreign VCs for the first time (Jun Zhang, 2016, pp. 5-6).¹⁷⁸ The Chinese government has been a large source of domestic investment, in the form of either bureaucratic funding or state-owned investment companies. According to a report from the consultancy organization Zero2IPO Group, Chinese government-backed venture funds tripled their money under management in a single year to 2.2 trillion yuan (US\$324 billion) in 2015; the amount of state capital threatens to overwhelm the private companies (Bloomberg News, 2016). There has been worries that investment decisions are sometimes removed from market concerns; in fact, according to government officials, state capital investment companies should serve as “policy funds”, and should not seek to make money on their investments (The Economist, July 22nd 2017). In this situation, who can get financing resources is not completely determined by market-based risk-benefit analysis, but also by policy considerations, and business-state connections in some cases. The importance of non-market factors then reduces the relevance of IPRs, which are an indicator of potential market success.

¹⁷⁵ The KPMG report and the Preqin report peg aggregate venture capital deployed in China during 2015 to be about US\$27 billion and US\$37 billion, respectively, but some argue that the real value may be higher than both (Yeung, 2016).

¹⁷⁶ The 334 active VC companies in 2008 included 157 foreign, 123 state-owned Chinese, and 54 private Chinese ones (Jun Zhang, 2016, p. 5).

¹⁷⁷ That did not affect China as much as the West.

¹⁷⁸ This study is based on the Zero2IPO data. In 2012, domestic VC investment has invested US\$3.8 billion in total, while foreign VC invested US\$2.8 billion.

Besides state control, other two characteristics of the VC market in China can affect the IPR-related behaviour of companies.

First, Chinese VCs usually have a very short-term orientation, requiring a certain amount of return within about three years. One interviewee, who is a manager at an investment company, said that:

In previous years, various industries have high investment returns, so people's appetites have become large; in the future, when economic growth goes down to a steady rate, they might learn that this high short-term investment return is unusual, and they may then go back to thinking about long-term investment. Look, in previous years, China grew so fast, short-term investment itself could bring the same profit as long-term investment, without sacrificing liquidity. Of course, we would make short-term investments! Nowadays the growth is too fast...there is no need to make long-term investments. Now this is what investors in China are concerned about: people are all getting a 2% investment return out there, so I want at least the same; people are getting investments back in three years, so I want the same. They are just 'going with the flow'...Only the "US-dollar" brain would make long-term investments....¹⁷⁹

This short investment time horizon may in turn shape the behaviours of companies, and reduce their incentives to make long-term commitments (Lazonick, 2013; Lazonick & Tulum, 2011), including IP-development ones.

Second, Given China's huge and still-growing domestic market, any business model, even focused on a very niche market, could still be successful and attract VC investments. In this case, VC-backed companies in China, even those in technology sectors, are characterized by small business-model innovations (mostly made by adapting existing technologies to fulfil customer

¹⁷⁹ Interview 20160614, with a manager at a private VC company. Original Chinese: “前些年各个行业都回报很高，所以大家的胃口被养大了，以后平稳了，大家知道不太可能有这么高的短期投资，就会慢慢投长期了。你想之前中国增长这么快，投短期就能有跟长期一样的收益，还不用牺牲流动性，肯定投短期呀。现在发展太快了，一个公司三五年就能出来，就没必要投长期。现在投资人关心的是什么：外面都是 2% 收益，我也要至少这么多，外面都是三年就拿回来，我也要三年。就是有点随大流。不是因为经济不稳定的原因，我们不分析大经济环境，没用，都是看项目的团队和方向。人民币现在不投长期嘛，都是美元的脑子才会投长期。”

requirements in a unique regulatory and social system), rather than technological innovations that produce IPRs (Jun Zhang, 2016, pp. 22-23).¹⁸⁰ This to a large extent affects the importance of IPRs to many start-up companies.

3.4 State-Industry Relation

Many development studies have explored the two-way interaction between state and industry (P. B. Evans, 1995; Kohli, 2004). First, state can affect industries through policies and regulations. States are supposed to provide a stable environment and public services for the industry; policies and regulations can also serve to guide industrial developments (Bates, 2006; Wade, 1990). Aside from the laws mentioned before, many non-IPR policies and regulations are relevant to the IP-protection behaviours of companies; but the most significant ones are usually industry-specific (for example drug registration policies from the China Food and Drug Administration (CFDA)), and they are discussed later in the case study chapters. Second, authoritarian states like the Chinese one usually have great control over social resources (for example R&D funding and subsidies) (Pei, 2006), and how they allocate these resources can largely determine the direction of industrial development. In China, the Chinese state still controls significant resources in Chinese society, thus how it invests its money has a powerful influence on industries. In fact, during one interview, a company representative said to me that the "trick" to succeeding in business in China is to "do what the government wants, and never do what the government does not encourage, and be the first one to do what the government just started to emphasize".¹⁸¹ This might be one reason why patent applications increased so much following the central governments' promotional campaigns. However, the role of modern IPR systems depends on the fact that market is where resources are allocated (in this case strong IPRs enable the right holder to gain more benefits from market competition); if key resources are in the hands of the government, instead of in the market, then the role of IPR, in this sense, is much more limited.

¹⁸⁰ The patent law in China does not have specific provisions for protecting business models, but internet companies have been calling on a change in law and policy to protect internet-technology-based business models.

¹⁸¹ Interview 20150429A, with the Executive Director of a local pharmaceutical company in Beijing.

On the other hand, industry agencies can also affect state policies or law-making behaviours (although to what extent is uncertain), even for non-democratic societies.¹⁸² Actually, many studies acknowledge that the Chinese government is becoming more institutionalized and more responsive (Nathan, 2003; Naughton, 2016; D. L. Yang, 2004). For example, the Party has offered party membership to private entrepreneurs; there has been more and more public involvement in policy making (where the state publicizes draft laws for comments, and invites suggestions on development programs). State services have also become more transparent by providing information on official websites. Currently the influence of industries on the government can be either through formal procedures such as propositions by entrepreneurs at the People's Congress (see chapter two), or through informal company connections with local governments, such as financial connections or *guanxi* (personal relationships)¹⁸³ (Dimitrov, 2009; Gehlbach, 2011; K. S. Tsai, 2007, p. 61).¹⁸⁴ However, the actual effectiveness of both means of influence is ambiguous, and most companies feel powerless facing the state (Pei, 2006); the lack of a consistent lobbying procedure limits the incentive for industrial companies to shape policies, and encourages passive adaptation instead of active action. Actually, most companies I interviewed, both large and small, said that they only hope to avoid unfair policy enforcement through connections with local governments, but they do not expect to be able to lobby the state to make the policies they want.¹⁸⁵

4. Summary

4.1 A Well-Developed IPR Legal System Embedded in a Special Context

As shown in section 1, under several kinds of foreign pressure, and to meet the WTO's TRIPS standard, China has developed a fairly comprehensive IPR legal system, with both complete IPR codifications and the establishment of formal institutions. Many foreign companies have

¹⁸² For example, (Linz & Stepan, 1996) categorize authoritarian societies into different categories, and argue that some of these categories allow for state-society interactions.

¹⁸³ For example, they hire well-connected staff, or cultivate good relations with key bureaucrats.

¹⁸⁴ For example, party members participate in private businesses; or local governments rely on tax collection from companies.

¹⁸⁵ Domestic studies have also confirmed that most usage of *guanxi* with governments are for the purpose of ensuring fair treatment, for example, see (Jing Zhang, 2005).

demonstrated growing confidence in the Chinese Intellectual Property Rights (IPR) system by filing patents and setting up R&D facilities in China (for example Novo Nordisk, Roche, and PFIZER). Yet, despite these rapid changes and improvements in IPR, there still are certain deficiencies. The majority of US companies in China surveyed by the American Chamber of Commerce have indicated that China's IP protection is "less than effective" (Langer, 2007), while a 2014 survey report from the Asia Pacific Foundation of Canada indicated that almost one-third of Canadian companies conducting business within China ranked IPR practices as a major obstacle (APFC, 2014). My fieldwork also suggests that many companies find it difficult to use legal methods for IP protection.

The deficiencies of the IPR legal system is not due to codification or IPR enforcement alone. In fact, as has been indicated in this chapter and chapter two, most limits are due to the fact that the Western-derived system has been placed into a Chinese institutional context, where the emergence of legal and market-economy institutions, as well as IP-related professionals are all fairly recent. For example, IPR laws have been established for only a few years, and are still under constant revisions, thus judges, lawyers, and right holders have to, effectively, grope their way towards a solution. Moreover, the evidence discovery system in the Chinese civil-law system is less extensive and limits the effectiveness of IPR laws. The still-developing market-economy institutions, including corporate data management and accounting systems, create difficulties with regard to damage calculations, thus limiting the workings of remedy rules.

What is curious is that, despite these limits and general complaints, the number of IPR cases brought to court has been large. This is probably due to the low cost of filing a lawsuit in China; it also indicates the imprudence of Chinese right holders in using legal methods; my interviews suggest that few domestic companies have learned to incorporate IP protection strategies as a significant part of the general strategy for company development. The curious phenomenon also indicates that IPR lawsuits may serve other purposes than recovering damages for right holders; for example, it can be used to harass competitors, push for cooperation, or to get media exposure.

4.2 The Dual Enforcement System of IPRs

A uniqueness of the Chinese IPR enforcement system is the parallel forms of both judicial and administrative enforcement, i.e. the dual enforcement system. Because of the existence of this system, any studies or statistics about IPR enforcement based on court cases should be taken with a grain of salt, because this may have ignored the large role of administrative enforcement.

Both systems are used a lot in practice by right holders. The judicial enforcement system is less efficient, but has more formal procedures. The administrative system is more efficient in stopping infringements, but it is less consistent, less transparent, with less formal procedures (Dimitrov, 2009). The administrative system is also subject to problems from its historical legacies, including jurisdictional ambiguity and coordination problems caused by fragmentation. In practice, companies could choose between these two formal enforcement methods according to their goals, their connections, or even their habits.

4.3 Large IP Activity with Complex Meanings

As indicated by the number of patents, China has a large amount of IP activity. As pointed out in chapter one, this has been interpreted as a signal of increased innovation; many scholars assume that it will create domestic need for improved formal IP protections, pushing for a better IP protection institution. However, the situation is more complex than that.

First, the interpretation of number of patents should be more cautious. More than half of the Chinese patents are "petit patents" for small improvements which do not require substantive examination for novelty, inventiveness, and practical applicability; they may not represent innovation level as invention patents. Although this is the case, the absolute number of invention patent is still impressive, and the increasing number of PCT patents owned by Chinese companies almost certainly indicates a growing portfolio of international-standard IPRs, suggesting increased innovation.

Second, as discussed in later chapters, a great many start-up companies apply for "useless" patents because this creates a portfolio that looks impressive, in order to attract subsidies and investments; they hold many patents but never use them, thus they have little incentive to care about the actual protection of these IPs.

Third, even for those companies who do have incentive to protect their IPRs, they do not necessarily have the ability to influence policies. The companies that are applying their patents in the market do want better legal protections. Nonetheless, they do not necessarily have the channels to affect state policies. No one is sure whether or not the formal proposals of these companies at the People's Congress (see chapter two) will lead to policy changes; these companies have more confidence in the effectiveness of their informal government connections, but that can only affect local policies and not the general IPR system.

The interaction between industrial companies and the IPR system in China is more complicated than assumed, and I elaborate the interaction patterns in later chapters with my fieldwork data.

Chapter IV. Methods and Data

I have pointed out a few puzzles about the Chinese intellectual property right (IPR) system in chapter one. The two most significant ones are: (1) despite the widely criticized weak intellectual property right (IPR) law enforcement (reasons include decentralization and the lack of judicial independence),¹⁸⁶ there is a lot of IPs, as well as associated innovative activities; (2) most IP-intensive domestic companies do not worry about IPR infringement and have little motivation to push for stronger formal IP protections. Starting with puzzles like this, we can consider the y variable, that which needs explanation, to be how certain industrial companies interact with the formal IPR system. (Some aspects of this y variable are: why do they accumulate IPRs, why would they bring up IPR infringement cases, and how would they protect their IPRs?) The potential x -variable I identify here is composed of industrial characteristics, including different aspects such as i) technological nature, ii) administrative control, iii) market characteristics and iv) network structure (elaborated in chapter five). There are, of course, other potential variables, or aspects that can be influential, such as place of business or culture but, in this study, I focus on the four above-mentioned industrial characteristics.

The relation between x variable and y variable is explained by case studies in the next chapters. In this chapter, I elaborate which methods I use to explore industry-IPR interaction patterns or mechanisms, and identify potential explanatory variables or contexts. First, I talk about methods I use for question analysis, case selection, and data collection. Then I explain the difficulties and coping strategies of doing fieldwork in China. In the end, my final data structure is summarized.

1. Research Methodology

¹⁸⁶ Concerns about the enforcement problems and the widespread IPR infringements in China are also mentioned by IPR reports in the West, such as the European Commission *Report on the protection and enforcement of intellectual property rights in third countries* (European Commission, 2015), and the Special 301 Report from the USTR (USTR, 2016), as well as a few business journal articles (Athanasakou, 2007).

1.1 Analysis Method in General

This study uses a combination of small-N comparative methods¹⁸⁷ and within-case methods to gain insight on the research question. (My case definition and case selection strategy are discussed later in, section 2 of this chapter.) I choose small-N methods in this research mainly due to availability of data and required analytic depth. In order to keep the study focused, a large-N analysis such as statistical or Boolean research¹⁸⁸ was not conducted. First, the phenomena under examination is of great complexity, and could require an in-depth exploration in each case. Given limited time and resources, a large-N method would limit the analytic depth of each case, which, in this situation, would undermine the clarity of the research question and its answer. Second, the availability of data is a problem for conducting large-N comparisons: secondary research on this topic is not sufficient to provide a reasonable set of operationalized variables, and there is good reason to be sceptical about questionnaires of this kind distributed to companies (Leeuw & Collins, 1997).

Through within-case methods, I can get a general understanding about the area I study, and pursue insight into the context of a certain phenomenon. Through comparative methods, I compare different industrial sectors to explore similarities and differences in order to construct general interpretations, but not exhaustive ones; that is to say, my intention is more nomothetic. In sum, I combine the advantage of idiographic explanations from case studies and mechanism exploration from comparative studies. Although, theoretically, within-case and comparative methods are different, in practice usually the insight they provide cannot be easily separated, because both methods are commonly intertwined within the same narrative and strengthen one another (Lange, 2012, p. 95). For example, (Boldrin & Levine, 2008) cite many industrial examples when they explain their general argument about how the IPR system affects innovations, and then use the general argument to direct case studies of the copyright and pharmaceutical industries. (Pang, 2012) studies various creative industries in China to explain the effect of modern IPR discourse on related industries; he develops his argument while describing different cases, and guides the

¹⁸⁷ See detailed introduction to small-N methods and a comparison of it to large-N methods in (Lange, 2012).

¹⁸⁸ See (Ragin, 2014) for an assessment of the Boolean approach.

case descriptions with a general theme to make them comparable. In the following paragraphs, I elaborate the methods I use respectively, while discussing how they can work together to provide analytical benefits for my research question.

1.2 Within-case Methods

Many scholars have noted the usefulness of within-case methods in analysing and explaining phenomena with very complex determinants (Mahoney, 2000; Rueschemeyer, 2003; Rueschemeyer & Stephens, 1997; Steinmetz, 2007). Because I am interested in how IP protection status and choices are determined in certain contexts, I focus on processes and mechanisms. In this case, I mainly use the within-case process-tracing method. Lange (2012) makes the distinction between causal narrative (focus on causality) and process-tracing (to identify process and mechanism), but many others treat both of them as "process-tracing". I use both methods, because my study starts from an exploration of causal factors (what causes various patterns of IP protections for specific companies), but the study ends with findings about mechanisms (especially alternative mechanisms of IP protection) and contexts (i.e. which industrial characteristics shape the effectiveness of these mechanisms).

Processes are sequences of events or actions which link one phenomenon to another. For example, when (Sell, 2003) studies the international politics of IPRs, she explores the process linking the intention of a group of private sector actors to the establishment of a high-protectionist global IP agreement (The TRIPS 1994); she concludes that this process was achieved by the lobbying efforts of a few powerful CEOs of multinational corporations who wished to mould international law to protect their markets. Processes are treated as “the fundamental building blocks” of social scientific analysis (Abbott, 1992, p. 428). Process-tracing is used to identify processes and potential mechanisms within cases; its application can include narrative description, analytic explanation and hypothesis-making (George & Bennett, 2005).

To understand the actual processes and contexts that lead to the phenomenon under analysis, for example how the establishment of IPR institutions affect the behaviour of companies, or how industrial characters lead to companies engaging in IP protection, I combine process-tracing with

narrative analysis to use as my principal research method. Narrative within-case analysis helps me elaborate institutional backgrounds and companies' behaviours in specific industrial and administrative contexts, while a focus on process can help discover the potential causes for the litigious or non-litigious behaviours of companies, as well as their decisions regarding IP investments and IP protection strategies. For example, to understand how the market structure lead to a company's choice of alternative IP protection methods, I first give a narrative introduction to the market structure of an industry; then I trace the role of IPRs in that market structure; then I discuss how this role affects how companies use IPRs in that specific market structure. Through within-case analysis, I can highlight mechanisms and contexts in each case and gain a basis for more general comparisons.

1.3 Comparative Methods

As the historian Marc Bloch said, "there is no true understanding without a certain range of comparison" (Bloch, 1953, p. 42). Comparative methods, based on within-case analysis, can help us discover more general patterns. In general, I use various kinds of comparison, including both cross-case comparison (among industries) and internal within-case comparison (among different companies in the same industry). As for specific methods, I mainly use narrative comparison, which has been recognized as a powerful source of insight (Lange, 2012; Mahoney, 2000; Rueschemeyer & Stephens, 1997); narrative comparison helps to highlight the most significant factors in these cases. I explore whether the absence or presence of certain mechanisms help to explain similar or different outcomes among multiple cases. Because analysis of mechanisms usually requires close attention to context (Falleti & Lynch, 2009), I also explore how industrial contexts shape the presence or absence of the mechanisms. Although difficult, to some extent I may be able to establish plausible causal relationships between factors, because: (1) comparative methods (methods of similarity and methods of difference) are helpful to identify potential causations; (2) I confirmed the potential causations by asking why-questions in interviews, which often reveal reasons behind certain behaviours.

Specifically, in my study, there is one major puzzle: according to previous theory, the increase

of IPs (patents, copyrights, and trademarks) leads to increased need for formal IP protection and the subsequent increase in the application of patent laws; the puzzle is that, in China, some industries fit this pattern, but some do not. There are sub-puzzles within the puzzle: (1) which factors actually affect the effectiveness of IP law enforcement in China, and are these factors the same across industries? (2) What is the role of legal enforcement of IPRs in different industrial sectors in China? When will domestic companies use IP laws? (3) In a society accused of weak legal enforcement of IPRs, what functions do IPRs serve besides the legal protection of innovation, and how important are they to different companies in China? (4) Which alternative IP protection methods are available to companies in different industries; specifically, what are their differences and when will the domestic companies choose them? In sum, facing the same IP law, how would industrial contexts or characteristics affect how an agency engages with IP protection in China? I combine within-case and comparative analysis to explore IP protection mechanisms in specific industries, and identify related contextual factors.

Although the application of Mill's method of agreement and difference (Mill, 1872)¹⁸⁹ are criticized as being too deterministic to be appropriate for small-N analysis (Goldstone, 1997; Goldthorpe, 1997; Lieberson, 1991), the method can still provide valuable insight when combined with within-case analysis. For this study, I keep Mill's method in mind to guide my comparison, but I use it in a suggestive rather than a deterministic way. For example, Mill's method of agreement suggests that, if two or more instances of a phenomenon under investigation have only one circumstance in common, the common circumstance may be the cause (or effect) of the given phenomenon. In comparing different industrial sectors, if companies in different sectors use the same IP enforcement method, I find the common characteristics they have to identify possible *x* variables. Mill's method of difference suggests that, if an instance in which the phenomenon under

¹⁸⁹ The method of differences can be represented as:

X1 B C D occur together with Y1 E F G

X2 B C D occur together with Y2 E F G

Therefore, differences in X are probably the cause, or the effect, or part of the cause, of the difference in Y.

Similarly, the method of agreement can be represented as:

X1 H I J occur together with Y1 O P Q

X1 K L M occur together with Y1 R S T

Therefore, X1 is probably the cause, or the effect of Y1

investigation occurs, and an instance in which it does not occur, have every circumstance save one in common, the differing circumstance may be the effect, or cause, or a necessary part of the cause, of the phenomenon. In my study, especially in comparing different industries in the same sector that exhibit different IP-use patterns, I focus on different characteristics to identify potential factors that are in effect. In addition, I supplement them with details of case studies, to reduce the risk of misunderstanding the specific mechanisms connecting a circumstance to a phenomenon.

2. Case selection

2.1 About Case Selection Strategy

Given the case-based nature of this study, and the control I have over selection of cases, as well as my intention to both explore cases and pursue nomothetic explanations, significant attention should be paid to case selection issues. First, one must carefully consider how to define cases in an effort to promote case homogeneity; then one must also cautiously consider factors such as number of cases, data accessibility, characteristics of individual cases, and case pairing to make selection decisions (Lange, 2012, p. 148). These issues are specified respectively in this section.

2.1.1 Defining Cases

A case is, according to (Gerring, 2007), “a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time”. Here, to explore IPR-related industrial behaviours in China, I define my case as: an industrial sector of present-day China, which is practically or potentially under the influence of certain types of IPR infringement. The specific reasons for choosing cases are discussed in section 2.2; here, to summarize, my major cases include industries from three industrial sectors in China: the medical sector, the telecom equipment sector, and the film and TV sector, each of which is internally heterogeneous, providing more comparison options. My focus will be on the post-TRIPS (Trade-Related Aspects of Intellectual Property Rights) period, i.e. after China joined the WTO in 2001. However, the time period is not completely strict because historical development is an important element of industrial

characteristics.

2.1.2 Representativeness of Cases

Case pairing means pairing cases to maximize or minimize commonalities in order to get comparative results; it is very important for comparative methods. It is close to impossible to find cases that coincide perfectly, but it is possible to maximize key similarities or differences. I decided to pair the cases after a prudent exploration of them. As stated in the beginning of this chapter, my y variable is the pattern in which certain industrial companies interact with the formal IPR system, while the potential x variable I identified is composed of various industrial characteristics. To appropriately use the method of difference, I make sure that (1) the sectors I choose vary in industrial characteristics (the x variable), (2) they vary in industry-IPR interaction patterns (the y variable), and (3) other potential control factors are largely similar, i.e. these cases are "most similar systems". With regard to point (3), all sectors I choose are facing similar laws and general political settings (although there may be differences with regard to specific applications among sectors and locations); all the industries I choose are those that generate large numbers of IPs. Facing a similar macro environment and the background of a large level of IP activities,¹⁹⁰ they express different patterns of IP protection. This case pairing provides a great opportunity to explore which non-legal factors affect IPR-related behaviour in China, and how these factors relate to industrial characteristics.

With these considerations in mind, I started with an ideal set of important cases, i.e. those that are critical to the research question and should never be excluded (Eckstein, 1975). In this study, these cases necessarily represent active industrial IP activities. As indicated in section 2.1.1, among the many industries with active IP activities, I identified three areas to focus on: industries in the medical sector, telecom equipment sector, and film and TV sector; specific reasons to choose the selected cases are elaborated in this chapter in section 2.2, but in general I chose them by considering the levels of innovation and creation in a given sector (based on IP activities), as well

¹⁹⁰ According to the Patent Corporation Treaty Yearly Review from WIPO, China became the third largest filer of PCT international patents in 2013 due to a sharp increase in filings (WIPO, 2016a). As for IPR lawsuits, there were 95,522 first-instance IP civil cases admitted by all local courts in 2014 (Court, 2015), and the number was 109,386 in 2015 (Supreme People's Court, 2016); The same figure was 13,335 in the US in 2013 and 13,420 in 2014 (The Administrative Office of the U.S. Courts, 2015).

as accessibility (i.e. how easy it was to contact people for interviews).

As for number of cases, in section 1.1, I state the reasons for choosing small-N analysis instead of large-N analysis. Small-N qualitative analysis makes random selection inapplicable. It is difficult because of the unclear universe of cases and because of limited access, and it is inappropriate because of the risk of missing important cases (King, 1994). To be clear, the reason that the study cannot use randomized selection is that, first, there are not enough qualified units to conduct a random selection according to the case restriction I have to make. (In this case, the case restriction confines the search to an industrial sector in certain locations of present-day China, which has large IPR activities and is practically or potentially under the influence of certain types of IPR infringement.) Second, even if there are enough units, random selection might cause the omission of some crucial cases which are under the purview of my initial research, for example a random selection might have omitted the medical and telecom equipment sectors.

2.1.3 Selection Bias and Measures

Even though I paid a lot of attention to case representativeness, without adopting random selection, cherry-picking is a potential problem for qualitative studies, as discussed widely in the literature (Collier, 2004; King, 1994). Despite my best intentions, I was sometimes compelled to take cases because of accessibility. However, although selection bias caused by accessibility issues may not be eliminated, there are a few strategies I used to reduce the risk. First, as mentioned, although there are many other interesting industries where IPR is expected to be important, the three cases I have access to are all considered crucial cases (cases commonly recognized as important and typical, i.e. those that represent active industrial IPR activities). In this case, industrial selection is not sizably subject to bias caused by data access limits. Second, with respect to company selection inside each industry, because my study focuses on industrial companies, the risk of systematic accessibility bias caused by factors such as political sensitivity of respondents is much less, compared to studies focusing on government agencies¹⁹¹¹⁹². Besides, I tried my best to distribute interviewees with consideration of company location and company size, to make them

¹⁹¹ Government agencies are the group that is more cautious about accepting interviews.

¹⁹² I talk more about interview data and method in section 3.

more representative. In the end, being conscious of this problem of cherry-picking, I refrain from choosing only those cases that conform to a pre-existing theory; I am also explicit about case selection in the next section, so that readers will be able to consider whether cherry-picking has occurred. These, to some extent, can limit the bias caused by cherry-picking (Lange, 2012, p. 160).

2.2 Selected Cases

2.2.1 Selected Industries

To explore the questions I mentioned in chapter one, industries in three sectors are studied in depth: (1) the medical sector, including the pharmaceutical industries (this includes Western medicine and Chinese medicine) and the medical device industry; (2) the film and TV sector (including the film industry, the traditional TV industry and the online-TV industry); (3) the telecom equipment sector (including customer products such as mobile phones and capital products such as transmission equipment and switching equipment). In-depth studies of the three sectors can provide detailed descriptions of industrial backgrounds and patterns of industry-IPR interaction in China. In addition, some other cases from my preliminary fieldwork in 2015 (for example, the publishing and software sectors in China) as well as cases mentioned in secondary literature (for example, sectors in the US) might be mentioned, to help support some arguments and provide more general comparison.

The three sectors I have chosen are cases where IP ought to matter, and the in-depth study of which can provide important insight for IPR systems in China. First, within a Western context, e.g. within US borders, most IP enforcement pressures are from parts of the medical sector; in China, the medical sector has a quickly increasing number of patents but it does not exert similar pressure for IPR enforcement. Second, the film and TV sector in China is going through a lot of change right now, from a copyright-free environment to a sector full of copyright enclosures¹⁹³ and discourse around IP; the film and TV sector is a perfect case to study in order to better understand

¹⁹³ The term enclosure here, as argued in Boyle (2003), makes analogy to the enclosure movement in England when public property became private property.

how an implanted IP system shapes industrial behaviour¹⁹⁴. Copyright infringement related to films in China is also considered “the most damaging form of IPR infringement” by the US International Trade Commission (US International Trade Commission, 2011), making the film industry a case worthy of attention. Third, the telecom equipment sector is where Chinese companies are leading in terms of PCT patents; it is also one of the few industries where intellectual properties are very concentrated, making it highly relevant to any IP-related topic.

Even though it can be argued that my cases are not completely representative, as mentioned, I have minimized selection bias as far as possible when pairing cases. What needs to be kept in mind is that, besides the three sectors I have chosen (medical; telecom equipment; film & TV), there are other industrial sectors that also have significant IPR activities and might be instructive, including, for example, the automotive, food-processing, agricultural, publishing, software, and metallurgy and advanced industrial material sectors. Although it is impossible for one study to deal with all these sectors, and I only focus on three, I am informed by studies of these other sectors.

2.2.2 Selected Locations

My fieldwork focuses on the areas around Beijing and Shanghai, balanced out by a few interviews with companies located in Chongqing and Shenzhen. There are a few reasons for the location selection. First, many IP-intensive companies are located in Beijing and Shanghai. Beijing, as the capital and the cultural centre of China, is where most film & TV producers are and where most high-tech companies have headquarters or offices. Shanghai and the nearby Yangtze River Delta are where most medical companies and where most foreign companies are located. Second, as previous studies have mentioned, networks are very important for securing interviews in China, especially for interviewing businesspeople; cold-calls without personal connections do not work (Y. Wang, 2014).¹⁹⁵ Most of my social networks come from classmates and professors from two top universities in China (Peking University and Renmin University), most of whom are

¹⁹⁴ I.e. when an IP system is transplanted to another society, it is called implanting.

¹⁹⁵ As the Wang says: " The cold calling approach was largely unproductive and frustrating. In most cases there was either no response or a direct refusal via telephone. This is probably due to the reason that people in the retailing sector are very busy, and they have to give up their spare time if they agree to take part in my research project, but for little I can offer in return. Having largely failed with cold calling I turned to my personal social networks."

working in Beijing and Shanghai. In this case, these two cities are where it was most possible for me to make contacts and find interviewees. Third, Chongqing is famous for Chinese medicine production, and it is located in the western part of China, so a short fieldwork in Chongqing can balance the overemphasis on the eastern part of China. As for Shenzhen, it is where two of the biggest Chinese telecom equipment companies are headquartered. I did not get a chance to go there due to time and budget restraints, but I managed to interview Shenzhen company representatives who had travelled to Beijing and Shanghai. Of course, there are other regions that have IPR-intensive industries, but my fieldwork focused on these locations because they are where my selected industries are concentrated.

3. Data Collection

3.1 Data Collection Methods

I used multiple methods for data collection, including both primary and secondary data. The major methods for primary data collection consisted of in-depth interviews and participant observation; I also collected secondary data from statistical databases, newspapers, online news websites, reports, and academic articles.

To collect information about how various social actors and various industries interact with the IPR system, I relied mostly on semi-structured in-depth interviews based on convenience sampling.¹⁹⁶ Semi-structured interviewing involves prepared questions guided by identified themes interposed with spontaneous probes to elicit more elaborate responses. It needed to be in-depth so that I could explore the actual decision-making processes of companies and the substantive role of IPRs for them. It had to be semi-structured because: (1) I needed to compare among interviewees from different companies and industries; (2) I also needed some flexibility to adjust my questions according to the interviewee's background and depending on what I learned in the previous interviews (so that the questions could better lead to a deep conversation).

¹⁹⁶ I was mainly interested in mapping out the IP protection terrain in each industry - who are involved, when, how, and why. As discussed, random sampling was neither possible nor desirable to explore these types of questions.

I focus on company representatives because they are crucial for my research question; however, government officials, legal professionals, and local scholars were also interviewed to get background information or to double-check information from businesspeople. These interviews allow an understanding of IP-related processes in China which cannot be found in the secondary literature. They gave me a clear understanding of how each industry's characteristics shape the way the formal IPR system works, and when alternative protection methods are chosen.

Aside from interviews, I also relied on participant observation, mainly in IPR-related forums and seminars attended by scholars, state administrative agencies, legal professionals (judges from the Supreme Court, special IP courts, regular people's courts, and lawyers), and company representatives (usually from different companies' IP departments). These forums and seminars reflected the problems of greatest concern in current IPR practice in China (for example the low compensation rate and the difficulty of evidence discovery), as well as the most debated directions of reform (for example the adoption of precedents). Participant observations in these events gave me a chance to get access to some unpublished case statistics from courts (including, for example, average compensation rate of IPR cases, the proportion of cases using "statutory damage"); I also learned about the different opinions of judges, lawyers, and companies with regard to similar issues. Furthermore, during breaks at these forums and seminars, I had the chance to have short conversations with some participants that I otherwise had no access to; but the limited time and the lack of privacy in such a public setting prevented me from conducting any in-depth interviews there. Section 3.3 has a descriptive table on the characteristics of my interview subjects.

Aside from primary data collection, I also tried to make use of the best available secondary data, as seen in the analysis in previous chapters. I have looked at data on Chinese IPR enforcement from SIPO (State Intellectual Property Office), NCAC (National Copyright Administration of China), and SAIC (State Administration for Industry and Commerce). I also got some unpublished material during interviews and participant observations. It is with these data that I got a general picture of the evolution and current characteristics of IPR enforcement in China. I also used available secondary industrial data in the case analyses.

3.2 Data Quality and Fieldwork in China

Although many studies on China specify methods they use, there are few detailed descriptions in the Chinese literature regarding how people actually do their fieldwork, and on the problems they encounter. These issues can affect how fieldwork data should be interpreted. This section will review some themes previous studies mentioned about doing fieldwork in China, and then summarize the problems I encountered as well as the techniques I used to deal with them.

- Previous experiences:

(1) Three General Themes on Fieldwork in China

After the CCP took power in 1949 and until Deng's "opening up" policy initiated in 1979, it was almost impossible for foreign scholars to do fieldwork in mainland China due to political limits (with a few exceptions for Marxist scholars). American scholars were allowed to visit and research in China only after the US-China normalization of relations in the early 1970s; they gained more access following the openness policy in the late 1970s (Nie, 2005). Since the early 1990s (Deng's "Southern Tour"), social science study in China conducted by Western scholars has become more frequent. Among the few studies discussing fieldwork in China, three themes come up a lot: data distortion, limited access to the field, and collaboration with Chinese academics (Carlson, Gallagher, Lieberthal, & Manion, 2010; Heimer & Thøgersen, 2006).

First, data distortion is always a potential challenge for scholars doing fieldwork in nondemocratic and transitional systems, especially for quantitative research, because both quantitative data and the process of conducting a survey are more subject to state control, compared to interviews and participant observations (L. L. Tsai, 2010). However, recently some scholars have studied the process of generating official data in China and suggest that using more upstream information sources (those closer to where the data originated) can mitigate the problem (X. Chen, 2010). Because my study is less reliant on quantitative data, and my focus is less on political issues than on industrial behaviours, this risk is much smaller for me.

Second, foreign scholars have limited access to some field sites and it is hard for them to conduct data collection through official channels, unless they have support from the

government.¹⁹⁷ To avoid distortion induced by the limited access, scholars can adopt multiple documentation (supplement fieldwork with secondary documents) and conduct fieldwork in multiple field sites (X. Liu, 2004, pp. 141-152). Again, this is less a problem for my study, because, as a Chinese citizen, I am not subject to many access limits that are put on foreigners; aside from that, I have used complementary secondary data and conducted field work in multiple locations.

Third, collaboration with Chinese academic partners and assistants is helpful in doing fieldwork in China, because they usually can provide all kinds of support and help contact interviewees. Surveys can only be carried out with a licensed domestic institution such as a research institution from prestigious Chinese universities (Tang, 2002). Furthermore, as mentioned, personal connections are very important in securing interviews in China, where cold calling is unlikely to work (Y. Wang, 2014). In this case, connections with locals can be significant. However, a market mechanism works here: it is not difficult to find collaborators for a professor from a famous university (from anywhere) with ample funding and scores of publications; but for young scholars or PhD students who do not have similar resources, it is very hard for them to get opportunities for collaboration. In my fieldwork, I did not rely on surveys due to the characteristic of my questions and my funding limits; thus, I did not necessarily need formal collaboration with a licensed domestic institution. Besides, I was lucky to get informal support from some academics in my old university, Peking University; in return I needed to give lectures, participate in seminars, and write reports for them.

(2) Fieldwork in China in IPR Studies

As for studies on Chinese IPRs, little attention has been paid to fieldwork details. For example, in the preface of his book, (Mertha, 2005) only briefly mentions how he conducted fieldwork in China starting from 1998. He points out that collaboration with local research institutions can be quite helpful, that access to research sites can be limited for foreigners studying political processes in China, and the challenge that the configuration of Chinese bureaucracy changes constantly over time. He does not specify how he found interviewees (mainly officials),

¹⁹⁷ But the extent of this problem in China has become more like that found in many other countries (Thøgersen & Heimer, 2006).

or problems that he encountered in contacting interviewees. Mertha also did not specify the exact distribution of his interviewees by location or by occupation. In contrast, (Dimitrov, 2009) specifies the distribution of occupations and locations of his interviewees in the appendix of the first chapter of the book. In one sentence he implies he used a snowball method by stating that he sometimes got bureaucrat and businesspeople contact information from diplomats, journalists and academics (Dimitrov, 2009, p. 31). However, there is still no clear description on how he got access to interviewees or how he contacted them. Similarly, some more recent management studies on the patent strategies of companies in China include more discussion about interviewee characteristics (Keupp, Beckenbauer, & Gassmann, 2009; M. Zhao, 2010), but still very little details about how to access interviewees.

The reason why previous researchers do not say much about these methods is likely because those authors are well-connected professors with ample resources, who do not encounter much difficulty in securing interviews. However, as mentioned, the case can very different for young scholars or PhD students who work without such resources. The brief and cursory overviews in previous studies are not very helpful to later scholars who want to do fieldwork in present-day China. In addition, the lack of information about how the interviewees were found, accessed, and interviewed may affect the understanding of the quality of the data, as well as the validity of the arguments generated from these interviews. In the following paragraphs I systematically elaborate the problems encountered, discuss coping strategies, and give some suggestions about precautions.

- Problems and Coping Methods in my Fieldwork in China

(1) Local Support

In China, support from government officials can make it much easier for researchers to gain access to multiple institutions, either governmental or non-governmental. Previous IPR studies focusing on interviews with officials rely a lot on contacts inside the government. I do not have any government-related background or network in China, so it was difficult for me to find officials as interviewees. However, this limited access did not affect my study a lot; this is due to two reasons. First, my initial interest is in industrial behaviour rather than government agencies, and interviewing officials only served as background. Second, according to Chinese academics and my

own experience, although government support or introductions would have made it easier to find interviewees in the private sector, it often harms data quality. For example, when a researcher is introduced by an official to an interviewee, the interviewee is more likely to give only superficial or official answers (i.e. answers that conform to what they think they should say). In this case, the cost of limited access due to the lack of official support may be compensated for by the benefit of getting more reliable data. In any case, although I could not interview officials in all the IPR related institutions, I did manage to talk to a few government agencies.

As mentioned, support from local research institutions can also be very useful. I did get some support from both the Sociology Department and the Faculty of Law at Peking University. The reason the professors helped is likely because I used to be a student there, or they found my research proposal interesting. They helped introduce some interviewees, especially IPR-related legal professionals. It is also due to their help that I could attend a few IPR-policy-related forums and seminars.

(2) Securing Interviewees, the Benefits and Limits of Snowball Sampling

After deciding the industries to study and general questions I needed to explore, I was clear that I needed to talk to company representatives in selected industries who knew about IPR-related decisions in their companies. I also planned to interview some legal professionals, because they have worked with hundreds of companies, and they should be able to provide information on law, in practice, and the general behaviour of companies. Although the legal professionals should know many company representatives, I did not ask them to introduce those representatives to me, because I knew that they must respect client confidentiality.

Keeping the groups I needed to talk to in mind, in the beginning, I found most of my potential interviewees through individuals who were well connected in certain industries. Usually, these well-connected individuals are introduced to me by my friends or very supportive professors. They helped me to find an initial set of interviewees. Then I adopted a snowball method to find more in the fieldwork process; I asked each of my interviewees if they knew anyone in their industry that I could talk to. Method books describing the snowball method usually suggest asking interviewee to introduce as many people as possible but, in my case, I found that it was important to ask them

to introduce only one, otherwise it would sound troublesome and there would have been a larger chance that they would instinctively say no.

As mentioned before, probability sampling was not feasible given the characteristic of my project. Snowball sampling is an important type of non-probability sampling. The logic of it is to access a certain group of people when the researcher does not have information about the total population. In this case, a problem is that it bears the risk of potential sample bias due to unpredictability. This risk can be mostly reflected by sample size difference by industrial sector and location (see Table 4.1 in section 3.3).

For industrial sector distribution, I secured fewer interviewees from the telecom equipment sector compared to the other two sectors, due to the following reasons. First, the total number of telecom equipment companies in China is much smaller than in the other two sectors. For example, until the end of 2015 the number of smartphone companies in China was under 100 (ZDC, 2016).¹⁹⁸ In comparison, according to available data, by 2011, there were more than 1100 domestic film producing units in China (China Film Association, 2011); in 2010, there were about 7346 domestic pharmaceutical companies in China (Yan Xiao, 2011).¹⁹⁹ Second, most telecom equipment companies in China are big ones, and it is harder to find appropriate representatives from big companies (who knows everything about the company's IPR strategies) due to their higher division of labour. However, I managed to interview people from IPR departments in two of the most influential Chinese telecom equipment companies; those interviews secured information for me on an important part of the sector.

For location distribution, even though I spent similar amounts of time in Beijing and Shanghai, I managed to interview many more people in Beijing, because in Beijing the interviewees were more willing to introduce their acquaintances to me. One possible explanation for this situation is that, Beijing, as the political centre, has a stronger civil culture, in which people tend to assume they have the responsibility to help with policy-related studies; in contrast

¹⁹⁸ The other industry in the telecom equipment sector, which produces capital goods, has an even smaller number of companies than the smartphone (consumer good) industry.

¹⁹⁹ This number includes both companies producing traditional Chinese medicine and companies producing Western medicine.

Shanghai, as the economic centre of China, may have a more individualistic culture, due to its higher level of modern market economy development.

To reduce potential risks of bias caused by the snowball method, I made great efforts to make sure that interviewees were distributed properly in each sector, as well as in each location. For example, if I found that I had not interviewed enough large-size companies in certain sectors or locations, I would spend more time searching for connections to access them. Aside from that, because business presses usually write a lot about large companies, I can get a lot of secondary information about such companies; in this case, interviewing more small and medium size companies is, to some extent, balancing out the information sources.

(3) Contacting Potential Interviewees

After getting contact information about potential interviewees through contacts who knows a lot of interviewees or through the snowball method, special attention needs to be paid to how researchers approach each potential interviewee. In some cases, the way the researcher makes contact can determine whether the interviewee agrees to the interview. It may also determine the interviewee's first impression of the researcher and thereby affect how he or she answers questions during a later interview. Despite its importance, there is almost no discussion about this issue in previous literature; however, there are actually a lot of related problems that are worth discussion. I now explain relevant difficulties during my fieldwork and the corresponding strategies that I used to address them.

First, even after the interviewees had heard about me from a previous contact, I found that there was a much larger chance that they would not respond if they were contacted by email, compared to if they were contacted by telephone or WeChat,²⁰⁰ possibly because WeChat messages are seen to be more personal and casual than email. Thus, I tried to get contact information of potential interviewees in the form of a WeChat account or telephone number, instead of by email address, to increase the chance that they would respond.

²⁰⁰ WeChat is a popular "super app" which integrates the function of MSN, Facebook, PayPal, and many other apps, and offers everything from instant messages, free video calls and instant group chats to news updates and easy sharing of large multimedia files. For more introduction about WeChat, see "China's Mobile Internet: WeChat's World" (The Economist, August 6th 2016).

Second, Chinese interviewees (especially businesspeople) do not make long-term schedules for everything; they do make fixed plans for crucial events, but for most other things they just arrange them provisionally, depending on how much time they have actually left in a certain day or week. In fact, when I tried to contact them a few weeks ahead to ensure meeting times, they would always say things like "ask me again around that time to see if I am available", or "ask me again that week". Also, the interviewees might contact me at an unplanned time when they suddenly were available (the interviewee might call suddenly to indicate that he or she has time "right now"). As a result, I could not make precise interview plans before I actually went into the field, but I tried my best to secure a certain number of contacts who knew a lot of potential interviewees, and got their promise to introduce interviewees to me once I got to the field.

Third, just like businesspeople in any other place, many of my potential interviewees had busy schedules. In this case, if I could not meet them at their preferred time, it would be very hard for me to get another chance. This meant that I should try my best to accommodate their schedules, avoid time conflicts, and be prepared for unplanned spontaneous meetings all the time. Thus, when I was in the field, I kept my cell phone and its network active all the time, so that I would not miss messages or calls from suddenly available interviewees. There was always a significant chance that the interviewees would ask me to send an introduction to my research and a question list on WeChat right after I contacted them, and there was a good chance that they would require a meeting soon after initial contact. So, I always had to prepare interview questions, interview guides, and read background information before making initial contact. To be prepared for spontaneous meetings, it was very important to have a half-structured interview guide in the beginning, which could help the researcher make a suitable question list for certain interviewees in a very short time.

Other useful techniques are more detailed. For example, when sending a potential interviewee an introduction and interview guide, there is a need to check the font of the document. Usually it is better not to use the "Song" font because it is used by government documents a lot; it would appear too official and may trigger some defensive feelings. Besides, it is important to adjust the order of the interviewer's background information (for example academic degrees) presented in the introduction on a case-by-case basis. Most of the time I emphasize my bachelor's degree from

a Chinese university, because in China graduate degrees are considered to be much less indicative of education than bachelor's degrees; when people knew that I had a bachelor's degree from a prestigious university, they would have more trust in me. But at other times, for example, if I interviewed some alumni from the university where I got my master's degree, I would emphasize that university to increase mutual trust. It is almost always a good idea not to emphasize my international background in China, unless the interviewee also had the experience of studying abroad; if the researcher works abroad but is cooperating with a domestic institution, he or she should emphasize that domestic institution in the introduction.

(4) Interview Techniques

As in anywhere, it is natural for interviewees to have some concern about sharing information with a stranger, even if the stranger is introduced by a friend. If not properly designed, both the content of the questions and the way the researcher asks the questions could evoke people's defensiveness, thus leading to them withholding good information. Previous literature lists many strategies to reduce superficial and overly official answers. For example, it is always important to do your homework (i.e. study anything that is related to the interviewees company or industry beforehand); if you can convince informants that you know some of what they know, they might provide more information. Another strategy is to focus not only on what informants say but how they say it, i.e. to watch for nervous ticks and body language.

In addition to general interview guidelines, doing interviews in China also introduces other unique problems due to its unique social context. For example, with regard to interview content, the biggest problem is the prevalence of politically sensitive issues, and the fact that it is unclear which topic might be sensitive to certain people (Thøgersen & Heimer, 2006, pp. 12-13). Perhaps due to this, with regard to format, Chinese interviewees might feel uncomfortable about such things as audio or video recording. Even if the researcher emphasizes at the beginning that anonymity is ensured, most interviewees would not believe it and would feel uncomfortable if any evidence of their words were kept. In my experience, all things being equal, state officials are more likely to be reluctant to talk than businesspeople. My study focuses on businesspeople due to the questions I examine, thus it is inherently more likely that I would get more reliable answers. In

any case, there are a few strategies that can be adopted to reduce the defensiveness of Chinese interviewees, and the three most important are specified in the following.

First, as when doing research in any other country, the researcher should always try to adjust questions according to the interviewee's background. For example, if the respondent is a businessperson, I need to make sure the questions would not touch on any specific business secret. If the respondent is a lawyer, I should never ask his or her opinion about any specific client.

Second, although some respondents might not mind being recorded, it is always safer not to even bring up the issue, unless the respondent himself or herself offers it. Once the researcher asks about recording, even if it does not happen due to the interviewee's refusal, it could dampen the atmosphere and make the interview less natural and casual because the respondent might always have a feeling that the interview is formal. For the same reason, I felt that any electronic device, laptop or tablet, might make them feel less comfortable. After learning about these factors during my preliminary field work, I always just took notes of all key points of their answers in a paper notebook and then recovered everything based on my notes and memories right after leaving the interview.²⁰¹ The negative effect of asking about recording agreements might also exist in the West but, it was my impression that the degree of discomfort is more serious in China.

Third, when it comes to consent forms, oral consent is always better than written consent. As discussed, Chinese interviewees feel uncomfortable about leaving any evidence, including signing their names; in this case, asking respondents to sign a consent form is likely to cause uneasiness which, in turn, is likely to reduce the willingness for them to cooperate.

Finally, in China gift giving is such a common social convention that it is always better to present a gift before an interview. Presenting a proper gift in the beginning would give the respondent the impression that the researcher understands social norms, thus increase the trust of the researcher. Of course the gift should not be too expensive because that could give the respondent an incentive to flatter the researcher. For example, an appropriate gift is something like a ballpoint pen, a key fob, or a business card case with the logo of the researcher's university.

²⁰¹ My notes might include special expressions, gestures, and tones when they answered certain questions.

3.3 Final Data Structure

During my limited six-month fieldwork in 2016, I interviewed 88 people in total, including right holders, company representatives, legal professionals, state agencies, and local scholars. Right holders and company representatives come from companies of various sizes from the three selected sectors (medical, telecom equipment, film & TV). Table 4.1 gives the detailed distributions of them. I also attended a one-day seminar in Beijing about judicial protection of IP in China, and a two-day forum in Beijing about IP protection in courts. Before the formal fieldwork in 2016, to explore the possibility of a more extensive study and to identify potential puzzles, I also conducted a preliminary field study in China, did some interviews and participant observations in 2015. These interviews gave me many initial insights, but they were not as systematic and structured as the ones in 2016; because of this, I did not include them in Table 4.1.

Table 4.1: 2016 Interviewee Distribution (categorized by occupation)

2016	Firm Representative from Film & TV Industry	Firm Representative from Medical Industry	Firm Representative from Telecom Industry	Legal Professional	State agency	Scholar	Total
Beijing	25	10	4	6	1	2	48
Shanghai	4	11	2	6	1	1	25
Chongqing	1	4	1	2	1		9
Shenzhen	1		3				4
Taiwan				1		1	2
Total	31	25	10	15	3	4	88

After analysing the data presented here, the major findings are presented in the following chapters. I first elaborate a general framework about how industrial characteristics affect the IPR-related behaviour of companies. Then I discuss each sector in detail under the guidance of the

general framework.

Chapter V. Industrial Characteristics and IP protection: A General Framework

In the first chapter, I discuss the development studies (Adelman & Baldia, 1996; Jianfu Chen, 2011; Massey, 2006a; M. Peng, 2013; P. K. Yu, 2007) that predicts that a weak IPR legal system likely reduces innovation or creation. This literature also predicts that increasing intellectual properties (IPs) in developing countries creates a kind of feedback loop that leads to local needs for stronger formal IP protections. In contrast, I point out a puzzling phenomenon in China. The intellectual property right (IPR) law enforcement is widely criticized as weak for reasons I have described, including the lack of independence in the judicial system as well as decentralization.²⁰² Nonetheless, in China, there is huge enthusiasm for IPR accumulation and there are many innovative activities. Another aspect of this puzzle is the fact that many companies with large amount of IPRs do not pay much attention to their protection, and increasing domestic IPRs does not lead to companies demanding a better legal IP protection regime.

In recent years, most domestic companies have been aggressively investing in IPRs and expanding their IP portfolios. At the same time, in my interviews, many right holders (or their spokespeople) told or suggested to me that they do not worry about infringements and they seemed to have little motivation to push for stronger IP protection. (More broadly, right holders do bring up a large number of IPR lawsuits in China, but for other reasons that are addressed in section 1.3 of this chapter.) According to the Patent Corporation Treaty Yearly Review from the WIPO, China became the third largest filer of PCT international patents in 2013 due to a sharp increase in filings (WIPO, 2016b, p. 27). According to a recent article in *The Economist*, Huawei, who has emerged as a world-class telecom equipment company and one of the world's biggest generators of high-quality patents, spends some US\$5 billion a year on R&D; Huawei is now at the forefront of research on 5G technology for the next generation of mobile phones along with Sweden's Ericsson (The Economist, September 12th 2015). Many more domestic innovation activities have also been

²⁰² Concerns about the enforcement problems and the widespread IPR infringements in China are also mentioned by IPR reports in the West, such as the Report on the protection and enforcement of intellectual property rights in third countries from EU (European Commission, 2015), and Special 301 Report from USTR (USTR, 2016), as well as a few business journal articles (Athanasakou, 2007).

noticed: China's Tianhe-2 supercomputer is now the world's fastest; Sunway TaihuLight, a supercomputer with local computer chips, is five times as fast as the best American rival; WeChat, a social-media and payments platform with seven hundred million monthly active users, is "more useful and fun than Facebook, Twitter and WhatsApp put together" (The Economist, July 9th 2016, September 12th 2015). A study conducted in 2012 of ninety seven chemical companies indicates that domestic companies perceive Chinese patents as quite effective in protecting their IPs from infringement (Shi, Pray, & Zhang, 2012) and expressed little worry about IP protection. These observations are contradictory to the predictions mentioned at the beginning of this chapter: an effective IPR legal system is necessary for industrial innovations, and large industrial IP activity will create a pressure to strengthen legal enforcement in a certain society (Adelman & Baldia, 1996; Jianfu Chen, 2011; Massey, 2006b; M. Peng, 2013; P. K. Yu, 2007).

I review the IPR legal system in chapter three and elsewhere, and conclude that the system, while complete as written by TRIPS standards, has many problems. As such, the puzzle cannot be solved by just claiming that critics of the Chinese IPR legal system are overstating their case. From my research, I have identified two possible explanations for the puzzling behaviour of companies in Chinese industry. First, some IP-intensive companies do not care about IP protection and damage compensation because they do not intend to use IPRs for what is commonly considered to be their primary function, i.e. to appropriate (or to monopolize) returns from the relevant innovation or creation.²⁰³ Instead, they use these IPRs for what are usually secondary functions, which are not affected by infringements generally. Second, companies with large IP activities do care about IP protection and appropriating profit from innovation, but they do not count on formal protections available through the courts. In this chapter, I discuss the two explanations, elaborate how they take effect, and point out pertinent underlying contextual factors. Here my major focus is on patents and copyrights, which are more related to innovations, but trademark issues are also discussed.

²⁰³ The word "appropriate" is used a lot in scholars' discussions of intellectual property, to indicate the act to monopolize commercial profits and to exclude exploitation of others. See Tidd et al. (1997, p. 181); WIPO (2003, p. 2).

1. Functions of IPRs in China

1.1 IP Protections to Appropriate Profits

1.1.1 Exclusivity and Direct Profit Appropriation

As introduced above, of the primary function of IPRs is traditionally seen as a way to enable the right holder to appropriate returns from the commercialization or licensing of the invention or creation, by excluding others from exploiting it (Hettinger, 1989; Jennewein, 2006; Scherer, 1970). This function of IPR is called appropriability (Tidd et al., 1997, p. 181; WIPO, 2003, p. 2). When IPRs are mainly used to serve this purpose, protection against infringements is important for IP-holding companies. The pharmaceutical sector has always been used by previous studies as a poster child for this function, where IPR is mainly used to ensure appropriability. However, even the pharmaceutical sector is internally heterogeneous, comprised of various industries (for example, chemical drug, biological medicine, Chinese medicine; for detail, see the case study in chapter six). The functions of patents in different industries vary in significance for companies. As I mentioned in chapter one, many recent management studies suggest that, in most other sectors, companies do not rely heavily on patents to directly reap the rewards from innovations, i.e. through commercialization or licensing of the IP (Cohen et al., 2000; Hall & Ziedonis, 2001; Levin et al., 1987; Mansfield, 1984). These studies suggest that companies could use patents to serve other functions, like self-defence, building a strong negotiating position, or attracting investments. (The alternative functions are elaborated in section 1.2 of this chapter.) In China, although some companies accumulate IPRs with appropriability in mind,²⁰⁴ many companies have other purposes.

1.1.2 Indirect Strategies to Appropriate Profit from Innovation or Creation

In chapter one, I review a few studies and the indirect functions of IPR they discuss (Cohen et al., 2000; Duguet & Kabla, 2000; Hanel, 2006; Kingston, 2001). In general, there are three strategies for using IPRs indirectly that have been mentioned a lot: (1) self-defence, where

²⁰⁴ For example, interview 20160623 with a pharmaceutical company representative.

companies accumulate IPRs to maintain freedom of action and prevent being sued;²⁰⁵ (2) blocking, where companies strategically accumulate patents in patent pools to block the entry of competitors; (3) bargaining, where companies expand IP portfolios to increase bargaining chips in cross-licensing negotiations. All these strategies have been commonly realized and used by Western companies. Although these studies are based on Western society, similar functions are sometimes also used by Chinese companies I interviewed, especially those who want to compete in the international market.²⁰⁶

Previous studies usually treat these strategies as "alternative functions" of IPR, different from appropriation. However, according to my findings, these functions still more or less require excluding others from exploiting the IPs. In this sense, they are also a dimension of ensuring appropriability: patents can play a role in blocking and bargaining when a strong statutory right to exclude others from using an invention is possible (Hall & Ziedonis, 2001); at the same time, self-defence is only necessary when the statutory right is effective. They are not "alternative" in this sense. This is why, unlike previous studies, I separate these functions of IPs from others that are not dependent on protections of appropriability (thus not threatened by infringements). This distinction helps me better analyse the behaviour of Chinese companies behaviour, and understand why some of them do not push for better IP protection, possibly because they use IPRs for other functions that are not affected by potential infringements, as discuss in the following.

1.2 Alternative Functions of IPRs

Even when the role of IPRs in protecting appropriability of innovations is less significant, they may still bring benefits for companies in other ways. For example, Cohen et al. (2000) mention that companies use patents as a measure of internal performance, for vanity, or "as the basis for approaching the capital markets" (p. 18). While most previous related studies focus on established large corporations in high-income and developed market economies (in Western

²⁰⁵ This works because, those companies that are dependent on each other through cross-licensing usually do not sue one another for infringement. This is because they know they are likely to infringe the infringer's patents sometime in the future (Anand & Galetovic, 2004, p. 76).

²⁰⁶ Interview 20160801 with a lawyer majoring in IP cases.

countries), my fieldwork investigated both large companies and small and medium companies in China. My findings suggest that IPRs can be used to bring benefits to companies in different ways there. The alternative functions are less susceptible to infringements, i.e. the ways they bring benefits to companies do not depend on appropriability protection. They can be summarized into the following four aspects.

1.2.1 Criteria for Government Benefits

With the Chinese state's policy of emphasizing intellectual property rights, there have also been many policies to encourage innovation. In October 2005, the Communist Party Central Committee and China's Government published the *Guiding Vision for the 11th National Economic and Social Development Program (2006-2010)*; with a focus on "endogenous innovation", emphasizing upgrades to economic structures and innovative capabilities (S. Gu & lundvall, 2016). Since then, both the central and local governments in China have been providing all kinds of support, subsidies, rewards, and privileges to encourage innovation; at the same time, the qualification to get these benefits is, to a large extent, related to the number of IPRs. In industries where the government has a large influence (see the section about state-industry relations in chapter three), and for companies that do not have many alternative resources, this could be a very important element in decision-making with regard to IPR accumulation.

Here I give examples of the three types of benefits provided by the government. The first is tax preferences, the second is government subsidies and rewards, and the third is policy privileges.

First, according to the newest version of *Measures for the Administration of the Certification of High-tech Enterprises* put into effect in China in 2016, companies certified as a "high-tech company" can enjoy various tax preferences and administrative supports;²⁰⁷ the certification requires a certain number of IPRs, usually measured by number of patents.

Second, as for subsidies and rewards, because the number of IPRs generated by companies in a certain location has become a measure of local officials' performance, different local

²⁰⁷ In the West, R&D expenditures are treated favourably in the tax codes of many countries; but here "high-tech" companies can get tax preferences not only on R&D expenditure but on many other aspects. See, for example: <http://www.qhipo.gov.cn/zongheguanli/zhengcefagui/difangfagui/2014-11-17/331.html>. Accessed on February 16, 2017.

governments provide various levels of subsidies to patent filings and rewards to patent grants; some of the subsidies and rewards can cover or exceed the entire patent fee (Managing Intellectual Property, 2013), which is about 8000 yuan (US\$1,176) for invention patents, 3000 yuan (US\$441) for utility models, and 2000 yuan (US\$294) for design patents.²⁰⁸ For example, according to a recent study, in 2012, a city in Jiangsu province provided patent subsidies for invention patent applications from 1500 yuan to 3000 yuan (US\$221 to US\$441) and added a reward of 10,000 yuan (US\$1,471) if the application were granted (Lei, Sun, & Wright, 2012, p. 13). One of my interviewees claimed that, in Chongqing Province, although an international trademark usually costs 8,000 yuan (US\$1,176), it is entitled to a subsidy of 20,000 yuan (US\$2,941), while a "well-known" trademark is entitled to a reward of 800,000 yuan (US\$117,647) from local governments in Chongqing province.²⁰⁹ In any case, more subsidies and rewards are based on the qualification of "high-tech" companies;²¹⁰ for example in Guangzhou city, each "high-tech" company is entitled to a reward of one million yuan (US\$147,059).

Third, examples of policy privileges brought by IPRs include the fact that, companies with patents or "high-tech" companies have a better chance to win all kinds of government procurement biddings because owning patents gives them extra points in the government's scoring system (Guangdong Provincial Department of Science and Technology, 2010). IPR-holding companies or projects also get priority in applying for loans from banks (W. Zhang, 2014).

Because IPRs can bring all these benefits, many companies, especially start-ups, and small and medium companies, have been enthusiastically applying for patents to get tax preferences, government subsidies and rewards, or policy privileges. In addition, because the number of patents has become a measure of the performance evaluation of local governments, these local governments are also making great efforts to help or even require local innovative companies to

²⁰⁸ For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early 2017 (where 1 US dollar equals about 6.8 RMB). For details about patent fees, see the SIPO website:

http://english.sipo.gov.cn/application/howtopct/200804/t20080416_380500.html, accessed at April 3, 2017.

²⁰⁹ Interview 2016092B, with an employee at the IP department of a local pharmaceutical company, who is responsible for trademark issues.

²¹⁰ Also mentioned by many interviewees, for example, interview 20160515 with a company representative; interview 20160621 with a lawyer; interview 20160812 with a company representative.

apply. They give subsidies with very low standards, thus too many low-quality or fake patents (patents that are not intended to be used in practice) use a lot of the limited state resources, making the real and high-quality patents less advantageous. But, recently, with the growing number of overall patents, in response to the callout by the central government to promote innovation in a more practical way, local states are raising the criteria for subsidies; in many areas, utility models and design patents cannot bring subsidies to the company any longer; for invention patents, the subsidy amount is also starting to go down.²¹¹ However, other types of benefits are still significant.

1.2.2 Promotion and Publicity Tools to Attract Customers

Thanks to the recent efforts of the Chinese government and the media to publicize IPR in China (BBC, 2004, 2008), IPR has been subject to a lot of attention, which generally attracts more media exposure and influences customers. This promotion effect is significant in China because all major news media are more or less controlled by the state, thus the media tends to cater to the state's propaganda for IPRs. First, the mention of the word "IP" itself can bring a lot of public attention; it has become an advertising tool commonly used on the Internet in present-day China. For example, buying the adaption rights (one element of copyright) of a famous copyrighted novel can bring wide public and media attention, attracting large numbers of potential customers (Mao, 2016). Second, self-owned IPRs in the media have become a symbol for "high-tech" or "high-class", or "international". A product promoted as "embedded with various patents" are more likely to impress Chinese customers when they are making purchasing decisions (P. Lin, 2016).

1.2.3 Attract Capital

Signalling is always an important consideration when a company makes decisions (Connelly, Certo, Ireland, & Reutzel, 2011; J. E. Stiglitz, 2000). Research has already pointed out different types of signalling used to attract capital; for example, studies have found that, in China as in the West, political connections can send signals about a company's quality (Bunkanwanicha & Wiwattanakantang, 2008; Claessens, Feijen, & Laeven, 2008; Fisman, 2001; Goldman, Rocholl, & So, 2008; L. Liu, 2016).²¹²

²¹¹ Interview 20160901A, with the general manager of a private technology company.

²¹² Political connections indicate either the company's influence or the government's approval of the company.

With regard to IPR, its role in attracting capital has already been studied a lot in the West based on signalling theory. Lerner (1994) finds that companies with a larger number of patents are valued more by Venture Capital firms (VCs); Haeussler et al.(2014) and Conti et al. (2013) confirm that more patents and patent citations help to improve a company's chance of getting venture capital. A more specific study of semiconductor companies in the US suggests that patents are important in attracting venture capital funds (Hall & Ziedonis, 2001). Business studies have also pointed out that patents can help companies communicate their asset picture and earnings potential to investors to attract new capital or increase their stock price (Rivette & Kline, 2000).²¹³ In China, studies also confirmed that patents are often used as a signalling tools to attract investments (Ying, Chuanming, & Hualiang, 2016). Although, in the West, this function is mostly still based on the fact that the IPRs provide appropriability, in China, my interviews suggest that it becomes more "form over substance" due to the following reasons.

First, as I introduce in chapter three, most domestic investment companies were only developed in the last few years, and so lack experience; this may contribute to their short time horizon in investments. In this case, many fund managers rely on some readily available indicators of likely performance of investments; they treat number of IPRs as one criterion which can indicate the most pertinent information about a project.²¹⁴

Second, also as I mentioned in chapter three, a large number of domestic VC funds are government-backed. State-owned entities tend to favour formal and direct measures in making investment decisions; moreover, for many party officials who lead government-backed institutions, the most important goal is not to take risk to increase profit, but to spend the allocated money and write a "reasonable" or "legitimate" report without making mistakes (The Economist, July 22nd 2017). In this case, number of IPRs would serve as a "reasonable" point.²¹⁵ Even for investment managers in private companies, the legitimacy embedded in IPRs can also justify their decision, and sometimes cover up the fact that they choose certain projects due to personal relations

²¹³ In addition, IP-intensive projects may be sold at a higher price in the future, providing the investor a withdrawal mechanism.

²¹⁴ Also see Interview 20160517 and 20160722 with company representatives, interview 20160614 with a private VC fund manager, and Interview 20160624 with a state-owned VC fund investment manager.

²¹⁵ Interview 20160427B with a company representative in the movie industry.

or kickbacks.²¹⁶ In this case, the number of IPRs, as an imperfect but quantifiable measure of technology or resource, has become a significant factor affecting investment decisions.

Third, related to sections 1.2.1 and 1.2.2, the expectation of IP-abundant projects to get state support and promotion advantage also gives investors more confidence on the project.

1.2.4 As a Commodity for Speculation

For reasons mentioned above, in China, the value of IPRs sometimes becomes less related to appropriated profits from commercialization or licensing, but more a self-fulfilling prophecy, relying on the public expectation that the IPR be valued also by others (similar to the mechanism of stock prices). Many business institutions purchase IPRs that are still in development (for example drug patents when the drug is still in clinical trials), and then sell them when their value increases (for example when the drug passed the clinical trials). They do not consider the products' long-term performance in the market, but only the premiums they can get from the IPR in two or three years.²¹⁷ While this use of IPR exists in the West, it is more frequent and extreme in China, and even produces speculative bubbles. The reason is that, although in the West the market and economy are more stable, China is experiencing rapid economic development, market changes, and wealth increase; this transitional status may produce unprecedented opportunities and an irrational passion to invest.

The speculation incentive is manifested especially in the copyright area, pertaining to film and scripted television series. From my interviews with company representatives and various news reports, many companies accumulate or invest in IPRs (e.g. adaptation rights for novels) due to speculative bubbles, which are probably caused by the sudden inflow of large amounts of capital into the film industry (Shule Zhang, 2015; Shihao Zhang & Qiu, 2016). According to an IP operator at an entertainment company, the price for adaptation rights (one aspect of copyright) recently rose dramatically because companies in the film & TV sector scrambled to hoard IPs that they may never be able to develop.²¹⁸ (This phenomenon is discussed in more detail in the case-study

²¹⁶ Interview 20160424 with a company representative.

²¹⁷ Interview 20160523, interview 20160319 with company representatives in the medical industry.

²¹⁸ Interview 20160410C, with a film & TV IP Operator.

chapters, (chapter six to eight.) This happens for patents too.

1.2.5 Summary

Some studies suggest that the reasons companies apply for patents may differ across industries and technologies (Warshofsky, 1994). While this is true, in the Chinese context, I found that there are also many commonalities among industries that I studied; each of the previous four points I described is mentioned by interviewees from more than one industry. First, the significance of using IPRs to gain government support is mentioned by a sizeable majority of my interviewees. Second, the functions of IPRs I discussed are also more or less based on their ability to bring government support and policy privilege. Companies in various industries display similar characteristics in exploiting IPR's function possibly because they are facing the same policy context. This is again related to the fact that the Chinese government has a very significant role in the economy and can have a strong influence on the market, compared to governments in the West. Overall, it is clear by now that, as mentioned in chapter one, in China, IP numbers cannot be used to measure IP protection needs of companies; this is because in many cases they need IPRs for certain purposes but do not require the enforcement of these IPRs.

1.3 Why do Chinese Companies Bring IPR Lawsuits

Following the previous section, one question is that, if companies get IPRs to serve alternative purposes that are much less reliant on appropriability protection, why would they raise more and more infringement litigations. As mentioned in section 1 in chapter one and section 2 in chapter three, IPR lawsuits have recently increased rapidly in China: there were 95,522 first-instance IPR civil cases²¹⁹ admitted by all local courts in 2014 (Court, 2015), compared to 13,335 in the US in 2013 and 13,420 in 2014 (The Administrative Office of the U.S. Courts, 2015).²²⁰ The number of first-instance IP civil cases closed in China was 109,386 in 2015 (Supreme People's Court, 2016), among which 98.7% were between domestic companies (Yuan, 2011). The low average

²¹⁹ First-instance case means a case for initial trial, in contrast to an appeal case

²²⁰ There may be differences in data collection and specific statistical approaches, but the gap is large even when these differences are considered.

compensation rate (see chapter three) makes the large number of lawsuits even more puzzling. To some extent, this can be related to a lack of IPR-related experience (see chapter three): in practice, uncertain interpretation of legal concepts can create disagreements and opportunism when companies face infringements, and thereby increasing lawsuits. Another factor is that, the lawyers who accept payment by contingency fees (commissions) may reduce initial litigation costs and add incentives to litigate. However, according to my fieldwork, there may be other reasons that lead to IPR lawsuits, which are not about recovering infringement damages, but for alternative purposes; they are discussed below.

A widely-noticed purpose of IPR lawsuits among big corporations is to send signals to or communicate with competitors. In the West, patent litigation or the threat of litigation has been used a lot in cross-licensing negotiation, especially in telecom equipment sector, where exemplar patents would be sent to litigation as a lever in negotiation (Ludlow, 2015), as in the case where Conner, a company that manufactured hard drives for personal computers, sued IBM for patent infringement in order to push for potential cross-licensing of power-management technology (McHale, 1995), or the case of the DEC-Intel litigation in 1997. A more recent study points out the prevalence of this in the semi-conductor industry and names it "persuasive patent litigation", meaning companies litigate in order to obtain a better deal in a cross-license agreement (Galasso, 2007).

In China, recently a few companies have followed this international trend, and started to use litigation tools in negotiations. For example, recently Huawei, for the first time, sued the world's largest smartphone maker, Samsung, over mobile device patents, clearly with the purpose of pushing for cross-licensing agreements (Thomas, 2016). Some companies intentionally raise big IPR cases, expecting that winning these would produce an image of litigious capability or an impression of being tough, which would make it much easier for them to negotiate with other companies, and to deter non-practicing entities (NPEs), otherwise known as patent trolls.²²¹ However, according to my field study, Chinese companies also have other purposes than signalling

²²¹ Interview 20160801 with a lawyer, interview 20160511 with a representative of a copyright service company, interview 20160803 with a telecom equipment company representative.

or communicating to competitors when they resort to IPR-infringement lawsuits.

1.3.1 Litigation as a Publicity Tool

As mentioned, the government and the media (that it controls) have been making efforts to publicize IPRs in China. Thus, they are likely to publicize IPR-related cases, as propaganda for IPRs; in this case, lawsuits about IP infringement have a good chance of increasing the public profile of the plaintiffs, and thereby having a positive effect on sales in industries where the producers sell to individual customers. This is the case because official media has a large audience as a result of the fact that all major TV stations rebroadcast CCTV (China Central Television) news each day in China. The effect of this is that one news item can bring a lot of exposure to the public. For example, a famous series of trademark disputes between two canned herbal tea brands produced a large number of news reports in various media outlets, making both brands much more recognized by customers (China Economic Weekly, 2015; Song, 2013). Besides official media, companies have learned from experience to use IPR litigation as a publicity stunt on social media platforms such as Weibo (similar to Facebook or Twitter). One TV scriptwriter told me that her company would decide whether to bring infringement lawsuits according to the overall marketing schedule, because IP-related reports immediately before broadcasting can generate a lot of publicity in a short time and attract a bigger audience.²²²

Media coverage of IPR litigation could also be used to defame competitors or damage the reputation of competitors. For example, in the film & TV industry, if a film or TV producer's product has unresolved IP-infringement issues, then its review process (reviewed by the State Administration of Press, Publication, Radio, Film, and Television) might be stalled, and potential buyers (such as TV stations) may hesitate to buy it. In fact, according to one of my interviews, sometimes a company will just release the news that it is planning to sue its competitor for infringement; as long as the news item brings doubts and pressures to its competitor, the goal is met, regardless of whether or not the company wins the dispute.²²³ This is probably why there are a great number of news stories and online discussions about the instigation of certain IPR lawsuits,

²²² Interview 20160423, with a TV scriptwriter.

²²³ Interview 20160503 with a telecom equipment company representative.

but it is hard to find news reporting their results.

1.3.2 Get Judicial Confirmation

As mentioned in chapter three, there are large numbers of utility models and design patents in China that did not go through substantive examination. These patents are considered "not solid" or flimsy, i.e. they can be easily invalidated in disputes. Many invention patents can be "not solid" too, especially if the purpose is not industrial application (and, as mentioned, it could be applied only to meet certain state criteria). In this context, an IP that has won a lawsuit without being invalidated by the infringer could be considered "solid", as if its value is confirmed by the judicial process. Similarly, a trademark can be officially confirmed as a "well-known trademark" during judicial litigation. The effect of judicial confirmation of an IP is mostly reflected in the following scenario: IPs confirmed by judicial process will be more highly valued, and this can bring advantages to the IP holder either by bringing them privileges (in loan applications, for example) or subsidies (some local governments provide subsidies to "well-known trademarks", for example).²²⁴

1.3.3 An Emotional Need-To-Get-Even Response

For IPR holders to vent their anger on the IPR infringer is seldom reason for corporate entities to sue, but it is not rare for individual plaintiffs or start-up companies. Many scriptwriters told me that they knew at the beginning it is very likely the loss brought by a lawsuit would outweigh the gain under the Chinese IPR system, compared to private settlement (where the defendant may be willing to compensate more to keep the plaintiff quiet), but they need to "work off their anger", or to "show some backbone".²²⁵ A copyright lawyer complained to me about how "emotional" scriptwriters can be in dealing with IPR disputes. Although this happens most often for individual copyright owners, similar phenomena exist for patents too, especially for start-ups and small companies. For example, the founder of a start-up company told me that the reason he sued for trade secret violation is to make the infringer "pay for messing with me", even if it means a large

²²⁴ Interview 20160408 with a local scholar who is also an IP law consultant for many companies. For the benefits brought by judicial confirmation of "well-known trademarks" in practice, see <http://hongjian.fyfz.cn/b/415588>.

²²⁵ For example, interview 20160601B with a scriptwriter, interview 20160410B with a scripted series planner.

cost to himself.²²⁶

From the above, it is now clear that, many things can influence IPR-related behaviours other than profit-maximization. As discussed in chapter one, a company's litigious choice is not always based on financial calculation of one or two specific IPs, but may be related to overall company strategies or other incentives. This suggests that domestic companies' interactions with an implanted IPR system in China are more complicated than might be expected; all the points above have complicated it. The large number of IPR lawsuits is not necessarily an indicator or a result of a growing need for appropriability protection.

What needs to be noted here is that, although companies use IPRs for functions besides ensuring appropriability and bringing lawsuits for purposes other than stopping infringers, it does not mean they always do that. In many cases, Chinese companies still have the need to appropriate profits from the IPs they hold, and they might still go to court with the intention of stopping infringements and ensuring appropriability. Companies' behaviours in this situation are discussed in the following section.

2. General Patterns of IP Protection in Industry

In section 1, I discussed how Chinese companies use the IPR system when they do not have the need to ensure appropriability of their IPs. Now the question is, what about those who actually need to appropriate profits from the commercialization or licensing of the invention or creation, and exclude others from infringing upon it? How do they perceive the current IPR environment in China? Are they threatened by infringement in China? How have they kept IPRs protected?

As discussed in chapter one, many previous studies of Chinese IP rights enforcement focus on formal IP protections carried out by state agencies (Dimitrov, 2009; Helpman, 1993; Lejeune, 2014; Massey, 2006b; Mertha, 2005; Scandizzo, 2001; Peter K Yu, 2000). Some corporate strategy literature focuses mainly on the intentional strategy of companies (Hoecht & Trott, 2014; Kumar & Ellingson, 2007; M. Zhao, 2010). However, probably because the concept of IP protection has

²²⁶ Interview 20160526, with the general manager and partner of a medical device company

only been introduced to China recently, I found the existence and the functioning of many alternative protection methods are not motivated by companies' standard IP concerns but do serve to protect them from IP infringements in China's current industrial context. Rather than focusing only on the state or only on corporate IP strategy, we need to combine both the state, or formal, aspect as well as the company, or informal, aspect to understand the Chinese IPR environment.

Through fieldwork in China, I conclude that, whether a company can protect its IPRs from being infringed depends on two factors: first, is the legal protection effective or not for its IPRs? Here by "legal protection" I mean formal protection based on IPR laws; as stated in chapter three, it can include both judicial enforcement and administrative enforcement. Second, are there any alternative protections available, and how do they take effect?

2.1 When Can Companies use Courts to Protect IPs

In the previous chapters, I review the IPR legal system in general, and conclude that, while the codification is well-developed, there are many limits, caused by a general lack of an IPR legal tradition, immature supporting institutions, as well as inexperienced IP-related professionals. More specifically, although the IPR laws and judicial enforcement structures are the same for all industries, two conditions can vary and affect the effectiveness of formal or legal protection in a certain industry.

2.1.1 Legal Definition Related to IPRs

For an IPR to provide effective protection against infringement, one precondition is that relevant rights are effectively defined, i.e. specific legal concepts can be applied without overt ambiguity, as discussed below, and relevant right claims can be strong, i.e. not easy to "invent around" an IP, where, for example, another party develops a property based on an original patent without violating the claims of the original patent.²²⁷ This condition is not always met by codification alone, and this issue is not specific to China. For example, in the US, there is some discussion about the widespread uncertainty over the scope of patents, i.e. when the words of a

²²⁷ According to Cohen et al. (2000, p. 14), ease of inventing around is one of the most cited reasons for not applying for a patent.

patent claim have a wide range of plausible interpretations (Surden, 2011). Merges and Nelson (1994) points out that, the way that the US patent office allows patents to be written leaves room for broad interpretation and a lot of the job of clarification to litigation and the courts. For example, an invention patent described and claimed an exterior wood flooring board shaped to shed water from its upper surface while at the same time providing a surface on which it is comfortable to walk and stand. The device accused of infringement sold by the defendant involves a synthetic (rather than a wooden) board; depending upon the chosen definition, the term "board" is variously capable of covering only wooden, or both wooden and synthetic, boards. The patentee used the word "fibrefill" throughout the written description of the patent, but whether it refers to synthetic materials is subject to interpretation.²²⁸

To make a broad legal concept operational, experienced legal institutions and legal professional groups, or customary principles are needed; as discussed in chapter two and three, those have not been fully developed in China. When the condition is not met, it is hard to even define infringements, not to mention stop them. For example, in the area of copyright, according to jurisprudence, copyright law only protects tangible expressions of an idea, not the idea itself,²²⁹ but there is no universal agreement about the division between the two. Besides, a work of literature contains too many elements, including words, scenes, story, character setting, writing technique, and theme. In this case, it is usually very hard to define whether a work of literature constitutes a plagiarizing infringement or not, or even what exact proportion is substantively similar, leaving the recognition of infringement to subjective judgment.

However, some IP types have very clear operational scope by nature. One typical example is pharmaceutical patents that cover a well-defined chemical composition or compound. The nature of these patents means that one patent can cover one drug, in contrast to medical device patents, where one product is based on multiple patents. These pharmaceutical patents are also usually

²²⁸ For detailed discussion and debates about this patent, see: *Nystrom v. TREX Co.*, 374 F.3d 1105, 1111-12 (Fed. Cir. 2004) at <http://caselaw.findlaw.com/us-federal-circuit/1388191.html>.

²²⁹ This is known as the idea or expression dichotomy. Copyright law generally protects the fixation of an idea in a "tangible medium of expression," not the idea itself, or any processes or principles associated with it. For example, according to Section 102(b) of the US Copyright Act of 1976, no "idea, procedure, process, system, method of operation, concept, principle, or discovery" is eligible for copyright protection.

rooted in chemical engineering that has built an objective vocabulary that allows explicit and clear patent descriptions of chemical drugs (Hanel, 2006, p. 910). In this case a patent can effectively define rights over a specific product or category of products (Barton, 1998), and it is very difficult to bypass or invent around (Taylor & Silberston, 1973); infringements can be comparatively easy to define and recognize.

2.1.2 Complementary Law Enforcement

A clear right claim or infringement definition is only one condition and is not sufficient for legal IP protection to be effective. Another condition is effective IPR law enforcement, where the infringing behaviour can be identified and stopped through a formal procedure (either judicial or administrative law enforcement) at a reasonable cost.²³⁰ I refer to this as "independent effective legal protection" when this condition can be met inside the judicial system (compared to what is described below, where other institutions are needed to meet the condition). In this case, the right holder and his lawyer can easily detect a specific infringement, prove it to the court, and thereby stop the infringer through judicial processes. To take the pharmaceutical compound patent as an example, infringing drugs using the compound can be purchased openly in the market, so the right holder can easily obtain the infringing evidence and bring it to court.

But in some cases, although infringement is clearly defined, it is very hard for the right holder to inspect, prove, or stop the infringing behaviour, either because the infringing behaviour is covert (for example, evidence of infringing a process patent is usually only visible inside the infringer's factory) or because there are too many scattered infringers (for example small vendors selling counterfeit garments). In this case legal protection for IPRs can be ineffective, or at least highly uncertain.

In another case, even though it is very hard for the right holder to inspect, prove, or stop the infringing behaviour through judicial process, some administrative institutions wade in due to political concerns. For example, as with counterfeit garments, local online movie piracy is too

²³⁰ As for "reasonable cost", what needs to be noted is that it is not an absolute concept but comparative. For example, large companies usually have more resources and can afford a larger cost to detect infringements and gather proofs. A lot of previous literature suggests that patents as a protection method are more effective for large companies, that can afford the financial burden brought by litigation that can dissuade small companies (Cohen et al., 2000; Hanel, 2006; Leiponen & Byma, 2009).

scattered to be inspected by any single right holder,²³¹ however, probably due to the concern that unregulated content can contain politically dangerous opinions or “negative views”,²³² the government has made a large effort to monitor and stamp out online movie piracy.²³³ One effort is the multi-ministry anti-piracy "Sword-Net" campaign that aims to improve online copyright management (BBC, 2015).²³⁴ These efforts have significantly reduced online piracy and made it much less of a concern for film and TV producers in present-day China.²³⁵ Another example, mentioned in chapter three, is when, in 2008, the Beijing Administration of Industry and Commerce increased inspection frequency and strictness for the Olympic-symbol related market, leading to a huge reduction of trademark infringement. Because enforcement effectiveness like this mainly depends on IPR law-based administrative monitoring, instead of judicial procedures, I refer to it as "dependent effective legal protection". As pointed out in chapter three, campaign-style administrative enforcement like this can be inconsistent.

When legal definitions are not clear, or when complementary legal enforcement, through either judicial or administrative institutions, is difficult, legal IP protection is ineffective. However, even in this case, if there are alternative protection methods, a company is not necessarily threatened by infringement. In fact, although large companies are usually more capable of inspecting and proving infringement, in China they are more cautious about launching a lawsuit. This may be because various alternative protection mechanisms are effective. This issue is explored in the next section.

2.2 Potential Alternative Protection

Aside from legal enforcement, there are other mechanisms that can alleviate the threat of infringement, usually by making infringing behaviour unprofitable. This can be achieved either by

²³¹ Interview 20160419 with a representative of a film & TV production company.

²³² “Negative views” is a general term that mainly refers to views not liked by the government, such as lewd behaviour or vulgarity. In June 2017, local authorities shut down video- and audio-streaming services on a few big websites, and forced the websites to remove all relevant content that was considered to contain “negative views” (The Economist, July 1st 2017).

²³³ Interview 20160521 with a film producer; interview 20160516 with a representative from a copyright association.

²³⁴ Also see <http://ip.people.com.cn/n1/2016/0826/c136655-28667239.html> for a related report.

²³⁵ Interview 20160424 with a representative from a big streaming video website; interview 20160427A with a film producer.

reducing infringing benefits, for example distinguishing the original product from infringing products through complementary sales (i.e. bundling), or through increasing the cost of infringement, for example potential punishment from various syndicates and organizations (Anand & Galetovic, 2004). As discussed in chapter one, a large amount of company strategy literature has discussed alternative methods Western companies use to protect themselves from competition from imitators or infringers (Arundel & Kabla, 1998; Cohen et al., 2000; Hoecht & Trott, 2014; Kumar & Ellingson, 2007; Levin et al., 1987; Ordover, 1991). Among the strategies mentioned in this literature, first-mover advantage, bundling, distribution channel control, and internal secrecy management have been most identified and are discussed below. Studies about alternative IP protection methods in China (Keupp et al., 2009; M. Zhao, 2010) claim that companies in China also tend to craft similar alternative IPR strategies to prevent infringement.

As discussed in chapter one, previous literature has treated alternative protection mechanisms as a strategic choice for companies but, in China, such alternative mechanisms may take effect without action from companies that intentionally targets IP protection. This situation creates an interesting phenomenon: while legal IP protection criticized a lot for being inadequate, many IPR-intensive companies do not complain about the general IPR environment, and do not worry about infringement. To make sense of this phenomenon, in this section, I describe four major alternatives I found. It needs to be noted that, these alternatives are not mutually-exclusive; in fact, more than one of them can take effect in the same industry simultaneously.

2.2.1 Market Access Control

Here, by "market access control" I mean control exerted by administrative agencies in the government. For certain industries, the government has established special institutions to control the market entry. Even though the control is not based on IPR laws but mainly product regulations, sometimes it can serve as a barrier to block potential imitators or infringers, giving the IPR holder a semi-monopolistic advantage. This mechanism has been ignored by most corporate strategy literature about IP protection, because it is not a "strategy" adopted by companies but a policy context that companies need to cope with. However, according to my field study, this could be a very powerful mechanism to curb IPR infringement.

First, this control can come from the central government. For example, in many countries, drugs need go through registration and approval processes at the drug regulatory body to get into the market. In the US, the drug development process includes (1) discovery and development, (2) preclinical research, (3) a clinical trial approval process, otherwise known as Investigational New Drug (IND) approval (4) clinical research, (5) FDA review (the examination).²³⁶ Step 3 usually takes a few months to one year in China, compared to, typically, a few weeks in the US (J. Wang, 2015), while step 5 usually takes 3 years or more in China (mostly due to the long waiting period),²³⁷ which is much longer than that in many other countries (Fassbender, 2016; Grace, 2004; Jin, 2015; The Economist, June 16th 2005). In this case, administrative control can serve to keep potential imitators out, giving the IPR holder enough time to take hold in the market and make profit. Medical devices and certain food products are also subject to similar controls.

Second, market access control can come from local institutions. For example, in China, all hospitals from the same province make purchase decisions by means of a bidding system, usually, every three to six years.²³⁸ Many countries have a similar provincial bidding system for drugs, but their bidding frequency is higher than in China; for example, the frequency in France and the UK is at least once a year (Fu, Lan-xiang, Yuan, & Chen, 2015, p. 4). In China's case, once a drug has won the bid, it sells in the provincial market without worrying about new competitors for many years until the next bidding. The chance of getting onto the medical insurance list of a specific province is also achieved through a similar bidding system (here the bidding is between the provincial government and producers).

2.2.2 First Mover Advantage

The Western literature discusses complementary capabilities or resources such as marketing experience, distribution channel control, bundling sales or services, or more mature internal supporting structure; these can be strategically used by leading companies to keep imitators and

²³⁶ See US FDA website: <https://www.fda.gov/ForPatients/Approvals/Drugs/ucm405622.htm>, accessed on April 5, 2017.

²³⁷ The Centre for Drug Evaluation (a branch of the SFDA that oversees clinical trial and drug registration applications) only has about 100 employees to handle thousands of new drug applications each year, compared with over 2,000 employees in the US Food and Drug Administration (FDA) (China Pharmaceuticals & Health Technologies Weekly, 2011), dealing with only dozens of new drug applications each year.

²³⁸ Interview 20160623 with a pharmaceutical company representative.

infringers at bay, and to appropriate innovation-related benefits (Cohen et al., 2000; Keupp et al., 2010; Levin et al., 1987). These complementary advantages can help ensure a certain market position of the original product, and make it difficult for imitators or infringers to enter. A famous example is the credit card company Capital One, that regularly overwhelms its rivals with a blizzard of new products. To be able to do this, it gives individual analysts, who have access to vast amounts of information on customer behaviour, the authority to make credit and pricing decisions. Its analysts also coordinate the work of IT personnel, market researchers, and statisticians before a product is launched. In addition, Capital One's accounting system can tell when a product's commercial life in each of the markets it has entered is coming to an end. Would-be imitators cannot keep up because they lack this necessary internal support structure, which serves as the seedbed for these new products (Anand & Galetovic, 2004). In China, while companies do not always intentionally explore these capabilities to ensure IP appropriation, they help the companies prevent potential infringers. Although professional internal supporting structure, such as the one Capital One relies on, is less indicated in China (possibly due to the short history of a market economy, discussed in chapter two), my interview subjects mentioned other forms of complementary capabilities and resources a lot during my field work; these mainly included product novelty, marketing experience, channel cultivation, and bundling.²³⁹ These are discussed in the following.

First, the element of novelty itself can bring huge advantages to first movers. For example, with regard to the online-TV or streaming industry (analogous to Netflix in the US), the recently-developed video streaming websites mainly make profit by means of clicks and page views. Because novel and curious elements are the key factors in attracting the attention, discussion, and clicks of internet users, after the screening of a successful TV show, those imitating or plagiarizing it would not attract so much attention and clicks.²⁴⁰ We could say the original TV show has already seized this part of the market by occupying the attention of the public, making it harder for

²³⁹ It may be self-evident but it should be noted that, under the same market condition, large companies with more resources are more likely to have these advantages than small ones.

²⁴⁰ Interview 20160424 with a representative from a top streaming website.

imitators to profit from this market again; see chapter eight for examples. This effect is especially prominent in China, because Chinese customers are comparatively more “voracious and venturesome” and are more interested in novel products than Western consumers (The Economist, September 23rd, 2017). Second, to get into the market earlier provides the first mover more time to study the market and accumulate experience in marketing, which latecomers would not have. Third, the company representatives I interviewed mentioned established distribution channels a lot, as an important reason why potential infringement would not be a threat.²⁴¹ Cultivating distribution channels usually requires long-term interactions revolving around an IPR product, which cannot be achieved by an infringer new to the market. Fourth, "bundling" means to bundle the IPR-embodied product with high-value add-ons that cannot be copied. A typical bundling is to provide buyers of an original CD a backstage pass or the opportunity to chat with the singer; service-based add-ons of original software have been a major mechanism to deter piracy in the Chinese software industry.²⁴²

2.2.3 Technological Dynamics and Technical Base

Often the potential infringer cannot offer identical product as the IPR holder, i.e. customers can somehow distinguish the original product from its imitators, for example, on the basis of appearance or quality; it is therefore less of a threat to the innovator. Many innovations involve a certain amount of know-how, experience, or industrial technical base, accumulated with the investment of time and capital (including human capital). These elements can be essential to the manufacturer's engineering and production process, without which a potential infringer would not be able to produce identical products as the right holder, at least in a certain period of time. In this case, the innovation itself embodied certain elements that make it less vulnerable to infringement; these elements can either prevent imitators from producing it or prevent them from providing necessary technical services. In some industries, technological development is so fast that when the imitator has developed the same production ability for a certain product, that product may have

²⁴¹ For example, interview 20160830 with a pharmaceutical company representative; interview 20160518B with a representative from a consulting company focusing on the medical sector.

²⁴² Interview 20160616 with a software company representative.

already become obsolete. For example, in the smartphone industry, since entering the 4G era, companies usually do not worry about scattered copycats as much as before, because they know that the small factories do not have the technical capacity to produce 4G smartphones.²⁴³

Many western studies have pointed out the importance of secrecy in stopping competitors from learning about the production process (Cohen et al., 2000; Robson, Townsend, & Pavitt, 1988). While secrecy is also an effective mechanism to create technological or technical barriers in China, according to my fieldwork, the most important thing is not that certain know-how can be kept secret, but that it cannot be mastered by imitators in a short time even if they understand it theoretically. For example, when I ask Chinese company representatives why they are not worried about IPR infringements, many mentioned that, even if competitors know about the idea and the related principle, they do not have the capacity to copy it; this is due to the lack of certain level of technical precision,²⁴⁴ processing craft,²⁴⁵ and production environment control,²⁴⁶ among others. Some also mentioned that, because they are continually updating their techniques, imitators do not have enough time to master the process and compete with them.²⁴⁷

2.2.4 Information Impactedness and Reputation

Sociologists since Simmel (Simmel, 1907 [1978]) have emphasized the significance of trust in economic transactions; game theorists have further analysed the role of reputation in repeated games (i.e. long-term interactions); organizational studies point out that ties within an industry push toward conformity to industry norms (Geletkanycz & Hambrick, 1997). The factor related to networks and reputations has always been neglected in previous IPR literature; however, I found it very prominent in China; its importance mainly comes from the incentive of different parties to reduce transaction costs through personal connections. Transaction cost theory claims that, when the environment is characterized by uncertainty, and individuals are characterized by bounded rationality (both neurophysiological and language limits on the mind which prevent full

²⁴³ Interview 20160601A with a representative from a telecom equipment company.

²⁴⁴ Interview 20160429A, with the Executive Director of a pharmaceutical company.

²⁴⁵ Interview 20160515, with the Vice President of a medical device company.

²⁴⁶ Interview 20160518A, with a manager at a consultation company focusing on medical industry.

²⁴⁷ Interview 20160526, with the general manager (and partner) of a medical device company.

appreciation of the potentialities of a situation) and by opportunism (the pursuit of self-interest by means of taking advantage of incomplete information possessed by other parties), there will be the problem of information impactedness, i.e. true underlying circumstances are known to some parties but that they cannot be discerned by others without a certain cost (Williamson, 1975). This can be solved through vertical integration but, in China, companies mainly rely on connections and reputation to reduce the cost of searching for the right employees and cooperators, as well as the cost of evaluating imponderables such as performance (for example, in film production, whether the actors have done their best or not). In this case different parties in the industry are pressured to maintain good reputations; this leads to their reluctance to infringe others in the same network.

In some industries in China, the necessity of multilateral cooperation produces the incentive to use reputation information to reduce transaction costs, while close-knit networks make reputation information available and reliable; in combination, those two features make reputation a significant factor. There might be different components of reputation, such as working ethics and honesty. Although not the most important factor, a party's history of infringement is also one of the components of reputation, and can become important, everything else being equal. For example, in the film and TV sector, reputation with regard to infringement is usually negligible if the presumed infringer has a reputation for efficient work and a grasp of the market; however, when two competitors have more or less the same ability, and one of them is said to infringe a lot, the decision-making party may choose the party with the better reputation, just to play it safe (to eliminate the possibility of the film or TV show being banned or being boycotted by consumers). In this case, the cost of reputation loss may be a potential disadvantage to finding future cooperators or investors; the fear of bearing these costs would then reduce the incentive of these parties to infringe and thereby serve as an alternative protection mechanism.

A typical example is related to plagiarism in the Chinese film industry. First, the production of a film requires cooperation among various parties, including scriptwriters, directors, actors, and production studios; these may not always belong to the same organizations. With the increasing cost of film production, in present-day China a film with a high budget usually requires the co-

investment of multiple companies. The necessity of both internal and external cooperation imposes a huge cost for companies to search for cooperators; thus they tend to rely on networks to get reputation information to reduce information impactedness and the uncertainty brought about by it.²⁴⁸ Second, according to reports and my interviews with film directors, producers, and scriptwriters, the film industry in China has a close-knit network where most company leaders know each other, and most directors are alumni of the same film schools (Y. Yang, 2001). In this case, many film producers pay extra attention not to be labelled as "infringers", or else it may give them disadvantages in seeking external cooperation in the future. In comparison, in a similar industry requiring external cooperation, where the social network is less close-knit, the traditional TV industry, infringement in the form of plagiarism is much more frequent.

2.3 Summary

After describing each alternative protection mechanism, it needs to be noted again that, the existence and the functioning of these alternatives in China are usually not motivated by companies' standard IP concerns but do serve to protect them from IP infringements in China's current industrial context. Most of the companies I interviewed did not even realize that they had to make special efforts to "cope with the weak IP protection environment"; this is mostly because, although not treated as IP strategies, the above-mentioned alternative mechanisms have solved many IP problems. The following three points support this argument.

First, the alternative protection mechanisms existed before TRIPS. Previous studies suggest that Chinese companies started to intentionally adopt alternative strategies to protect their IPRs only recently with the growing awareness of IPR after China joined TRIPS in 2001 (M. Zhao, 2010); however, what I found is that, companies have benefited from market access policy, complementary capabilities, technical dynamic and social network structure in appropriating innovation profits many years before TRIPS. This has to some extent indicated that the alternatives are not choices motivated by growing awareness of IPRs, but are shaped by the general industrial

²⁴⁸ Interview 20160410A, with a film director and scriptwriter; interview 20160427A, with a film producer.

environment. For example, according to my interviews, for many years before 2001, the social network among those who work in the film industry had already been very close-knit and hard for outsiders to penetrate; in fact, it was actually much more close-knit in the past than it is today.²⁴⁹ Another mechanism, complementary capability (including first-mover advantage, market channel control, and bundling) has always been pursued by companies even before IPR laws were introduced.²⁵⁰

Second, the alternative protection mechanisms are not subject to company choice. As discussed, the market access control policies that can help block infringers in present-day China (for example CFDA examination) cannot be intentionally chosen by companies, but are policy contexts in which they have to operate. If anything, according to my interviews, the companies would prefer less strict state control, because they themselves are also limited by it.²⁵¹ Similarly, to a large extent, companies cannot intentionally choose the social network environment they are in.

Third, interviewee reactions indicate a lack of IP concerns. Most interviewees at first did not express any concern about infringements; only after my further inquiry would they start to think about why they were not concerned. This has, to some extent, suggested that the workings of these alternatives may not be motivated by IP concerns of companies.

In sum, because the modern IPR system has a short history, few Chinese companies intentionally adopt intentional IP strategies motivated by the standard IP concerns. Most of the time, it is the policy or market environment that has eliminated the risk of IP infringement in advance; in this case, the companies actually benefit from certain alternatives without treating them as alternatives for judicial IP protection. This is why many companies I interviewed, although they do not trust judicial enforcement, feel IPR infringement is not a serious problem in China. Now, another question is, if these alternative IP-protection mechanisms are available more due to context than agency strategies, which contextual factors are relevant, and how do they interact with

²⁴⁹ For example, interview 20160423 and interview 20160703 with scriptwriters; interview 20160628 with a representative from a film distribution company.

²⁵⁰ For example, interview 20160429A, interview 20160518B, and interview 20160812 with company representatives.

²⁵¹ For example, interview 20160526 and interview 20160830 with company representatives.

each industry? This is discussed in the next section.

3. Industrial Characteristics that Intermediate the Use and Protection of IPs

In the previous sections, I discussed when legal protection is or is not effective, and which potential alternative protection mechanisms may be available (market access policy, complementary capabilities, technical dynamic and reputation pressure inside a social network). In industrial practice, which of the protection methods are available or effective are usually not in the control of individual companies, but it is to some extent determined by industrial characteristics. Many Western studies have pointed out that the effectiveness of IP-protection strategies will differ by industry (Baldwin, Hanel, & Sabourin, 2001; Robson et al., 1988). For example, many have found that companies in pharmaceutical industries consider legal patent protection to be a more effective means of appropriation of innovation benefits, compared to companies in most other industries such as mechanical engineering (Levin et al., 1987; Taylor & Silberston, 1973).

In China, there are two separate but connected questions that need explanation. First, under the same IPR legal system, why is the legal protection effective in certain industries but not in others? Second, when would the alternative mechanisms be available and why are they available to certain industries but not to others? In the following paragraphs, to address the first question, I distinguish different types of technology, and how legal definitions and legal enforcement are affected by the nature of technology in specific industries. To address the second question, I consider other industrial characteristics besides the nature of technology. I summarize different characteristics by categorizing industries into two types: *hard-entry or closed* ones vs. *easy-entry or open* ones. Closed or hard-entry industries have comparatively stricter administrative access control, more concentrated distribution channels, higher technological or technical barriers, or a more close-knit social network. In sum, it is hard for imitators to get into the market once the innovators are already there. Open or easy-entry industries are the opposite, i.e. it is comparatively easy for infringing imitators to make profits in the market. In general, alternative protection methods are more likely to be available to prevent infringements in the hard-entry industries.

3.1 Technological Characteristics and Legal Protection

As discussed in section 2.1, two conditions are required for effective legal IP protection: clear legal definition and complementary enforcement. Technologies in some industries have a better chance to get effective protection from the current IPR system, because it is easier for them to meet these two requirements.

3.1.1 Legal Definition and Technology Type

According to standard definitions, a product or process is referred to as being “of complex technology” when it is comprised of numerous patentable elements; this contrasts with a product or process that is referred to as being “of discrete technology” when it is comprised of relatively few patentable elements. As mentioned in section 2, for an IPR to be operational, it should effectively define rights over a specific product or category of products (Barton, 1998), and be difficult to bypass or invent around (Taylor & Silberston, 1973). Under the current Chinese IPR system, products of complex technologies, compared to that of discrete technologies, are less likely to meet these conditions.²⁵² For example, electronic products like cell phones are complex-technology products, because one cell phone is comprised of many patentable elements; chemical drugs are discrete-technology products, because one drug is comprised of only one patentable compound. Most copyright products can be considered “complex”, because usually a copyrighted work includes various components, for example as mentioned, a novel or a script includes words, scenes, plots, character settings, writing techniques, and themes. For a complex technology, such as telephone patents, one single IPR would not be able to define rights over a specific product; this can create ambiguity in right claims and make it easy to be invented around (as discussed below); it can be compensated by experienced legal institutions, because ambiguous concepts get clarified through years of legal practice. In comparison, in the case of discrete technology, such as a drug compound patent, one IPR can effectively define rights over a specific product or category of products (Hanel, 2006, p. 901).

²⁵² For studies that make a distinction between these two types of technologies, see Levin et al. (1987), Merges and Nelson (1990), Kusunoki, Nonaka, and Nagata (1998), and Kash and Kingston (2001).

In a more mature IPR system, various customary rules or experiences may develop to reduce the inequality produced by the technological nature of the products or processes. But, in present-day China, sometimes even IPR judges feel that there is no clear rule to follow in declaring infringement involving discrete-technology products.²⁵³ In this case, companies are more likely to accumulate IPRs for other functions (as mentioned in section 1) instead of direct appropriation.²⁵⁴

3.1.2 Enforcement Difficulties and Technology Types

As discussed in section 2, when the infringing behaviour can be identified and stopped through a formal procedure (either judicial or administrative) with a reasonable cost, legal enforcement can be effective. Here, a major difference exists between product innovations (where patents cover the product itself, for example a drug substance patent covering the chemical composition of the active ingredient) and process innovations (where patents cover manufacturing methods). Because processes are less visible to outside scrutiny after production, compared to products, process infringements are more difficult to detect by right holders alone. In this case, when there is no third-party help to detect these hidden infringements, it is very hard for the right holder to prove them in court. It can be said that product gets better protection through patents than processes do, while processes might be better protected through secrecy (Robson et al., 1988). In fact, many company representatives, scientists and lawyers told me that process patents are "not useful" in appropriability protection due to the difficulty of identifying and proving infringement.²⁵⁵

3.2 Alternative Protections According to Industry Types

In the beginning of section 3, I categorized industries into two types with different characteristics: *hard-entry or closed* ones vs. *easy-entry or open* ones. This distinction is more an

²⁵³ Interview 20160704 with an IPR judge.

²⁵⁴ For example, Hanel (2006, p. 902) also mentions that, for complex-technology products such as communication devices, because they use many patents belonging to different companies, the principal value of patents is to serve as bargaining chips for settlement and cross-licensing.

²⁵⁵ For example, interview 20160627 with a biomedicine researcher, interview 20160801 with a lawyer, 20160726A with a company representative.

issue of extent, which can be identified through comparison. It is harder for imitators to make a profit in closed or hard-entry industries, because there are alternatives to legal methods that can help the first mover block latecomers or imitators. As discussed, the availability of these alternatives and associated entry difficulties are due more to industrial characteristics rather than to the strategic choices of companies. Hard-entry industries enable innovative companies to block imitators because they exhibit the following characteristics, each corresponding to an alternative protection, already mentioned.

3.2.1 Complexity and Dynamics of Technology or Techniques

I have introduced the idea that the time and resources required to develop production capabilities can serve to forestall infringers. First, the more complex the technology or accompanying know-how is, the more difficult it is for a potential imitator to copy it based on patent description alone; in this case, a longer time would be needed to develop the capability of copying the original product, or at least not with the same quality. Second, the more rapidly technology changes, the harder it is for imitators to catch up before the product become obsolete in the market. Both mechanisms have served to reduce the threat of infringements. In comparison, when technology in certain industries is straightforward (i.e. can be copied based on a simple patent description) or slow-changing, this alternative would not be effective.

3.2.2 Comparatively Stricter Administrative Regulation

Usually, there is a time lag between when an imitator sees the original product and when it can produce or sell the product. Sometimes this lag can be extended by administrative processes, to give the original product enough lead time to appropriate profits. For example, as mentioned, the China Food and Drug Administration controls the production permissions and market-entry permissions of food and drugs; the administrative review process would take up to one year before a product can enter the market (China Pharmaceuticals & Health Technologies Weekly, 2011). In comparison, one example of the easy-entry industry is the online novel industry, where the original product can be copied in an instant and then published immediately. Because there is no authoritarian control over the publishing of online literature, administrative market access, as an alternative, is not available here.

3.2.3 The Effect of Market Characteristics on Complementary Capacities

As discussed, some complementary advantages that the first mover has can help ensure the market position of the original product, and make it difficult for imitators to enter. Certain market characteristics of the hard-entry industries are more favourable towards the establishment of complementary capabilities in blocking infringers. I have mentioned three types of advantages brought by established capabilities that can prevent infringement: the element of novelty, channel control, and bundling sales, all three of which are more or less related to market characteristics.

First, in some cases, the market has a taste for novelty, thus, imitators would not attract many consumers even if they got into the market. I have discussed the example of the online-TV industry, which has been expanding rapidly in recent years. In this newly developed industry, clicks and page views has become the key revenue source, and scripted series with novel elements can attract a lot of internet audience attention and clicks, making it harder for similar latecomers to attract the same number of clicks. This is part of the reason why there is less plagiarism in the online-TV industry, compared to the traditional TV industry, where all TV stations are state-owned; in the traditional TV industry novel elements and clicks from curiosity are not the crucial factors to be considered, and the market is tolerant of repeated content²⁵⁶ (discussed in detail in chapter eight, the industry case study).²⁵⁷

Second, when the distribution channel in the market is highly concentrated, it is very hard for imitators to enter the market after the original product has established connections with channel providers. For example, most drug producers need to cultivate connections with their major market channel, i.e. hospitals, through the activity of sales representatives. For a certain kind of drug, one hospital usually only purchases from one or two producers. In this case, once one producer has built connections with hospitals and taken up one position in their purchase catalogue, it would be very hard for subsequent imitators to get in.²⁵⁸ In comparison, before recent industrial integration

²⁵⁶ Here repeated content can refer to reruns of original shows and also derivative content that has similar storylines to original shows.

²⁵⁷ Interview 20160423 with a scriptwriter, interview 20160424 with a representative from a top streaming video site, interview 20160703 with a scriptwriter, interview 20160514 with a scriptwriter.

²⁵⁸ Interview 20160429A with a pharmaceutical company representative, 20160517B with a sales representative of a domestic pharmaceutical company.

that concentrated distribution power in only a few streaming video websites, the online-TV industry was subject to serious infringements, because the Internet provided seemingly countless platforms or channels to publish scripted television series. However, recently, with the growing concentration of streaming video sites, most consumers only go to the three or four biggest websites to watch shows; now it is very hard for unauthorized content to reach audiences, and infringement has become much less a problem for online-TV producers.²⁵⁹

Third, while bundling sales to a large extent depends on individual company resources, in certain markets it is more important in general, because the product itself requires bundling to be useful to consumers. For example, in the financial software industry, what consumers want to buy is not just the software but also the bundled services, including explanations on how to connect it with corporate networks, adjustments with regard to legal changes, or updates with regard to tax policy changes (because how the software calculates taxes are related to tax policies).²⁶⁰ All these services require domestic experience and familiarity with regard to the macro policy environment in China. In this case, a pirated software producer usually cannot provide such experience-based services to consumers, making it useless in the market.

3.2.4 Cooperation, Network and Reputation

I have mentioned that, in some industries, the necessity of multilateral cooperation creates the incentive to use reputation information to reduce transaction costs, while close-knit networks make reputation information available and reliable. In this case, the pressure to maintain a good reputation may serve to prevent IPR infringement; the more frequent multilateral cooperation is, and the more close-knit the network is, the more significant this mechanism is.

Industries where product quality is hard to measure are most likely to develop a reliance on reputation, and develop a close-knit network structure. In the manufacturing sector, it is known that more precise procedures can produce higher-quality products; but in the film industry, many interviewees said that no objective measures (the size of the studio, production budget, the

²⁵⁹ Interview 20160424 with a representative from a top streaming video site; interview 20160521 with a film and TV producer.

²⁶⁰ Interview 20160616 with a financial software provider; I also interviewed a few representatives from professional software companies in 2015.

popularity of the original novel, among others) are reliable in predicting the final quality or market success of a film.²⁶¹ Without objective measures to resort to, companies face the problem of transaction costs, especially impacted information and the uncertainty brought by it; thus in making investment and cooperation decisions, people rely more on information they get from networks (for example about the accountability of their potential cooperators). These characteristics make reputation inside a network very important, and can, to some extent, limit domestic infringements.

4. Conclusion

In this chapter, I discussed alternative functions of IPRs in China, the reason why companies bring IPR lawsuits, the factors that affect legal enforcement effectiveness, and alternative protection mechanisms available to companies. At the end of the chapter, I discussed which industry characteristics lead to the differences in these aspects. It can be concluded that, IPR-industry interaction patterns (including the role of IPRs, the role of IPR legal institutions, and alternative IP protection mechanisms) would differ in different industries, due to the technological and industrial characteristics described. In the following few chapters, I use detailed case studies of different industries to further elaborate the points developed here.

It should be noted, in the discussions above, I did not focus on trademark protection, but its interaction with companies shows its own patterns, which is to some extent different from the patterns we see with patents and copyrights. From my fieldwork, I found that trademark is important under certain industrial structures: (1) a large part of that industry is the B2C market; (2) there is a lot of know-how embodied in industrial products, and companies need to inform consumers about the associated differences. For example, trademark protection is highly valued in the Chinese medicine industry.

As for the protection effectiveness of trademarks, I found that it differs by size of infringing parties. I attributed the effectiveness of legal protection to two factors in previous sections about

²⁶¹ For example, interview 20160426C and interview 20160426D, with representatives from a Movie Research Company; interview 20160427A with a film producer.

patents and copyrights; one is the clarity of legal concepts, and another is the ease of proving infringements. In the domain of trademarks, especially with regard to counterfeiting, no matter in which industry, the definition of infringements is usually very clear, using the same trademark without authorization. However, the ease of detection and proving an infringement varies according to the size of the infringing party. If a company's major concern is infringement from big companies, then legal trademark protection can be very effective in China, because it is very easy for the innovator to monitor a big company and to collect its product from the market. For example, big Chinese medicine companies seldom worry about trademark infringements from other big companies. These companies know that, if some big competitor does infringe on their trademarks, it would be very easy to win a lawsuit against the infringer. However, if a company's major concern is infringement from small companies or scattered individual workshops, private detection can be quite difficult. In this case, the protection effectiveness is inconsistent, depending on the supporting enforcement mechanisms; more specifically, it mainly depends on the intensity of administrative action in a certain period. One example is the garment industry; trademark infringements such as counterfeiting decrease largely during local government "hard-strike" (*yan da*) operations, when large numbers of government employees are sent out to inspect major streets and markets for counterfeit items; once the operation is over and there is no public effort to detect infringement, garment counterfeiting increases again.

Chapter VI. Case Study: The Medical Sector

In this chapter, I discuss the medical sector in China. Here I include both the industries related to drug production (mainly including the manufacturing of chemical drugs, traditional Chinese drugs, and biological drugs) as well as medical device production. Although they belong to different categories in the SIC code and NAICS code in the US, in China, they are often grouped in the same sector by the government, the media, industrial researchers, and investors, with the name "medicine-health sector".²⁶² For example, in the *Catalogue for Guiding Industry Restructuring (2011 Version)* issued by the National Development & Reform Commission (NDRC), the three pharmaceutical industries and the medical device industry are included in Category VIII, i.e. Medicine. In the *Guiding Opinions to Promote the Healthy Development of the Medical Sector (2016)* issued by the General Office of the State Council, both the pharmaceutical industries and the medical device industry are included. The *Investment Promotion Report on Chinese Medicine-Health Sector 2016*, jointly issued by the Investment Promotion Bureau of the Ministry of Commerce and the private consulting firm Deloitte, also put these industries together as one sector with similar market and policy environments, i.e. the Medicine-Health Sector.

This grouping is perhaps due to the following shared characteristics: (1) They are both health-related industries subject to the supervision of the China Food and Drug Administration (CFDA), because quality control is important; (2) As discussed below, companies in these industries all need to deal with hospitals, which are the main distribution channel for these products; (3) The logic of "safety first (i.e. profit maximization is less important than survival)" is especially important for hospitals and medical consumers, and this can shape company behaviour in practice. (This last point is elaborated in section 2.3 of this chapter.)

I interviewed 25 company representatives in the Chinese medical sector. This chapter is mainly based on data from those interviews; in addition, in the medical device industry I also collected data from participant observations at certain sites, for example an exhibition where

²⁶² Note that in the SIC there is no separate code for traditional Chinese drugs; it is unique in China that traditional Chinese drugs make up a significant industry.

various product producers are present, covering products from medical consumables, rehabilitation equipment, to medical imaging equipment (X-ray, ultrasound, nuclear). Some secondary literature, such as industrial reports, are also used. In the first section of this chapter, I introduce the general background of this sector, including patent types (according to which feature of the product it applies to, for example for drugs: the drug substance itself; the method of use; the formulation; or the process of making it); I also introduce the general regulatory background. Then, in the second section, based on the framework developed in chapter five, I discuss the four specific aspects of industrial characteristics that affect the availability of alternative protection methods, which a company can use to appropriate the benefits of its innovation investment (i.e. to exclude exploitation of others and monopolize commercial profits); these four aspects include: technological characteristics, administrative regulation, market characteristics, and social network structure; companies can use these alternative protection methods.²⁶³ In this process, I explain how each specific industry in this sector differs with the others. In the third section, I elaborate how companies use patents in each industry and which protection methods are available to them. This chapter is structured this way because: (1) understanding product features and the institutional background can help readers understand industrial characteristics; (2) both the institutional background and industrial characteristics will set the context for the behaviours of companies and limit their choices.

1. General Introduction to the Medical Sector

In this study, "the medical sector" includes industries related to the manufacturing of the following four kinds of products:²⁶⁴

- (1) Chemical drug manufacturing: the manufacturing of chemically derived medicinal products, usually produced through synthesis.
- (2) Biologics manufacturing: the manufacturing of therapeutic biological products

²⁶³ The word "appropriate" is used a lot in scholars' discussions of intellectual property, to indicate the act to monopolize commercial profits and to exclude exploitation of others. See Tidd et al. (1997, p. 181); WIPO (2003, p. 2).

²⁶⁴ Here to avoid overly complicating the issue, I do not include the medical service sectors.

(usually composed of sugars, proteins, or nucleic acids, or a combination of these substances) through biological processes.

(3) Traditional Chinese medicine (TCM) manufacturing: the manufacturing of TCM (mainly include elements or extractions from herbs, animal parts and minerals) based on medicinal recipes. There are two main types of TCM: (a) Traditional medicinal raw materials, such as elements of or extracts from herbs; the patient can decoct these materials to make medicinal soup. (b) Chinese “patent medicine” or nostrum (here “patent” refers to the standardization of the formula by a particular company, somewhat analogous to what is known in the West as “patent medicine”, prior to the twentieth century, not in the intellectual property sense), i.e. these are standardized herbal formulas; the product can be found in the form of teapills,²⁶⁵ oral solutions, plaster, capsules, among others, and all are comprised of powders or liquids, extracted from the raw materials.

(4) Medical device manufacturing: the manufacturing of any instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, material or other similar or related article intended for medical use,²⁶⁶ usually including products from medical consumables, rehabilitation equipment, to medical imaging equipment (e.g. X-ray, ultrasound, nuclear).

What should be noted is that, this differentiation is more analytical than practical; in practice, many companies I interviewed are involved in multiple industries mentioned above and are producing various types of drugs. According to the interviews, it is possible that mixed production may affect how the company acts by creating internal tensions that may end up neutralizing what might otherwise have been its behaviour were it only in one industry. For example, companies with both chemical products and another type of drug usually produce generic chemical drugs while they conduct research on new biologics or aspects of TCM; in this case, as manufacturers of generics, one might suppose that they would want short terms for patents but, as manufacturers of new drugs, they might also want their IPs to have stronger protection. Perhaps due to these conflicting

²⁶⁵ Raw herbs are brewed into a tea at low temperatures and this is later formed into small round pills called teapills.

²⁶⁶ The specific definition may vary in different regions.

interests, i.e. that they have products with contradictory interests with regard to the intellectual property right (IPR) regime, in my fieldwork, companies with these features usually said that they thought that the current IPR legal system is adequate in strength and there is no need to strengthen it for now.²⁶⁷ This passiveness in pushing for a stronger legal regime may also be due to the existence of alternative methods (introduced in section 3 of this chapter).

The medical sector and its relevant market have been developing rapidly in modern China (F. Hu, 2009; J. Liu, Fu, & Zhu, 2015). China is already the world's second-biggest drug market with pharmaceutical sales reaching US\$108 billion in 2015 (International Trade Administration, 2016); it is also the second largest medical device market in the world, with sales of medical devices reaching around US\$32.4 billion in 2014 (Elsinga, 2014; EU SME Centre, 2015). An aging population, the expanding coverage of public health insurance, and rising income are creating a soaring demand for drugs (The Economist, Feb 1st 2014, June 14th 2014). China is also a world leader in basic pharmaceutical manufacturing, as well as a centre for clinical trials (The Economist, June 16th 2005). This sector's potential and importance have been emphasized by both the government and private investors (Ge, 2016; General Office of the State Council, 2016; Sunday Business Post, 2005). It is also frequently mentioned in IPR reports and studies in China.

In the following parts of this section, I first introduce different categories of innovation and patent claims, because specific technological characteristics attached to them can affect the effectiveness of various IP protection methods, and have implications for the IP-related behaviours of companies. Then I introduce some institutional settings that are crucial to companies' decision-making, including the market-entry policies and the state-controlled product distribution system; these institutional factors can limit companies' choices, and thereby shape their strategies, actions, and priorities in business.

1.1 Innovation and Patent Type

Understanding the technological nature of products helps us understand the role of patents

²⁶⁷ Interview 20160719, with the Vice Dean of the research institute inside a pharmaceutical company; interview 20160726A, with the director of Patent Department of a local pharmaceutical company.

for different products. I explain the features of medical devices, and then the features of pharmaceutical products in the following paragraphs.

In China, medical devices have been able to get patents since the first Patent Law (1984), but drugs only became patentable later, in 1992. Medical devices can include various patentable innovative elements: most are engineering-related machines or structures, ranging from a metal stent to a wheelchair to an electromedical apparatus; some are pharmaceutical-related, for example a polymer for making contact lenses; some manufactured articles are related to bioengineering, for example a spinal implant; some are method-related, for example a method to monitor blood sugar levels using a wearable device. Due to the intra-industry heterogeneity, medical device companies can range from capital-intensive cutting-edge large companies with sophisticated products (the high-end) to small companies with limited capital and simple products (the low-end).

In general, patents related to drugs can be categorized into a few main types, with claims on different features of a drug: the drug substance itself (an active ingredient or a composition of active ingredients), the formulation, the process of making it, and the method of use (Angell, 2004, pp. 175-176). As elaborated below, different types of patents correspond to differing effectiveness with regard to patent right legal protection.

1.1.1 Primary Patents or Core Product Patents Which Directly Protect an Active Ingredient.²⁶⁸

The most central drug patent claim is usually that which covers the active compound. These patents can define rights over a specific product or a category of products and are generally regarded as being the superior patent claim for drugs. In this study, I call it a "core product patent", instead of a "primary patent" as used in a lot of Western literature; although they mean the same thing, "core" corresponds more to how Chinese interviewees refer to them. Compounds used in medicine are usually organic compounds, e.g. carbohydrates, lipids and proteins, all of which exist as molecules, called molecular compounds. Molecular compounds can be classified as: (a) small

²⁶⁸ There is no primary or secondary patent distinction in patent law. However, this distinction is commonly used to distinguish between different claim types in pharmaceuticals; for example, in Kapczynski, Park, and Sampat (2012). Patents on active ingredients are referred to as primary patents. In later phases of drug development, patents are filed on other aspects of active ingredients such as different dosage forms, formulations, and production methods; these patents are referred to as secondary patents, or peripheral patents. Secondary patents also include applications in new therapeutic classes.

molecules defined by their chemical formulas, which are mainly used in the chemical drug industry; (b) large molecules such as sugars, nucleic acids or proteins, which are mainly used in the biomedicine industry. In present-day China, most domestic biomedicine companies focus on the development of recombinant therapeutic proteins, which can be defined by their amino-acid sequences.

For chemical drugs, patent claims usually cover both the original compound and its polymorphic forms, such as crystal forms (for example, for the drug Lipitor, the company Pfizer patented crystal form I of atorvastatin calcium). To avoid a too-narrow scope of protection, drug companies usually file patents on different polymorphic forms during drug development. In turn, generic drug makers will target unprotected polymorphic forms of expired compound patents to avoid patent infringement; however, this is difficult because usually one compound only has one or two crystal forms that are sufficiently stable for commercial production,²⁶⁹ and it would be covered in the patent filed by the original producer; as such it is very hard for generic producers to find an unprotected polymorphic form that is also stable, i.e. it is hard for them to make small modifications on the original product that also have the same pharmaceutical effects. In this sense, the protection provided by a patent on an original compound and its polymorphic form is strong because it is hard for an imitator to get around the original patent in production.

A similar strategy is also used by biological drug patentees to avoid a too-narrow scope of protection; they can draft patent claims to proteins that have a certain degree of homology (i.e. the existence of shared ancestry) with the defined amino-acid sequence, or proteins that may have a certain number of possible amino-acid deletions, additions, or substitutions (Grubb & Thomsen, 2010, p. 257). Protection provided by this type of patent family can be strong as well because, in this case, it is hard for imitators to make small modifications to the product to get around the original patents.

²⁶⁹ For a chemical substance, being "stable" means it is not particularly reactive in normal environments, with the presence of, for example, heat, moisture, and pressure, and retains its useful properties on the timescale of its expected usefulness. Under this meaning, the material is "unstable" if it can corrode, decompose, polymerize, burn or explode under the conditions of anticipated use or normal environmental conditions or during the manufacturing process. An "unstable" chemical substance cannot be produced in large-scale industrial processes.

1.1.2 Pharmaceutical Composition (and Formulation) Patents

Patents with regard to new pharmaceutical compositions may be of the following two distinct types:

A. Combination preparations comprising two or more known active pharmaceutical ingredients (APIs); they can be patented only if it is proven that the combination has real advantage over the separate components, for example reducing side-effects. Synergistic effects ensure patentability, but they are extremely difficult to prove, requiring comparing dose-response curves²⁷⁰ from the two components separately as well as in combination, the tests for which are long and difficult. In fact, because most traditional Chinese drug prescriptions work as compositions, and this difficulty in proving patentability has always been present.²⁷¹

B. Existing compositions with new physical formulations (also called dosage forms, e.g. liquid or capsule) or method of administration (e.g. orally or by injection).²⁷² These patents usually define how different chemical substances, including active ingredients and inactive components (excipients), are combined to produce a final medicinal product with a particular configuration, route of administration, and dose. In the patent, it can be written like this: "a pharmaceutical composition comprising a compound... in association with a pharmaceutically acceptable diluent or carrier". Various formulation or dosage forms may exist for a single particular drug product. For example, two products may both be amoxicillin, but one can be in 500 mg capsules and another can be in 250 mg chewable tablets. Many bio-drugs such as insulin are peptides which would be destroyed by the digestive juices if taken orally and so have to be administered by injection (Grubb & Thomsen, 2010, p. 238); this requires a higher level of purification, and therefore has a higher technical manufacturing requirement.

For a primary or core product patent, which directly protects an active ingredient, a company

²⁷⁰ Describes the change in effect on an organism caused by differing dosage levels of a chemical after a certain exposure time.

²⁷¹ This was mentioned by many interviewees, for example, interview 20160708 with a representative from a pharmaceutical company with business including both biologics and TCM.

²⁷² Common dosage forms include pill, tablet, capsule, drink, or syrup, and natural or herbal forms such as plants, among many others.

infringes on the patent rights of another company when the company uses it in their products, without permission, regardless of formulations and dosages. But for a composition patent, this is not the case; as long as others adjust the original formulation or dosage in the product, they are not infringing, even though the product is guided by the original patent; this is what is called an "easy to get around" patent. In this sense, we can say that a combination patent claim provides narrower coverage and is comparatively weaker in protecting an innovator's profits, compared to a core product patent. Indeed, composition patents are less relied on by pharmaceutical innovators in China compared to core product patents. This situation is especially manifested for TCM, where most patents are composition patents (called "fu-fang" in Chinese);²⁷³ more about the characteristics of TCM is discussed in section 2 and section 3.3 of this chapter.

1.1.3 Process Patent Covering Manufacturing Methods

Process patent claims covering manufacturing methods usually contain words like "comprising the steps of...", or something similar (Quinn, 2013). Patent claims on processes in pharmaceutical industries mainly include synthetic processes aimed at adaptation and optimization of the synthetic route for industrial scale syntheses (which involve reaction thermodynamics, economics, and safety, among others), fermentation, enzyme-using or gene engineering processes, or even some mechanical processes. Chemical drug production usually involves chemical synthetic processes, while biological drugs are usually related to the metabolism of living organisms such as microorganisms. As stated by the US FDA, biological products differ from chemical drugs in that "they tend to be heat-sensitive and susceptible to microbial contamination" (FDA, 2008); this makes the process more difficult to formulize, standardize, and control; in this case, the process has more uncertainty, and, as a result, it is comparatively more difficult to be reverse-engineered and copied without considerable experience.

For a primary or core product patent, when others use it in their products without licensing, they are infringing the patent rights regardless of the process involved in manufacturing the products. For these product patents, as long as the products are sold in the market, it is easy for the

²⁷³ Interview 20160712 with a representative from a TCM company.

right holder to identify potential infringements and collect relevant evidence. But for a process patent, this is not the case; it is usually not so easy to figure out what processes are used to produce a final product, because processes are less tangible and happen in the producers' factories. Especially in China, as mentioned in chapter two, section 3.2, and, as stated by Chinese companies who also operate in the US market,²⁷⁴ right holders have very limited rights to get evidence from other parties, compared to, for instance, in the US. For example, a party is rarely required to produce evidence (such as detailed sales data) to support a claim or defence by another party, and third parties are generally under no obligation to provide any evidence for litigation. In fact, many interviewees said that process patents are "very weak" in protecting innovation appropriability.²⁷⁵ According to this, we can say that a process patent claim is comparatively weak in preventing infringements, compared to a core product patent.

1.1.4 Method of Use Patents

Method of use patents cover the use of a drug in treating a particular condition (such as depression or heart failure) or to treat a particular population (for example, certain age groups). For example, patent claims for method of use usually include words like "use of compound X for the treatment of disease Y". In this case, sales of bulk substances are not infringing, but sales of the substance presented or packaged for that certain use will be. With similar logic as the previous two claim types, this type of patent claim is also not as strong as the core-product patent claims, but it is often used by drug companies to extend the range of IP protection of the original product (Angell, 2004).²⁷⁶

As it can be seen, even in the same industrial sector, patents can be very different in nature; in addition, as discussed in section 3, even for the same type of patent, its effectiveness can vary by specific industry. As such, patent protection should not be treated as a unitary concept in analysing the IPR regime in China.

²⁷⁴ For example, interview 20160623, with a senior vice president of a local private biomedicine company.

²⁷⁵ For example, interview 20160429A, with an executive director of a local private pharmaceutical company.

²⁷⁶ Extension of the use of an existing drug to the treatment of a disease with respect to which its utility had not previously been demonstrated.

1.2 Institutional and Regulatory Background

Both the pharmaceutical industries and the medical device industry are health-related industries, and thereby are usually under a lot of administrative regulations in a country. Government policies structure income maximization mechanisms in the medical sector, and these policies can thereby affect companies' behaviours. Although there are some differences in the specifics (which are discussed in this chapter, section 2.2), some general institutional arrangements affect all of the industries under study.

In law, there are a few legal provisions about regulating the medical sector. For example, *The Drug Administration Law of the People's Republic of China*, the country's first comprehensive legislation regulating the research, production and distribution of drugs, was adopted in 1984 and revised in 2001; *Regulations for the Supervision and Administration of Medical Devices* was published in 2000 and revised in 2014. Legislation for the current drug approval pathways in China is set out in *The Drug Registration Regulation*, which was issued in 2007 and amended in 2013. In practice, the main institution regulating manufacturing and market entry of drugs and medical devices is the China Food and Drug Administration (CFDA), and the system, largely determining the distribution of drugs and medical devices, is the provincial distribution system. These regulation institutions, as a policy background, have implications for the IPR-related choices of companies, and both are briefly introduced in the following paragraphs.

1.2.1 Product Development and Market Entry Regulation - CFDA

In China, CFDA is responsible for the registration and review of drugs and medical devices. The process to pass CFDA review is a complicated and long process. In general, the process for new drug approval is based on the pathway used by the US FDA (PPD, 2013). Three main types of drug applications can be approved in the US: The New Drug Application (NDA) for new chemical drugs, the Therapeutic Biologic Application (BLA) for biologics (including new biologics and biosimilars), and the Abbreviated New Drug Application (ANDA) for generics. For clinical trials, the Investigational New Drug (IND) Application is also required. In China, the types of new drug applications to the CFDA mainly include chemical drugs, biological drugs, and

Traditional Chinese medicine (TCM), and each type includes new drugs²⁷⁷ and generic drugs (or biosimilars),²⁷⁸ as well as imported drugs;²⁷⁹ clinical trials also need approval. Usually the producer needs a "case acceptance notice" from the provincial FDA before the application can be submitted to the CFDA for formal review. Medical devices need approval too; usually medical device approval can be given by the CFDA, the provincial-level FDAs, and the FDAs of the autonomous regions, and direct-controlled municipalities, depending on the device type.²⁸⁰

With regard to drugs, the whole process of developing a new drug can last more than 10 years, including the following stages:

- (1) Lab research, mainly including target identification, drug discovery, and optimization.
- (2) Pre-clinical testing: testing lead compounds on animals to analyse their pharmacology and toxicology.
- (3) Clinical trial approval process or IND (investigational new drug) approval process, to get approval for testing a drug candidate in humans; it usually take a few months to 1 year in China, compared to, typically, weeks in the US (J. Wang, 2015).
- (4) Various stages of clinical trials, including: first-stage clinical trials to verify the safety of the drug by applying increasing doses to healthy volunteers, second-stage clinical trials to test the efficacy in a few patients, and third-stage clinical trials to apply the drug to a larger group of patients.
- (5) the New Drug Approvals (NDA) process: going through CFDA review to get the certificate to produce the drug; it usually takes three years or more in China (mostly due to the waiting period caused by administrative backlog), which is much longer than that in many other countries (Fassbender, 2016; Grace, 2004; Jin, 2015; The Economist, June 16th 2005).

²⁷⁷ New drugs in China used to refer to drugs that have not been marketed within the territory of the People's Republic of China (including those already marketed in foreign countries); however, since late 2015, its definition has been changed to be consistent with the international definition, i.e. drugs that have not been marketed inside or outside the territory of China (Hongyue Wu, 2015).

²⁷⁸ In the United States, generics' reference drugs have been codified into the US FDA's Orange Book. Many jurisdictions, including China, do not have such a reference for comparison of off-patent originators.

²⁷⁹ See the categorization at the website of centre for Drug Evaluation, CFDA:
<http://www.cde.org.cn/news.do?method=changePage&pageName=service&frameStr=3>.

²⁸⁰ Regulations for the Supervision and Administration of Medical Devices: <http://eng.sfda.gov.cn/WS03/CL0767/61641.html>.

With regard to medical devices, the general process is similar, and the manufacturer can only sell its products after clinical trials and CFDA approval; however, the research period, clinical trial period, and the NDA approval process are much shorter, and the whole process may only take one to three years (Zhou & Gao, 2013).

To get a head start, companies usually apply for patents before clinical trials, and the time needed to pass patent review is usually one and a half to three years for inventions, and six to eight months for utility model and design patents.²⁸¹ The time it takes from when the patent is granted until the drug can be marketed eats away at the total period of patent protection and thus effectively shortens the patent protection period for when the drug is on the market. While, in the US and Europe, companies can get extended protection terms to compensate for regulatory delays through SPC (Supplementary Protection Certificates) protection (Grubb & Thomsen, 2010, p. 243), there is no such option in China. However, the Chinese authorities are moving to clarify and speed up the procedures for new medicine approvals (The Economist, June 14th 2014).

1.2.2 The Role of Public Hospitals in Distribution and Price Control

There are two major traditional channels for selling medical products in China: (1) medical institutions, including hospitals (including Western-style hospitals, TCM hospitals and mixed ones)²⁸² and grassroots medical institutions (mainly health centres and clinics at the township, village and community levels); (2) retail sales, including pharmacies and medical device shops. Most manufacturers distribute their products via national and provincial wholesalers; those national and provincial wholesalers then deliver the products to hospitals, clinics and pharmacies (Pacific Bridge Medical, 2014a). Before June, 2015, public hospitals and medical institutions could add a 15% mark-up on top of the purchase price to form the retail price; but after 2015, this mark-up has been abolished, and public hospitals could not add any mark-up for to the retail price. (Drug price control policies are discussed in detail in section 2.2.5 of this chapter.) Now

²⁸¹ <http://www.tmmark.com/helpcenter/common/qa/domestic/230.html>

²⁸² According to a report from the National Health and Family Planning Commission, there were 46,541 TCM-related medical institutions by the end of 2015, including 3966 TCM or mixed hospitals, 42,528 TCM clinics and 47 TCM research institutions. See: <http://www.nhfpc.gov.cn/guihuaxxs/s10748/201607/da7575d64fa04670b5f375c87b6229b0.shtml>, accessed at March 28, 2017.

approximately 80% of drug sales go through the pathway from the manufacturer through to the wholesaler, to the hospital and finally patient (Mossialos, Ge, Hu, & Wang, 2016, p. 98). Recently, online sales of medical products (online pharmacies that are eligible to sell over the counter (OTC) drugs and medical devices) in China are also becoming an increasingly popular retail sales channel for distribution.²⁸³ While prescription drugs are sold primarily in hospitals, OTC medication, which makes up 18% of total pharmaceutical sales in China and includes both Western and TCM drugs, are sold primarily in retail pharmacies rather than in hospitals, at an approximately 3:2 ratio (China Nonprescription Medicines Association, 2012).

In general, for each industry in the medical sector, hospitals are still the major distribution channel. In the Chinese drug market, according to data from around 2010, retail accounted for only 20% of sales, while 70-80% of drug sales went through hospitals (Canadian Trade Commissioner Service, 2013; Pacific Bridge Medical, 2014a), in contrast to approximately 20% of sales that went through hospitals in developed countries (Bastida & Mossialos, 2000; Mossialos & Oliver, 2005; Tordoff, Norris, & Reith, 2008). In the medical device market, according to 2014 data, retail sales channels accounted for 24% of sales (EU SME Centre, 2015).²⁸⁴ Until the last couple of years, public (state-owned) hospitals constituted a large majority of hospitals in China, providing more than 90% of patient services (World Bank, 2010), and were the most common place for patients to access health care (Mossialos, Ge, Hu, & Wang, 2016, p. 21). Since 2009, the government has carried out reforms to open the healthcare market more than ever to private investment, which has led to a rapid growth in private hospitals. By the end of 2015, there were 27,587 hospitals nationwide in total, among which private ones already accounted for 53% (14,518) while public ones accounted for 47% (13,069) (NHFPC P.R.C., 2016). However, although private hospitals now account for over half the total number, they are generally smaller in scale and have fewer visits. With regard to the number of visits to hospitals, public ones still dominate, accounting for 88% in 2015, while private ones accounted for 12% (NHFPC P.R.C., 2016). Given this situation, and due

²⁸³ According to the CFDA website, there are 649 online pharmacies registered as of March 2017. See: <http://app2.sfda.gov.cn/datasearchp/gzcxSearch.do?formRender=gjcx&optionType=V7> (accessed on March 21, 2017)

²⁸⁴ According to the same report, in the retail sales channel, physical stores accounted for 74% of total sales in the channel, while e-commerce sales accounted for 26%.

to time and resource limits, my interviews focused on the public hospital system.

There are two facts which combine to affect hospital purchasing decisions (and thereby affect the behaviours of the drug companies); one is the source of hospital revenue, another is the drug price control policy. Both factors were undergoing drastic changes while I was doing my fieldwork in 2016, leading to changes in industrial characteristics and business models, as well as in the role of patents.

As for revenue sources, since the 1992 reform, public hospitals in China are responsible for their debts and operating losses, and are permitted to keep the surpluses that they generate; they can use their surpluses to invest in new facilities and services, or to pay employees higher salaries or more bonuses. Until 2016, there had been three main formal sources of revenue for public hospitals: government subsidies, fees for services, and drug sale mark-ups. (In practice, there are also kickbacks from medical product sale reps, a grey area.) Until 2016, both hospitals and doctors obtained significant revenues from charging fees-for-services and earning profits from drug sales at a 15% mark-up; in fact, in 2011, government subsidies only made up 9% of their revenues while the sale of medicine accounted for 40% (The Economist, Feb 1st 2014). This system used to create incentives for doctors to purchase and prescribe high-value medicine. However, while I was doing my fieldwork in 2016, officials instituted a “zero mark-up” (i.e. they must sell at the purchase price) policy on drugs at hospitals; by the second half of 2016, almost all public hospitals had cancelled drug mark-ups, and the reduced revenues caused by this have been compensated by increasing service fees (H. Li, 2016). Now the formal revenue sources of public hospitals are only consisting of government subsidies and fees for services.

As for price controls, starting from 1997 until 2000, the Chinese government controlled every stage of drug pricing, from manufacturers’ ex-factory prices, to wholesale and retail prices.²⁸⁵ In late 2000, the Chinese government changed its drug pricing policy from controlling every stage of pricing for all pharmaceuticals to only controlling retail prices for selected products, i.e. drugs

²⁸⁵ Manufacturers’ ex-factory prices, also called exit prices, were determined based on average production cost plus a 5% mark-up, to which a 15% mark-up was added for the wholesale price (the price hospitals paid), and an addition of a further 15% mark-up constituted the retail price (the price the consumer paid) (CSCPD, 1998).

listed under the Urban Health Insurance Scheme (Meng et al., 2005), which accounted for 20% of all drug categories, but 60% of overall drug sales (L. Yu, Yu, & Tian, 2007).²⁸⁶ From 2000 to 2015, the government set the upper limit for retail prices, and specified that, for public hospitals, the mark-up from the purchase price to the retail price could not exceed 15%. Under these arrangements, more expensive drugs were preferred by public hospitals (the 15% mark-up amounts more for drugs with a higher purchase price); in order to attract hospitals to their products, manufacturers tended to set higher prices to increase sales (H. Shen, 2014). Under this system, drug prices were thought to be unreasonably high (Du, 2002; Y. Hu & Li, 2001). To address problems in the previous system, since June 2015, the government cancelled price controls for more drugs and only controlled prices for anaesthetics and psychotropic drugs, giving companies more autonomy in price setting. In late 2016, the 15% mark-up for public hospitals was also cancelled, which may reduce public hospitals' preference for high-priced drugs.

1.2.3 Getting Medical Products to the Market

After getting CFDA approval for production and sales, there used to be a process of medical product price approval, where the manufacturer must get the product price approved by the government; the whole process would take four to five months. However, this arrangement was abolished in the 2015 reform, right before my fieldwork started. Now there are two steps needed to get the CFDA-approved product into the hospitals: provincial bidding and hospital listing.

First, since around 2000, in China, medical products must take part in provincial bidding before they can be sold in a hospital in that province; the bidding takes place every few years (usually three to five years). When the bidding starts, a tendering committee composed of local government officials, the National Development & Reform Commission (NDRC) representatives and pharmacists choose among the bids and determine which companies can distribute their products in that province. Usually two to five suppliers of each product are selected. In the process, the manufactures may rely on a local advocate, like a local distributor, to promote their product and lobby the committee members to make sure their product is approved for provincial

²⁸⁶ Faced with the rapid expansion of the pharmaceutical sector and asymmetry of cost information, the government was unable to set appropriate exit prices.

distribution. The bidding procedure is set by each provincial government and each bidding usually takes about three months. This bidding system has produced problems such as corruption, market entry delay, and local protectionism (i.e. the provincial government unfairly chooses local producer's products), so, recently, there have been a lot of voices advocating for its reform, both from scholars and People's Congress deputies (Gui, 2015; W. Liu, 2013); some local governments have already started to make relevant reform plans (H. Gao, 2014).

Second, after a medical product has won a provincial bidding process, it must be listed by each individual hospital in order to be prescribed by physicians working there. Once or twice a year, every large hospital creates a committee to approve any new drugs to be included in the hospital's formulary, and only pharmaceuticals listed on the formulary can be purchased by the hospital and prescribed to patients by physicians. The committee is usually headed by the hospital's pharmacy director and consists of department chiefs who recommend the drugs that their specialties and departments need; decisions are based on consensus. The listing process usually takes three to five months. Issues such as kickbacks to doctors in explicit and implicit forms (for example organizing medical conferences and covering invited doctors' travel funds) usually are related to this listing process.²⁸⁷ What needs to be noted here is that, kickbacks usually only work when competition exists between similar products; if a product is innovative and unique enough, it would not be affected. (How this affects the behaviour of companies focusing on different products is discussed in section 2.3 of this chapter.)²⁸⁸

In addition, drug makers also look to get their products onto the National Reimbursement Drug List (NRDL) to gain access to the mass market, which is covered by medical reimbursement schemes. Reimbursement makes pharmaceuticals more affordable to medium-income patients and doctors are more likely to prescribe state-sanctioned goods; NRDL products are also more likely to be added to hospital formularies (Business Monitor International, 2015). The NRDL list is

²⁸⁷ Information about the listing process is based on some foreign reports such as Pacific Bridge Medical (2014b) and my interview with sales representatives in China, for example interview 20160517B, with a sales representative of a state-owned pharmaceutical company.

²⁸⁸ Interview 20160319 with a researcher at a pharmaceutical company; interview 20160517B, with a sales representative of a state-owned pharmaceutical company; interview 20160525B with a sales representative of an international pharmaceutical company.

issued once every four to five years by the Ministry of Human Resources and Social Security (MOHRSS). This long waiting time also serves as a tool to delay competitors' market entry.²⁸⁹

The effect of the above-stated processes is that the approval and distribution system for medical products in China can delay the market-entry process by years. As is discussed in section 3 of this chapter, this delay has an unexpected function for innovators in this sector, i.e. it becomes a means of blocking latecomers, including imitators.

2. Heterogeneity Inside the Medical Sector

Many western studies have pointed out that the effectiveness of IP-protection strategies differ by industry (Baldwin et al., 2001). I have also suggested in chapter five that, the availability and effectiveness of various innovation protection methods is, to some extent, determined by industrial characteristics. Considering this, in order to understand discussing the IP-related behaviour of companies, in this section, I introduce relevant characteristics of various industries in the medical sector.

Before getting to these aspects, it may be worth discussing the reason why TCM and the medical device industries are relevant in IPR studies. The pharmaceutical industry has always been a poster child for active innovation that generate a large number of intellectual properties. With regard to TCM and the medical device industries, their relevance to IPR is less obvious. However, I still include them in my study, for the following reasons.

First, both industries are taking up a significant portion of the market share in the Chinese medical sector, and this indicates their importance in this sector. According to available data about total sales, in 2011, the four industries, occupied 38% (chemical drugs), 18% (biologics), 31% (TCM drugs), and 13% (medical devices) of the medical product market (CCID, 2012).

Second, although less remarked on, both industries are generating a large number of IPs. Although the TCM industry does not generate many “core product” patents, there are a large

²⁸⁹ This process is also where corruption happens a lot; according to one company representative (interview 20160812, with the general manager of a local private Chinese medicine company), nowadays to get a drug onto the NRDL, it might cost the company more than 3 million RMB (US\$ 441,176) to grease the process with what is then called "black money".

number of patents for processes, formulation, and methods of use that have emerged from it. With regard to the medical device sector, although in China most producers are manufacturing low-end products without much high-tech invention, they have launched a significant number of inexpensive novel products. Various consultancies have even predicted that China's inexpensive innovations will transform the medical device market (The Economist, Jan 20th 2011).

Third, the fact that the TCM industry does not generate IPs in the Western sense is changing. In fact, a trend of TCM development in present-day China is to analyse traditional herbs (or other forms of TCM) to derive modern medicine (sometimes called "modern TCM"), and many drug makers are taking another look at traditional medicine as a way of finding new molecules to test against their disease targets. For example, one of Novartis's most important medicines—Coartem, a malaria treatment—has its origins in TCM (The Economist, June 16th 2005). The TCM segment in China is now undergoing a trend of modernization, i.e. research into isolating active ingredients for pharmacological efficacy (Pharmaceutical Executive, 2009), and there has been at least one successful case in this field; a well-known example is the anti-malarial drug "artemisinin (*qinghaosu*)", isolated from the Chinese herb *artemisia annua* (Tu, 2011).²⁹⁰

Now that it is clearer why these industries in the medical sector are relevant in this study (i.e. chemical drug, biological drug, TCM, and medical devices), in the rest parts of section 2, the characteristics of the industries are discussed in terms of four aspects, including technology type, administrative regulation, market characteristics, and social network structure.

2.1 Characteristics of the Technology

The characteristics of the technology can affect both the effectiveness of legal patent protections and the difficulty to copy a certain patented product (i.e. difficulty of market entry). As discussed in chapter five, two conditions are required for effective legal IP protection: a clear legal definition (i.e. the relevant rights are effectively defined and the right claims are operational) and effective complementary enforcement (i.e. the infringing behaviour can be identified and stopped

²⁹⁰ A Chinese scientist was awarded half of the 2015 Nobel Prize in Medicine for this discovery.

through a formal procedure, either judicial or administrative, with a reasonable cost). For some technology types, it is naturally easier for them to meet these two requirements in securing an IP right. In the following paragraphs, I discuss specific technologies in each industry, and see how they would affect the two conditions for effective legal protection and the difficulty for imitators to enter the market, keeping in mind my distinction between the *easy-entry* and *hard-entry* industries at section 3 of chapter five).

In general, chemical drug companies rely on chemistry technologies, bio drug companies rely on biological technologies, while medical device companies mostly rely on engineering technologies and techniques. However, inside the drug industries, there may not be a clear differentiation between technologies used in different types of drugs.

First, some chemical drug producers use synthesis technology on fermented products to make its structure more stable; the final product is called a "half-synthesized fermented" or "half-synthesized" product. For example, amoxicillin is a half-synthesized product, synthesized based on penicillin.

Second, some modern molecular compounds have originated in TCM. As discussed in the third point at the beginning of section 2, TCM is being mined for active ingredients that could be developed into Western-style medicine, just as Western companies are exploring the biological diversity of the Amazon rainforest in a search for the basis for new drugs.

Despite these ambivalences, it is still possible to make some general distinctions between different types of technology. The most discussed distinctions might be the one between discrete and complex, as well as the one between product and process.

2.1.1 Discrete or Complex Technology: Is the Legal Definition Clear?

First, as discussed in chapter five, a product or process is referred to as being "of complex technology" when it is comprised of numerous patentable elements; this contrasts with a product or process that is referred to as being "of discrete technology" when it is comprised of relatively few patentable elements. Products of complex technologies, compared to that of discrete technologies, are less likely to have a clear patent right claim over a specific product; thus, it is harder for the original producer to identify an infringement on complex technology (i.e. harder for

the patent holder to defend its right). Engineering products are mostly based on complex technologies and one product usually embodies many different components, which are all relevant to the overall product character. In this case, a patent on a separate component is less relevant to the overall consumer choice, and the patent also cannot stop competitors from producing a similar product by replacing the patented component for another. With regard to pharmaceuticals, as introduced in section 1.1, both molecular compounds and compositions can comprise a single drug product, so, by definition, patents on drug substances can be categorized as "discrete" here. In this case, one patent can determine the characteristics of the overall product, and competitors should not be able to produce similar products without infringement. In this sense, patent claims on discrete technologies are viewed as stronger.

What needs to be noted here is that, even though many pharmaceutical patents are about discrete technologies, because they can singly define a product, they still differ in character. For example, compound patents (both in chemical drug and biological drug areas) are much stronger than composition patents. An example of a composition patent is in TCM, where a drug product is usually a composition with hundreds of molecule groups, and there is usually no clear understanding about which elements are the effective or crucial ones.²⁹¹ In this case, it would be very hard to define infringement for TCM, because there are many ways of making minor insignificant changes to elements inside the product and it is usually hard to tell if those comprise infringements.²⁹² Besides, because TCM treatment has a holistic view, it aims to bring the body's various organs into harmony, rather than focus on individual symptoms, proximate causes and direct pathogens (Pharmaceutical Executive, 2009). In this case, usually the same composition with small changes does not produce a sizeable difference to the patient (while a change in a chemical compound or formula usually leads to a totally different effect); this has made it very easy for imitators to get around a composition patent in TCM, by imitating without infringing.

²⁹¹ Interview 20160525B with a sales representative of a pharmaceutical company, and who had taken a Bachelor's degree in TCM. Interview 20160523 with the Deputy Managing Director at a consultation company focusing on the medical sector. Interview 20160722 with the Vice Director and General Manager of a TCM research institution. Interview 20160812 with the General Manager of a local private TCM company.

²⁹² Interview 20160708 with a Chief IP Officer at the IP department of a local biomedicine company.

More generally, many interviewees mention that, because the medical sector in China is in the process of first-round innovation, their focus is learning, enhancing a technological base, and seizing a virgin market, instead of protecting IPs.²⁹³ Because the general technological base is low, companies can distinguish themselves from others through technological know-how and experience accumulation, thus they do not yet need to resort to IPRs to distinguish themselves. This is possibly the basic reason why most participating medical companies told me they have not encountered any patent disputes. This contrasts seriously with the Chinese telecom equipment sector, which is a more mature sector (and is discussed in the next chapter).

2.1.2 Product or Process: Enforce Patent Rights Through Court

As introduced in section 1.1, inside the pharmaceutical industries, there is a difference between product (for example, molecular compound and composition) and process (manufacturing process) patents. As discussed in chapter five, because processes are less visible to outside scrutiny than products, process infringements are more difficult to detect by patent holders. That is to say, it is harder for the patent holder to defend his right in a legal system with inadequate discovery rights. (See chapter two for details about the discovery system in China.) This corresponds to the fact that, during my interviews, almost all of my interviewees in pharmaceutical industries said that patent protections for compounds are quite effective and satisfactory in China; the infringement of compound patents can be identified in a straightforward way, and it is easy to get related evidence. On the contrary, almost all of these interviewees said that it is too hard to collect evidence for process infringements so the process patents are not very useful in protecting their innovations.

However, although product patents are more effective than process patents in general, for some drugs it is still hard to benefit from product patents because, although the potentially infringing product is publicly available for scrutiny, it may be difficult to analyse it to prove infringement. We already know that chemical drugs generally have well-defined chemical structures, and a finished drug can usually be analysed to determine all its various components

²⁹³ Interview 20160726A, with the director of Patent Department of a local pharmaceutical company.

(and thereby it can be determined whether or not a product is infringing the patented one). By contrast, according to experts in pharmaceutical companies, the living systems used to produce biologics can be sensitive to very minor environmental changes in the manufacturing process; compared to chemical drugs, biologics are more difficult (but not impossible) to be characterized by testing methods available in the laboratory, and some of the components of a finished biologic may remain unknown (BIO, 2017).²⁹⁴

It should be noted, the connection between product and process can also affect the effectiveness of relevant patents. On one hand, a clear connection can make it easier to prove potential process patent infringements. For example, for some chemical products, if it is known that there is only one synthetic way to get a compound with a certain chemical structure, then, by analysing the structure of the final product, the process can be proved as well. However, biomedicine and TCM both involve various procedures that can vary for every batch. For biological drugs, the procedures usually involve cultivating living cells or bacteria, i.e. involve various biological processes which can differ in a certain range between batches, such as glycosylation.²⁹⁵ For TCM the procedures involve planting, raw material harvesting, raw material processing (cutting, infusion, baking, frying, brewing, among others), and final product manufacturing. In this case, it is almost impossible to precisely identify a complicated process like this in the final product.²⁹⁶ This makes it harder for the patent holder to enforce its rights in court.

On the other hand, an unclear connection, although it makes it harder to prove infringements, serves as a technical barrier to keep imitators away. For example, for biologics, because the finished product cannot be fully characterized in the laboratory, manufacturers need to make a great effort to ensure product consistency, quality, and purity by ensuring that the manufacturing process remains substantially the same over time. Process controls for biologics are established separately for each unique manufacturing process or product, and are not applicable to a

²⁹⁴ But this does not mean it is impossible to characterize a biologic.

²⁹⁵ Glycosylation refers in particular to the enzymatic process that attaches glycans to proteins, lipids, or other organic molecules. This enzymatic process produces one of the fundamental biopolymers found in cells (along with DNA, RNA, and proteins); it is a form of co-translational and post-translational modification.

²⁹⁶ Interview 20160831C, with the Associate Director of the R&D department of a local private pharmaceutical company.

manufacturing process or product created by another manufacturer. In this case, it is difficult or impossible for a second manufacturer to make a biosimilar without intimate knowledge of and experience with the innovator's process. In fact, many interviewees told me that, if the manufacturing process involves biological processes, there is less likelihood for their product to be imitated.²⁹⁷

2.2 Administrative Regulation

In section 1, I introduced some common regulations the medical sector gets from the CFDA and provincial governments. The process is long and complex, and this can help early movers prevent imitators from getting into the market. This function is accentuated especially because, after one producer of a certain drug get the CFDA approval, the CFDA is more reluctant to approve other producers producing drugs with the same active ingredients.²⁹⁸ In addition, there are some policy regulations that are unique to certain industries or areas and that can affect IP protection behaviours. They are introduced in the following.

2.2.1 Special Review Process for "Innovative" Products

Since 2015, the CFDA has been carrying out reforms in order to open special "express" approval routes or "green channels" for certain innovative drugs and innovative medical devices. To be qualified as "innovative", a product patent is necessary. The promise of a faster review process has provided incentives for companies to get patents.

As introduced, the market economy in China started to develop in the early 1980s, and drugs have been patentable in China only since 1992. Considering the long development cycle for pharmaceutical drugs, and the time it takes for local companies to create their own infrastructures for R&D, for now, most of the Western drugs produced and sold by local companies in China are still generics of drugs invented by foreign companies (Business Monitor International, 2015; CCID, 2011; The Economist, March 18th 2017). In this case, this "green channel" priority can only

²⁹⁷ Interview 20160623, with the Senior Vice President of a local private biomedicine company. Interview 20160719, with the Vice Dean of the research institute inside a local pharmaceutical company. Interview 20160708, with a Chief IP Officer in the IP department of a local biomedicine company.

²⁹⁸ Interview 20160719, with the Vice Dean of the research institute within a local pharmaceutical company.

be enjoyed by a small number of companies. In addition, as discussed above, it is hard for TCM to get product patents (but not process patents), so this priority may not be so useful to them. In general, according to what I heard in interviews, for most companies in China, the review process is still very long.

2.2.2 Observation Period as an Exclusive Priority

Under Section three of *The Provisions for Drug Registration*, in order to protect the public health, the CFDA may set an observation period for any new drug approved for production. The observation period of a new drug can be the five years from the date the drug is approved for production, during which the CFDA will not approve other manufacturers to produce, or change dosage form of the drug. In this case, the observation period serves as another type of marketing exclusivity in China.²⁹⁹

2.2.3 Drug Data Protection for New Chemical Entities

As stated in Article 20 of *The Provisions for Drug Registration*, a drug manufacturer may submit undisclosed experimental data and other data regarding a drug, which are independently acquired in order to obtain approval of a drug containing any new chemical entity (NCE); in this case, within six years of the approval date of the drug, the CFDA would reject applications from other parties that use this data without permission of the original applicant. This protection has a narrow scope because it can be applied only to NCEs, and does not cover data used in the research of biomedicine and TCM, or combination drugs, process technologies, and drug indications.

2.2.4 Protection of TCM

As stated in *The Regulations on Protection of Traditional Chinese Medicines*, to raise the quality of all varieties of TCM, the state practices graded protection for those varieties of TCM that are stable in quality and that are effective in therapeutic results. "Protection" means those TCM varieties can only be produced by companies who receive the "certificate of protected TCM varieties". It is applicable to varieties of TCM that are produced or prepared in China, or both. The

²⁹⁹ As it currently stands, however, the observation period exclusion does not apply to any manufacturers that are already approved for clinical trial of the same drug; in this case, the manufacturers always try to get their clinical trials approved fast, in order to avoid being shut out of the market.

only varieties of TCM, that can apply for this protection, are those listed as standardized medicine at the national, provincial, direct-controlled municipalities, or autonomous regional levels. The protection term can be from 7 to 30 years.

As discussed in chapter five, usually there is a time lag between when an imitator sees the original product and when it can produce or sell the product; this lag can be extended by administrative processes, to give the original product enough lead time to appropriate profits. The policies mentioned in sections 2.2.1 to 2.2.4 constitute the background for each industrial segment, and provide different administrative protection for innovations by expanding this lag for imitators.

2.2.5 Special Pricing for Patented Drugs

As introduced in section 1.2.2, since June 2015, the government has been loosening price controls for most drugs. But, because the drug price control has only been loosened very recently, and the cycle from drug development to entry into the market is long, relevant company responses may have some lag. Adaptations to policy changes may not have fully manifested themselves when I conducted my fieldwork in 2016, so it is necessary to also consider the influence of previous policies on company behaviour. When retail prices were controlled, the government allowed some innovative drugs (patented drugs) to apply to be sold at a higher price. This may have been an important incentive for drug companies to apply for patents before 2015; it also could have been a method of IP protection.

In sum, the government has provided various administrative privileges to patent holders. As seen in section 3, in this case companies need patents to get leeway from the government, but the companies may not need to actually enforce the patents.

2.3 Market Characteristics

The market for medical products can be separated into two segments: (1) the high-end market, for original compounds and high-end medical devices such as image diagnostic equipment and X-ray machines, where innovation is the focus of competition; (2) the mid-and-low-end market, for common generics and low-end medical devices such as medical tubing, medical cotton, gauze, X-ray examination contrast agents, hearing aids and syringes. For the mid-and-low-end products,

price is the focus of competition. However, this separation may not be absolute in reality, because some companies in China are in transition from the mid-and-low-end market to the high-end market.

According to reports and my interviews, in general, the current Chinese medical sector has a low concentration rate, where large companies with high innovation capacity are still scarce. Although there are more and more innovations in this sector in China, the sector is still dominated by price competition among homogeneous manufacturers, and competition in terms of personal connections (or *guanxi*) focusing on distribution channels. That is to say, most Chinese medical companies are competing in the mid-and-low-end market.

With regard to the market concentration level, the medical sector in general has a low concentration rate with a lack of large dominant companies. Most companies are medium or small low-cost ones that cannot distinguish themselves from others in complementary abilities and resources (i.e. capabilities or resources that can be used by leading companies to beat competitors even though the product itself is not distinguished, for example, superior marketing, bundling services, and channel control).³⁰⁰ According to the Chinese National Health Statistics Handbook, in 2011 China had 4,629 drug manufacturers (including TCM), and the overall market concentration level was far lower than in developed peer countries, i.e. there were a great deal fewer large companies (Mossialos et al., 2016, p. 95).³⁰¹ The medical device market, with 15,698 licensed manufacturers in 2013, is even more fragmented; almost all large medical device companies in China are foreign ones, and most local manufactures tend to be small in size (EU SME Centre, 2015; Zhou & Gao, 2013).³⁰²

With regard to product distribution, although now there are some innovations, the market

³⁰⁰ According to *The Law of the People's Republic of China on Promotion of Small and Medium-sized Enterprise* and its explanations, the standard for small and medium-sized companies varies across industries. According to the Ministry of Industry and Information Technology, for the medical sector, small-sized companies are those with fewer than 300 personnel, and operation revenues of less than 20 million RMB (US\$2.9 million); medium-sized companies are those with 300-1000 personnel, and operational revenues of 20-400 million RMB (US\$2.9 – 58.8 million).

³⁰¹ For example, the top five manufacturers hold only 13.2% of the total market share (IBISWorld, 2015).

³⁰² The government has been encouraging consolidation in recent years, so the number of companies has been gradually declining (for example through acquisitions and mergers of manufacturing companies); however, fragmentation remains the major feature.

largely consists of generic producers and imitators,³⁰³ for whom the major competing point is price or personal connections.³⁰⁴ The Chinese pharmaceutical landscape consists of a large number of low-cost generic drug manufacturers (Business Monitor International, 2015); usually there are dozens, and sometimes hundreds, of local manufacturers seeking approval for an identical drug molecule (Mossialos et al., 2016). Similarly, In the medical device industry most Chinese medical device companies are small companies who produce similar products and often lack core competences such as R&D capabilities, while foreign branded medical devices account for the majority of the mid-high-end device market (EU SME Centre, 2015).³⁰⁵

As discussed in chapter five, market characteristics determine the advantages the first mover can develop, shapes how hard it is for imitators to get into the market, and thereby affects to what degree innovating companies are threatened by potential imitators. In the Chinese medical sector, for the few companies who have the technological capacity and resources to compete in the high-end segment, they may be able to seize the market and dominate the distribution channels. After the manufactures' products enter the distribution channels, it is very hard for imitators to access these distribution channels, i.e. the original manufacturer has a huge first-mover advantage.³⁰⁶ This is for the following reasons. (a) Due to the bidding system discussed in this chapter, imitators can only enter the market after a few years. (b) State-owned institutions have political incentives aside from economic ones when making decisions, thus they tend to avoid taking any risks; most hospitals are state-owned, and they renew their products very cautiously because of safety concerns. (This is also related to weak quality controls in China.) High-end device producers also exclude imitators by providing bundling services based on their technology or resources, for example, technical device maintenance services.³⁰⁷ As for most companies competing in the mid-and-low-end market, because there is no obvious distinction in product quality per se, seizing

³⁰³ To be noted, as mentioned before when I introduced patent types, generic drugs can also have process patents, method of use patents, among others.

³⁰⁴ Interview 20160429A, with the Executive Director of a local pharmaceutical company.

³⁰⁵ Interview 20160518A, with a manager at a consultation company focusing on the medical sector.

³⁰⁶ Interview 20160429A, with the Executive Director of a local pharmaceutical company; interview 20160526, with the General Manager and Partner of a local medical device company.

³⁰⁷ Interview 20160526, with the General Manager and Partner of a local medical device company.

distribution channels through price cutting and personal connections becomes the most relied-upon factor that can exclude latecomers.³⁰⁸

2.4 Cooperation, Network Structure and Reputation

As discussed in chapter five, close-knit networks and the importance of reputation inside these networks can serve to reduce the incentive for IPR infringements in some cases; this is the case when the necessity of multilateral cooperation gives agencies the incentive to use reputation information to reduce transaction costs (Williamson, 1975), and close-knit networks make reputation information available and reliable. The conditions needed for this mechanism are not generally met in the medical sector; the reasons are as follows. First, according to my interviews with various agents in the medical sector, production usually does not require much multilateral cooperation, so, although company representatives can communicate with each other through meetings, seminars, and exhibitions, in general they do not develop close-knit connections with others for cooperation (compared to, for example, the film industry and other standard-setting industries).³⁰⁹ In addition, as introduced in section 2.3, the industry concentration level is low in this sector and there are many scattered manufacturers. In this case, the reputational element is not important enough to deter potential infringements.³¹⁰

However, although in general the industry has an expanded network structure, the situation differs by company size. In pharmaceutical industries, there are still some (although not many) big innovative companies and many medium size companies, while the medical device industry has many more small scattered producers. When the few existing bigger companies are familiar with each other, they form a relatively small circle; as such, it is easier for them to monitor each other and detect potential infringements within that circle. In comparison, it is harder to detect

³⁰⁸ This has been mentioned by many interviewees, for example, interview 20160726A, with the Director of the Patent Department of a local pharmaceutical company; interview 20160812, with the General Manager of a local private Chinese medicine company, and interview 20160830, with the Senior Manager at the Business Development department of a local private pharmaceutical company.

³⁰⁹ Interview 20160518A, with a manager at a consultation company focusing on medical industry; interview 20160812, with the General Manager of a local private Chinese medicine company; interview 20160902A and 20160902B, with employees at the IP department of a local state-owned pharmaceutical company.

³¹⁰ Interview 20160623, with the Senior Vice President of a local private biomedicine company.

infringements from small producers scattered all over a huge territory.³¹¹ In this case, a big company in the spotlight would usually have less incentive to infringe another big company in the same circle.³¹²

2.5 Summary of Industrial Differences

In chapter five I introduce the distinction between "open or easy-entry" and "closed or hard-entry" industries, indicating how industrial characteristics affect the ease or difficulty for imitative companies to enter the market. From what I described in section 2, about the medical sector, it can be seen that "easy-entry" or "hard-entry" is not a definite characteristic for an industrial sector, but an issue of extent. The so-called "industrial" characteristics differ for industries inside the medical sector, but also can differ in different segments in each industry.

3. IPR and Company Behaviour

Building on the discussion of industrial characteristics in the previous section, in this section I discuss each industry separately, to illustrate how different agencies use patents and protect their innovations in practice. The industries I examine are as follows: the chemical drug industry, the biomedicine industry, the traditional Chinese medicine (TCM) industry, and the medical device industry.

3.1 The Chemical Drug Industry

3.1.1 Functions of Patents

As discussed in previous sections, for chemical drugs, a patent claim on a chemical compound (or relevant crystal forms) can provide strong protection because, as a product patent of a discrete technology, the patent is clearly defined by a chemical structure, covers a single product, and infringing evidence can easily be obtained from the market. In this case, patents like this are highly

³¹¹ Interview 20160616, with a manager of a medical software company.

³¹² Interview 20160708, with the Chief IP Officer from the IP department of a local biomedicine company; interview 20160429A, with the Executive Director of a local pharmaceutical company.

valued or even called "core patents",³¹³ and are used to serve the traditional function of ensuring innovation appropriation and excluding the exploitation by others. Relevantly, companies also need the patent to prevent themselves from being excluded by others (due to the fact that, if a company does not have patents, it is more likely to be sued by competitors because they do not have to worry about counter suits).³¹⁴

Besides ensuring appropriation of innovation profits, some other functions are also mentioned a lot by interviewees in the chemical drug industry.

First, almost all companies admit that one consideration for them to apply for drug patents is to get government support. Such support, mentioned by companies, includes: (1) Local governments give reimbursement and awards to specific individual patents (these, for example, can be around 10,000 RMB, i.e. US\$1,471, if an invention patent had been granted);³¹⁵ (2) there are certain projects allocating government funds to companies, which demand certain qualifications related to number of patents; (3) owning a certain number of patents is a crucial requirement for a company to be listed as a "high-tech" company, which can bring both rewards (that can be around a million RMB, i.e. US\$147,059) and privileges including tax reductions and extra scores in bidding (to get into provincial markets or be listed with hospitals);³¹⁶ (4) patented drugs can get faster approval from the CFDA.³¹⁷ Because point (1) has been on the decline since 2015, company representatives in interviews put more emphasis on the last three types of support.

Second, many companies said that patents can be used as a promotion tool to increase publicity and customer attention. One interviewee from a local chemical drug company mentioned

³¹³ Interview 20160726A, with the Director of the Patent Department of a local chemical drug and biomedicine company.

³¹⁴ Interview 20160830, with a Senior Manager at the BD department of a local private chemical drug company; interview 20160831C, with the Associate Director at the R&D department of a local private chemical drug company.

³¹⁵ For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early 2017 (i.e. 1 US dollar equals to about 6.8 RMB).

In China, patent fees are about 8000 yuan (US\$1,176) for an invention patent, 3000 yuan (US\$441) for a utility model patent, and 2000 yuan (US\$294) for a design patent; according to a recent study, in 2012, a city in Jiangsu province provided patent subsidies for an invention patent application from 1500 yuan to 3000 yuan (US\$221 to US\$441) and added a reward of 10,000 yuan (US\$1,471) if the application were granted (Lei et al., 2012, p. 13). These numbers are also confirmed by interview 20160429A.

³¹⁶ For example, in Guangzhou city, each high-tech company is entitled to a reward of one million yuan (US\$147,059).

³¹⁷ Interview 20160429A, with the Executive Director of a local pharmaceutical company; 20160726A, with the director of Patent Department of a local pharmaceutical company, 20160830, with a senior manager at the BD department of a local private pharmaceutical company, 20160831C, with the Associate Director at the R&D department of a private pharmaceutical company.

that about one third of their patents are used to increase the company's publicity and to meet certain government qualifications.³¹⁸

Third, for some listed companies or small companies seeking loans from investors, patents can be used to attract investments and enhance corporate value.³¹⁹ Because the government encourages the development of the medical sector (The Economist, March 18th 2017), many people are willing to invest in this sector, but among the investors are a large number who do not understand the industries very well and who rely on measures such as number of patents.³²⁰

3.1.2 Mechanisms of Innovation Protection

Although compound patents can be used to protect innovation profits, as introduced before, in China, most chemical drugs produced by local companies are generics (of foreign brands whose patents have expired), with their own secondary or peripheral patents (composition, process, formulation, method of use, among others) that provide less effective protection. However, most companies do not worry about this limited protection provided by patent laws; after many interviews, it had become clear to me that they were protected by other mechanisms.

First, technological or technical barriers are important in many cases, when supported by trade secrets or industry-specific know-how. As discussed, although process infringements are hard to identify, the complicated drug manufacturing process itself might serve as barriers to keep infringers away. Even though general information is publicized in patent claims, a few interviewees mention that, as the patent holder, they do not publicize important "tricks" such as those about precision control and cost control in large-scale productions,³²¹ so they would do a better job at purification and refinement than imitators.³²² For example, one interviewee told me that, if the best temperature of the manufacturing process is 5 degrees Celsius, they would write "20 to -10 degrees" in the patent claim, and any imitator would have to explore which exact temperature would work best.³²³ Furthermore, some drug manufacturing processes require a large

³¹⁸ Interview 20160831C, with the Associate Director at the R&D department of a private pharmaceutical company.

³¹⁹ Interview 20160726A, with the director of Patent Department of a local pharmaceutical company.

³²⁰ Interview 20160523, with the Deputy Managing Director at a consultation company focusing on medical industry.

³²¹ Interview 20160429A, with the Executive Director of a local chemical drug company.

³²² Interview 20160523, with the Deputy Managing Director at a consultation company focusing on the medical sector.

³²³ Interview 20160831C, with the Associate Director at the R&D department of a local private pharmaceutical company.

amount of investment, human capital and experience to ensure stability (for example, osmotic pump technology or nanotechnology).³²⁴ All these can prevent potential infringers from producing competitive products.

Second, perhaps most importantly, as introduced before, administrative regulations for chemical drugs are very strong. Aside from the observation period protection after market-entry, the market-entry regulations from the CFDA and provincial bidding system are also very strict. In combination, administrative regulations can exclude potential infringers for years and provide the innovator enough time to dominate the market and collect profits. According to a company representative, only after the five-year observation period can alternative product producers submit applications, and then the application would need two to three years to be approved; in sum, the combined administrative protections can keep infringers away for seven or eight years, which "is absolutely enough in a market as large as China" (as discussed in chapter nine, companies often pursue "enough" instead of "maximization", due to either their subsistence ethic, Confucian doctrine, or uncertain further costs).³²⁵ For companies, administrative protection is "more straightforward" because it does not require the company's private efforts to defend its own rights (for example to collect evidence of infringements).³²⁶ Besides these direct controls, as introduced in section 2.2.2, there is the Drug Data Protection policy for new chemical entities (NCE), which prevents potential infringers from applying for CFDA approval for years.

Third, market distribution channel control, as an established complementary capability, also seems to be an effective protection mechanism; it is especially important if the technological or technical barrier to copying the product is low. The fact that patients buy their drugs according to doctors' recommendations gives hospital doctors a lot of power in drug distribution. In China, each hospital usually only purchases one or two brands of drugs with the same function, and doctors usually do not easily change drug brands for safety concerns; because China has been having serious problems with food and drug safety controls (Q. He, 2015),³²⁷ doctors bear a high risk

³²⁴ Interview 20160830, with a senior manager at the BD department of a local private chemical drug company.

³²⁵ Interview 20160429A, with the Executive Director of a local chemical drug company.

³²⁶ Interview 20160726A, with the Director of Patent Department of a local chemical drug and biomedicine company.

³²⁷ For example, from 2005 to around 2015, there were more than 3000 stories about various scandals of food security or product

when they shift from a product they have prescribed for years to a new one. Due to these factors, this drug loyalty may be stronger than in the West. In this case, once the manufactures have sold their products and taken up a share of the market, it would be very hard for imitators to have a chance to get in.³²⁸ This is why most companies emphasize the importance of personal connections and quickly gaining a market share. Some companies even claim that, as long as their sale reps have cultivated relationships with doctors, they can always make profits.³²⁹

3.2 The Biomedicine Industry

3.2.1 Functions of Patents

With testing methods available in the laboratory, characterizing the molecular compound of a biological drug is more difficult than with chemical drugs, but it is still easier to identify compound-patent infringement compared to peripheral-patent infringements. In this case, in the bio-drug industry, macromolecule compound patents are valued most and are mainly used to ensure innovation appropriation and to exclude others from exploiting the innovation, or to avoid being excluded by others (i.e. the situation where a company cannot get into a certain market because relevant patents are held by others).³³⁰ Aside from this, companies also apply for patents to attract government support, publicity, and investments.³³¹ In the eyes of some interviewees, these companies are "tricking investors" with patents;³³² this may not be an objective judgment, but it indicates the fact that companies can use patents to attract investments.

3.2.2 Mechanisms of Innovation Protection

As the situation in the chemical drug industry, most companies in the biomedicine industry think compound (and relevant crystal form) patents are strong, and other types of patents are weak.

security in the media, not to mention other sources or those that have not been reported (Q. He, 2015, p. 2).

³²⁸ Interview 20160517B, with a sales representative of a state-owned chemical drug company; interview 20160719, with the Vice Dean of the research institute inside a local chemical drug company; interview 20160429A, with the Executive Director of a local pharmaceutical company.

³²⁹ Interview 20160319, with a researcher at a pharmaceutical company.

³³⁰ Interview 20160623, with the Senior Vice President of a local private biomedicine company; interview 20160708, with the Chief IP Officer at the IP department of a local biomedicine company; interview 20160719, with the Vice Dean of the research institute inside a local pharmaceutical company, whose business covers biomedicine.

³³¹ Interview 20160708, with the Chief IP Officer at the IP department of a local biomedicine company.

³³² Interview 20160719, with the Vice Dean of the research institute inside a local pharmaceutical company.

But, as with the chemical drug industry, people in the biomedicine industry do not worry much about patent infringements, nor do they take special strategies to protect their patents, because some alternative mechanisms are providing protections.

First, technological or technical barriers are even more evident in the biomedicine industry than in the chemical drug industry. It is harder for infringers to figure out how to manufacture the final product without guidance from the original company. As discussed, for most chemical drugs, manufacturing processes can be reverse engineered by means of the final products' structural form (although, as discussed, there is a difference in purification and refinement quality); but for macromolecule medicine with many uncertain elements, the manufacturing process cannot be discovered by analysing the final product in the lab (BIO, 2017).³³³ In addition, even when the general process is known, it is technically more difficult to control the stability and quality of biomedicine in large scale production.³³⁴ One biomedicine company representative told me that, as the first generic producer of a foreign biological drug, it did not meet with any competition until several years after market-entry, because it would take any imitator a long time to overcome the technological and technical barriers in large-scale cell cultivation.³³⁵ According to the representative, “[imitators only sprang up after many years] mainly due to technological problems.”³³⁶

Second, most administrative regulations I mentioned in the chemical drug industry (section 3.1) are also effective and valued in the biomedicine industry, except for the Drug Data Protection policy, which does not apply to biomedicine yet. However, for companies, other administrative regulations have already provided strong protections,³³⁷ like the long review process and the observation period. For biologics, the review process even provides stronger protections for companies, because biosimilar review requires a complete process of three-stage clinical trials,

³³³ Interview 20160831C, with the Associate Director at the R&D department of a local private pharmaceutical company.

³³⁴ Interview 20160719, with the Vice Dean of the research institute within a local pharmaceutical company; interview 20160726A, with the Director of the Patent Department of a local chemical drug and biomedicine company.

³³⁵ Interview 20160708, with the Chief IP Officer at the IP department of a local biomedicine company.

³³⁶ Ibid. Original Chinese words: “主要是技术问题”.

³³⁷ Interview 20160726A, with the Director of the Patent Department of a local chemical drug and biomedicine company; interview 20160719, with the Vice Dean of the research institute within a local pharmaceutical company.

which can take 5 to 8 years.³³⁸ (Chemical generic drug review only requires proving bioequivalence,³³⁹ not necessarily clinical trials.)

Third, established complementary capability, that manifests as a head start in market distribution and channel development, is also important in the biomedicine industry. Because most local biomedicine companies are generic drug producers, as in the chemical drug industry, even with some peripheral patents (such as process patents about how to synthesize the original compound), it may be hard for them to distinguish their products from other generic producers in terms of quality. In this case, they rely on marketing and personal connections to gain market share and control relevant distribution channels.³⁴⁰ Due to the reasons mentioned in section 3.1 on chemical drugs, once the manufactures have gained market share, it is very hard for imitators to have the chance to get in. One company representative told me that usually the first three generic producers of a foreign drug maintain 80% of the market share in China.³⁴¹

3.3 The Traditional Chinese Medicine (TCM) Industry

3.3.1 Functions of Patents

The patent system that originated in the West may not be suitable for protecting TCM. To gain a solid drug patent in either the current Chinese or Western patent systems, it requires (a) an indication of the precise active ingredients, (b) the enhanced treatment effect, and (c) the industrial application that requires standardization;³⁴² but these requirements are all very difficult to meet for TCM.

First, with regard to the identification of active ingredients, due to technological weaknesses in extraction and purification,³⁴³ TCM is mostly in the form of compositions, where it is usually

³³⁸ Interview 20160708, with the Chief IP Officer at the IP department of a local biomedicine company.

³³⁹ To prove bioequivalence is to show the generic drug contains the same active ingredients as the brand-name drug (the pioneer drug) and acts in the same way in the body.

³⁴⁰ Interview 20160726A, with the director of Patent Department of a local pharmaceutical company.

³⁴¹ Interview 20160719, with the Vice Dean of the research institute within a local pharmaceutical company.

³⁴² Interview 20160722, with the Vice Director and General Manager of a state-owned Chinese medicine research institution.

³⁴³ For example, according to interview 20160523 (with the Deputy Managing Director at a consultation company focusing on the medical sector), Chinese researchers have tried to extract a substance called "ellipticine" from plants for years, but they cannot purify it enough to be an effective drug; in the end it was extracted with high purification levels by Western companies and was developed as an anti-tumour drug.

not clear which elements are the actually effective ones; even if TCM products get composition patents, as discussed before, these patent claims are weaker than compound patents.³⁴⁴

Second, with regard to treatment effects, Chinese medicine is different from Western medicine in both medical theory and physical properties of drugs. Chinese medicine takes the view that a certain pattern of disease is the reflection of a disorder in the balance of the human organism; therefore, the root of the disease may lie in other parts of the body (which may seem irrelevant to the original disease); it is this imbalance toward which the medical treatment should be directed to regain overall harmony, while Western medicine often applies treatment directly to the disease itself (Y. Chen, 2010).³⁴⁵ TCM emphasizes synergistic effects of material combinations to gradually improve overall body health, not a single agent with precise treatment targets and effects (which would be more patentable). In this case it is hard to prove an enhanced treatment effect precisely.

Third, with regard to standardization in industrialization processes, TCM emphasizes individualized treatment, where the same herbs may work differently for different people even for the same disease (and an experienced doctor would be able to adjust treatments based on personal characteristics); during standardization the individualized effectiveness might be lost. In sum, it is very difficult for TCM to get protection from the patent system, especially core product patents, in the current patent system.

Furthermore, local companies and their agents are not so experienced as those in the West, and they have not developed enough expertise to compensate for this weakness in patent protection through patent-claim writing skills.³⁴⁶ In my fieldwork, I found that, as opposed to the chemical drug and biomedicine industries, almost no TCM companies I interviewed thought that patents

³⁴⁴ Interview 20160523, with the Deputy Managing Director at a consultation company focusing on the medical sector; interview 20160722, with the Vice Director and General Manager of a state-owned Chinese medicine research institution..

³⁴⁵ In the West there are also treatments that treat the whole body (e.g. an immune system treatment), but the way TCM considers interconnectedness is different. In TCM, everything that makes up a human being correlates at an energetic level to something external in nature. This principle of interconnectedness applies between different physical aspects of our bodies, each representing different elements of energy (Wood, Fire, Earth, Metal, and Water, which reinforce or neutralize each other, causing the organs themselves to reinforce or neutralize each other). For example, the kidney correlates with tissue in the bones and teeth, the sensory taste of salt, the sensory aspects of the ear, and the areas of the lower back, knees, and the heels and feet.

³⁴⁶ Interview 20160902A, with an employee at the IP department of a local state-owned pharmaceutical company, who is responsible for patent-related issues.

were useful in appropriating innovation profits and excluding potential infringers. In fact, some companies even claim that "I only apply for patents so that I can call my product a patented product" (for the alternative functions mentioned in the following).³⁴⁷

In this case, alternative functions, including government support, publicity, and funding opportunity, are much more important in the TCM industry than in Western-style drug industries. One of the functions that was most mentioned by my interviewees is that patents can lead to a higher score in provincial biddings.³⁴⁸ This is especially emphasized in the TCM industry, possibly because, as discussed before, compared to the Western sector, it is even harder to distinguish the curative effects of different drugs in the TCM sector. When the difference in treatment effect is slim, additional measurements such as patents become more significant for purchasers to justify their decisions.

3.3.2 Mechanisms of Innovation Protection

Because the patent system originated in the West and is not entirely suitable for protecting Chinese medicine, the government, has provided special administrative protection for TCM. In this case, the TCM sector relies much more on alternative protection mechanisms, especially administrative regulation, to protect their innovations, instead of using patent law.

First, due to the complexity of preparation and manufacturing of TCM, technical barriers exist to some extent.³⁴⁹ Many interviewees indicated that it is very hard to use patent law to protect others from exploiting their innovations, and they rely more on technical know-how about the manufacturing process.³⁵⁰ One interviewee mentioned an example about Donkey-hide gelatine (Latin: colla corii asini), which is gelatin obtained from the skin of a donkey by soaking and stewing. The brand famous for the production of this product was Dong-E, whose product has always been translucent, while another company who tried to copy it could only produce turbid products; the difference turned out to be in the details of the steaming process.³⁵¹

³⁴⁷ Interview 20160722, with a Vice Director and General Manager of a state-owned TCM research institution.

³⁴⁸ Interview 20160712 with a manager at a local TCM company; interview 20160812 with the General Manager of a local private TCM company.

³⁴⁹ Interview 20160718, with a professor focusing on TCM research.

³⁵⁰ Interview 20160722, with the Vice Director and General Manager of a state-owned TCM research institution.

³⁵¹ Interview 20160812, with the General Manager of a local private TCM company.

Second, as introduced in section 2.2.4, in addition to all other administrative protections for drugs (except for data protection for new chemical entities), due to a government regulation, TCM also enjoys a special "Protection of TCM", which lasts from seven to thirty years; during this period, only those few companies who got the certificate of protection can produce the relevant product. However, many interviewees said that, the "protection of TCM" is redundant under current CFDA approval requirements and the bidding system.³⁵² For TCM, the existing CFDA approval process is enough to prevent not only potential infringers (as happens in the Western-style drug industries), but also late-moving generic producers from entering the market.³⁵³ To be approved as generics, one requirement is to scientifically demonstrate that the generic product and the original product has quality consistency. However, it is hard to prove it for TCM in general, because common methods in proving quality consistency of drugs, such as bioequivalence tests, can only be used for single elements; they cannot be used directly on TCM with multiple components and an uncertain material basis of efficacy (Yibin Feng, 2013; Hou, Yue, & Zhang, 2016). An additional requirement for generics of TCM is to have the same raw material source as the original drug. If the original drug producer controls the raw material source and prevents others from achieving the same raw material, then others cannot get approval for producing corresponding generics. One example mentioned by an interviewee is "notoginseng (*san qi*)", a major raw material for the TCM drug "Compound Danshen Dropping Pills" (a drug to regulate Qi and activate blood circulation). Notoginseng requires a very specific environment to grow, including variables such as latitude, altitude, humidity, temperature, and soil status; 90% of notoginseng in the world is produced in Wenshan district in Yunnan Province in China.³⁵⁴ When the original producer has purchase exclusivity contracts from the district, then others cannot get the same raw material to produce generics.³⁵⁵

³⁵² Interview 20160722, with the Vice Director and General Manager of a state-owned TCM research institution; interview 20160812, with the General Manager of a local private TCM company.

³⁵³ Interview 20160712, with a manager at a local TCM company; interview 20160722, with the Vice Director and General Manager of a state-owned TCM research institution.

³⁵⁴ Notoginseng can be produced in other provinces with similar latitudes too, but according to TCM researchers, those produced in Wenshan have a greater amount of the active ingredient.

³⁵⁵ Interview 20160719, with the Vice Dean of the research institute inside a local pharmaceutical company.

Third, as with other drug products, TCM drugs are also mainly distributed through hospitals, making channel cultivation and personal connections very significant; first-movers with established channel connections can easily block similar products from late comers.³⁵⁶

What needs to be noted is that, trademark is emphasized a lot by interviewees from the TCM industry. This may be related to its technical nature: as discussed before, even when two companies are producing medicine with the same formula, processing detail, i.e. technical know-how, can make a lot of difference in curative effects; in this case, a famous trademark can represent a better curative effect and attract more customers.

3.4 The Medical Device Industry

3.4.1 Functions of Patents

Different from the compound patent claims in the chemical drug and biomedicine industries, as introduced in section 2.1.1, patent claims in the medical device sector are mainly about complex technologies. As discussed in section 2.1.1 and in chapter five, without significantly distinguished innovation or excellent patent-claim writing skills, patent claims on these complex technologies provide weaker protection than patents on discrete technologies. This is because, for patents on complex technologies, a product or process can be comprised of numerous patentable elements, so it is less likely to have a clear patent right claim over a specific product; as a result, it is harder to identify a product infringement and to defend a patent on complex technologies.

Although this weakness in legal definition can be partly compensated for by and excellent patent writing skills and significantly distinguished innovations (i.e. the invention is so paradigm-changing that it's hard to produce similar product without using the patented part); the two conditions are not usually met in the Chinese context. First, most medical device companies are small companies that do not have the expertise to compensate for the weakness of complex patent claims through writing skills (and it is hard to find highly experienced and skilled patent agencies in present-day China). In addition, as stated, the medical device industry is highly fragmented, and

³⁵⁶ Interview 20160712, with a manager at a local TCM company; interview 20160812, with the General Manager of a local private Chinese medicine company.

filled with a large number of small companies producing low-cost products with little technological innovation. Most companies admit that their patents are just "small structural changes that are not helpful in selling the product".³⁵⁷ In this case, companies in the medical device industry, similar to the TCM industry, get patents mostly for the alternative functions, including for government support, publicity, and attracting investments.

This reliance on alternative functions can be manifested by the large number of utility model patents in this industry. Many companies I interviewed admit that most of their patent applications are utility model applications, which can be processed faster than invention patents, i.e. the companies can meet certain qualification criteria, e.g. for government support, faster with this type of application; they may also divide one patent into dozens of patent parts, just to have a larger number of patents.³⁵⁸ One representative from a medical device company mentioned a composition patent to me; he said that this patent cannot lead to profitable products in practice, but it still attracted many investments.³⁵⁹

3.4.2 Mechanisms of Innovation Protection

As an industry based on complex technologies, for the medical device industry, patent protection for innovations can be weak. According to an IP strategist, even in the Western market, medical device patents easily fail to "create a scope of protection" that is sufficient to justify relevant investment; competitors or imitators can enter the market with a non-infringing alternative but one that nonetheless adopts insights that formed the basis of the patented innovation (Hutter, 2016). Aside from that, because the development of the modern medical device industry in China started decades later than the pharmaceutical industries,³⁶⁰ domestic companies lack both technical accumulation and market experience to develop professional patent strategies to compensate for this weakness. In fact, almost all medical device companies I interviewed said that patents are useless to them in excluding imitators. Most of them rely on alternative mechanisms to ensure profits from innovative products.

³⁵⁷ Interview 20164229B, with an employee responsible for Technological Project Application in a medical device company.

³⁵⁸ Interview 20160526, with the General Manager and Partner of a local medical device company.

³⁵⁹ Interview 20160515, with the Vice President at a medical device company.

³⁶⁰ Interview 20160623, with the Senior Vice President of a local private biomedicine company.

First, technological (or technical) barriers and technological dynamics are major methods for pioneering local device producers (including the first generic product producer) to secure their market share. With regard to technological barriers, as opposed to drug compounds, where the final structure more or less dictates the way a product is copied, it is very difficult to copy a complex medical device from a final product without an adequate material and technological base.³⁶¹ According to an interviewee from a medical device company, it took them twenty years to copy a Germany product, because they did not have the same level of material, cost control, precision, heat treatment, environment control, management support, assembly experience, among others; these can only be improved gradually, through individual exploration or other kinds of development.³⁶² After they mastered all these aspects to produce a product worth copying, it would also take domestic imitators many years to reach the same quality as the original product.³⁶³ With regard to technological dynamics, very different from in the pharmaceutical industries, where drug development and replacement can take a long time, medical device product replacement and upgrading can be very fast.³⁶⁴ In this case, pioneer companies often keep imitators away through continuous product upgrading. A medical device company told me that they never fear imitators, not only because their product has certain technical complexity, but also because they have a complete schedule of product upgrading (which needs to fit each bidding cycle) to dominate the market; when the imitators learn to produce the first generation, they might already put the second generation onto the market, making the first generation obsolete.³⁶⁵

Second, because medical devices are also under CFDA's regulation and its major distribution channels are still hospitals, the aforementioned market entry controls through CFDA approval process and the bidding system are also effective here (although companies do not necessarily view this as a protection mechanism). One representative from a consulting company told us that

³⁶¹ According to interview 20160319 (with a researcher at a pharmaceutical company), this is possibly why the high-end device market is dominated by foreign brands, and local producers are concentrated in the mid-and-low-end market even if some high-end devices are not patented in China. In interview 20160518A, a manager in a consultation company focusing on medical industry also mentioned the difficulty of copying a complex medical device.

³⁶² Interview 20160515, with the Vice President at a medical device company.

³⁶³ Ibid.

³⁶⁴ Interview 20160719, with the Vice Dean of the research institute inside a local pharmaceutical company.

³⁶⁵ Interview 20160526, with the General Manager and Partner of a local medical device company.

it usually takes more than 200 days for a medical device company to get CFDA approval after application.³⁶⁶ Another company complained that even the clinical trial approval took them ten months, then the clinical trial took at least six months, then after the application for CFDA production approval, it took them another six to eight months to get the final production certificate.³⁶⁷ Aside from this, the CFDA usually only approves one or two generic products for a pioneering product, which straightforwardly keeps all latecomers away.³⁶⁸

Third, with regard to established complementary capacity (introduced in chapter five, section 2.2), because the distribution channel for medical devices is similar to in pharmaceutical industries (mainly through public hospitals), prior distribution channel cultivation and personal connections are also important for medical device producers.³⁶⁹ For most small companies producing non-distinctive products with minor innovations, price competition, marketing, and personal connections are significant in ensuring their profits. One medical device company I interviewed produces a life-support machine which can remove mucus and drain them from a patient's airways.³⁷⁰ A manager from that company told me that, their strategy is to gain market share through selling machines at a low price in the beginning; once this succeeded, the hospitals must continue to always buy their supplies to go with the machines.³⁷¹

4. Conclusion

I have introduced the general background of the Chinese medical sector and the four industries inside it; I discussed the technology types, administrative regulations, market characteristics, and social network structure in these industries, and then I discussed how these characteristics affect the difficulty for imitators to get into the market, and affect companies' IP protection mechanisms in each industry. It is clear by now that, industries in the same sector can exhibit different IP protection patterns, due to differences in industry characteristics. Even in the

³⁶⁶ Interview 20160518A, with a manager at a consultation company focusing on the medical sector.

³⁶⁷ Interview 20160526, with the General Manager and Partner of a local medical device company.

³⁶⁸ Interview 20160523, with the Deputy Managing Director at a consultation company focusing on the medical sector.

³⁶⁹ Interview 20160515, with the Vice President at a medical device company.

³⁷⁰ Interview 20160526, with the General Manager and Partner of a local medical device company.

³⁷¹ Ibid.

same industry, companies with different technological bases, market positions and resources would be affected by different protection mechanisms.

In general, most companies in the medical sector accumulate patents for various goals, not just for excluding others from exploiting the innovation; these goals include government support, publicity and promotion, and attracting investment. With regard to protection mechanisms, such things as technological or technical barriers, administrative regulations, and channel control are all in effect. Because cross-company cooperation is not frequent in this sector, there is less reliance on reputation information gained through the network; as a result, social network structure and reputation is less useful in harnessing infringements.

One more thing to be noted is that, with regard to IPR issues, I found that medical companies interact with each other in different ways, depending on the other party's characteristics. This fact has an underlying logic that corresponds to the rational-choice decision-making model discussed in chapter nine. Specifically, there are two dimensions where these interaction patterns differ.

(1) Dealing with local or foreign companies

In the medical sector, companies told me that they seldom have IPR disputes if they only sell in the Chinese market.³⁷² This may be due to the following two reasons. (a) With the slow approval process, (according to drug company representatives) it takes more than 10 years from the time of getting a patent to getting the drug onto the market, e.g. most drugs marketed recently (around 2010s) usually had patents issued before China joined the WTO. At that time many IP-holding foreign companies did not pay much attention to the Chinese market and therefore did not apply their patents inside China. Without patents, there are of course not many patent disputes. (b) Local medical companies would be more careful about intellectual property protection if they sold in foreign markets or if they were doing business with foreign entities. This is partly because foreign

³⁷² This may be different from many other industries, because as indicated by the overall data, most local IPR civil cases are between local parties. In 2015, among the 101,324 closed first-instance IP civil cases in China, 1327 (1.3%) involved foreign parties (the proportion is higher in more open economic areas such as Shanghai, where the proportion is 13.5%), and most of them are brought by foreign parties (Supreme People's Court, 2016; Yuan, 2011). This could mean that local companies pay more respect to foreign IPRs or that they are not willing to engage in disputes with foreign companies. In addition, foreign companies are more cautious about bringing lawsuits in China. In fact, foreign companies seldom bring lawsuits without serious preparation, and this is perhaps why foreign patentees have a higher winning percentage than Chinese patentees.

patents are more valuable and foreign companies usually have stronger IP teams; infringing them is more likely to induce disputes; another possible reason is that local companies have this feeling that local competitors and buyers are less serious regarding IP infringement issues, compared to foreign parties. According to an interviewee with a local pharmaceutical company, their local clients would not care how they make the product and do not require non-infringing promises, while foreign companies would ask for a statement of non-infringement, and require relevant contract clauses.³⁷³

(2) Dealing with small or big companies

Although drug producers emphasize that they pay great attention to IPR, they seldom have IPR disputes, especially as plaintiffs. When infringement is detected, drug producers choose different methods for facing different infringers. If the infringers are geographically scattered small companies or workshops, the original producers usually try to report to the related state agencies (or the state agencies, such as the police, might initiate), and transfer the rights protection costs to public agencies; if the infringers are big corporations or other targets that are easily identified and have financial capability, the original producers usually first communicate with them through, for example, a private letter, to try to solve things personally, or sending a legal cease and desist letter; if there is no satisfactory result or if the infringer does not respond, or if the response infuriates the original producers, they would then think about filing a lawsuit.

³⁷³ Interview 20160831C, with the Associate Director at the R&D department of a local private pharmaceutical company.

Chapter VII. Case Study: The Telecommunications Equipment Sector

In this chapter, I study the sector related to telecommunications equipment manufacturing, called the “telecommunications equipment sector” or the “telecom equipment sector”. Telecommunications equipment is hardware used for the purposes of telecommunications.³⁷⁴ It is a four-digit category in the NAICS (code 3342)³⁷⁵ and a three-digit category in the SIC (code 366).³⁷⁶ Telecommunications equipment includes both capital goods, such as transmission equipment and switching equipment, and consumer products (sometimes also called customer premises equipment), such as mobile phones and routers (state administrations and my interviewees treat them as consumer goods,³⁷⁷ but sometimes they are treated as capital goods by industrial companies). As in the rest of the world, in China this sector is one of the most R&D intensive-sectors as well as one of the sectors where intellectual properties are most concentrated (Fan, 2006); in this case, it is highly relevant to IP-related topics.

In this chapter, for consumer telecommunications products, I focus on mobile phones as a representative product; this is because the mobile phone market has been growing much faster in China in the past few years than any other consumer product in the sector:³⁷⁸ more than a decade of rapid growth has made China the largest market for mobile phone handsets in the world, with about 1.4 billion cell phone subscriptions in 2017 (National Bureau of Statistics of China, 2017); China is also the world’s largest exporter of mobile phone handsets (Imai & Shiu, 2011). For capital goods, I focus on wireless communications equipment (also called wireless equipment, as opposed to fixed line equipment). The reason is that, the telecom market is shifting away from

³⁷⁴ Telecom equipment manufacturing can be roughly divided into five sub-sectors: optical transmission systems, switch systems, access systems, data communication systems, and mobile communications.

³⁷⁵ Sub-categories under it include: 33421 Telephone Apparatus Manufacturing, 33422 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, and 33429 Other Communications Equipment Manufacturing.

³⁷⁶ Sub-categories under it include: 3661 Telephone and Telegraph Apparatus, 3663 Radio and Television Broadcasting and Communications Equipment, and 3669 Communications Equipment, Not Elsewhere Classified.

³⁷⁷ The General Administration of Quality Supervision, Inspection and Quarantine categorizes routers as consumer goods, see the website:

http://cpzljds.aqsiq.gov.cn/xfzn/cpzlxfzn/ryxfp/201702/t20170221_483066.htm.

³⁷⁸ This is perhaps due to income growth (Euromonitor, 2016), and the development of wireless technology (larger bandwidth, higher surfing speed, among others).

fixed or land lines so the interest in innovation in it has fallen (Kaul, Ali, Janakiram, & Wattenstrom, 2008, p. 177), making it less relevant in an IP-focused study. In fact, many international companies in telecommunications are walking away from fixed lines and focusing wholly on wireless (Crawford, 2013, p. 161).

I conducted ten in-depth interviews in the telecom equipment sector in China, covering representatives from two of the largest telecom equipment companies there and a few smaller companies, as well as representatives from certain telecom industry associations. This chapter is mainly based on data from these interviews; in addition, I also collected data from participant observations, for example at forums and seminars related to intellectual property right (IPR), participated in by both scholars and industry representatives, including IP department managers from local and international telecom equipment companies. During these participant observations, I was able to hear different parties express their opinions with regard to telecom and IP-related topics, and I had casual chats with some representatives during tea breaks. Some secondary literature such as industrial reports are also used as a complementary data source.

In the first section of this chapter, I introduce some general background for this sector, including characteristics of telecom equipment patent (especially the standard essential patent, discussed in the following section), a brief overview of the sector's development in China, and how the state intervenes in this sector. Based on the framework I developed in chapter five, the availability and effectiveness of various innovation protection methods (which limit the choices of industrial companies) are to some extent determined by industrial characteristics, mainly including four aspects: technological characteristics, administrative regulation, market characteristics, and network structure. Given this, in the second section, I discuss these four specific aspects of industrial characteristics. In the third section, I elaborate how Chinese companies in this sector use patents in practice, including functions of patents and functions of IP lawsuits, as well as alternative innovation protection methods. I explain industry characteristics before I talk about company behaviour because: (1) product feature and institutional backgrounds can help the readers understand the industrial characteristics; (2) both institutional background and industrial characteristics set the context for company behaviours and limit their choices. In the fourth, and

concluding section, I summarize company behaviours in this sector.

1. General Introduction

Based on my interviews and some industry literature, I distinguish two different types of telecom equipment: (A) consumer products (or end user products), represented by mobile phones; (B) capital goods, represented by wireless communications equipment, such as switches and base stations (BS).³⁷⁹ Although they are based on similar types of technologies, various differences exist between them:

(1) Customer base, corresponding distribution channel, and innovation direction: Consumer products mainly target individual customers, and are usually distributed through retail channels, including online channels (for example, the brand's official website and e-commerce websites) and offline channels (for example, super chain stores and operators' service points). Here, a product's market share can be significantly influenced by marketing, and innovations tend to be related to additional functionality for retail customers. As for wireless communications equipment, their target customers mainly include corporations (for example, operators and companies which need internal networks) and institutions (for example, universities). Products are usually traded in batches, directly between manufacturers and purchasing institutions. Here, a major factor influencing market share may include reputation related to product costs and performance; to establish reputation of this kind, innovations in this area tend to focus on cost reductions and mission-related performance improvements.

(2) Technological requirements: the production of wireless communications equipment has a much higher technological requirement in general; as a result, the industry of wireless communications equipment is more concentrated, and has a lower level of competition.³⁸⁰ But the mobile phone market is also not homogeneous; high-end markets for smartphones using in-house designed chips have a very high technological barrier, while the technological

³⁷⁹ A base station is a piece of equipment that facilitates wireless communication between user equipment (UE) and a network.

³⁸⁰ Interview 20160601A, with the chairman of the Board of a local private telecom company.

requirement in producing medium-and-low-end mobile phones with purchased integrated chips is very low.

How these differences affect relevant IP behaviours is discussed later in this chapter, in sections 2 and 3. What needs to be noted here is that, the difference between consumer products and wireless communications equipment, although not negligible, is not so huge as what exists between some industries inside the medical sector. A similar technological base (information and telecom technology) exists for the two industries (Fan, 2006, p. 360). In China, many telecom equipment companies do well in the two different categories, which are managed within the same organizational structures. For example, Huawei's IPR department is responsible for patent issues for both products for operator and products for individual consumers (i.e. end users).³⁸¹

In the following parts of this section I introduce a patent type with particularly interesting characteristics, the standard essential patent, which is commonly used in this sector; specific technological characteristics attached to a patent can affect the effectiveness of various IP protection methods, and have implications for companies' IP-related behaviours. Then I briefly review the development of this sector, which forms the background of company decision making.

1.1 Telecommunications Standards and Patents

As in many equipment manufacturing industries, patents in the telecom equipment sector usually cover only one of many components of a product (the effect of this is elaborated in this chapter, section 2.1). One feature of the telecom equipment industry is that many patents may be related to certain technical "standards". Telecommunications standards are the underlying "laws" that govern the global information and telecommunication system, which can define how telecommunication networks operate. They ensure compatibility between different functional elements and different areas and this plays out in three dimensions, as follows (Jayakar, 1998, p. 721). The first is with regard to physical operation and pertains to how objects fit together

³⁸¹ Interview 20160702, with an employee at the IP department of a top local private telecom company. The interviewee also mentioned that, in Huawei, the wireless communications equipment part still dominates, but customer products generally have been developing very fast and are making up a larger proportion of their business.

physically or electromagnetically, e.g. peripheral and CPU equipment for a computer. The second is with regard to communication and pertains to how two devices can communicate with each other, such as computer protocols that enable computers to exchange data. The third is with regard to design conventions and has no functional utility but adds convenience to transactions, e.g. the design of icons and symbols must be accessible to all users. Telecommunications networks in every country in the world utilize formal telecommunications standards to connect and communicate. Without public agreements and the telecommunications standards that codify such agreements, wide-area voice and data communications would not be possible (Communications Standards Review, 2003).

In practice, there have been a few ways by which a telecom standard is formed and accepted by the whole industry. First, a de facto standard can be set by an industry leader, which is then adopted by the entire industry, or it can emerge when one standard achieves a predominant market share over its competitors. For example, a product or service is introduced into the market by the innovator, achieves wide-spread acceptability, and is then recognized (either formally or informally) by industry participants as a standard for the whole industry. Second, the government, usually a regulatory agency, may set standards for the entire industry. Third, international organizations introduce standards through specialized agencies. (Standards formed this way are usually called recommendations, and have non-mandatory status until they are adopted in national laws.) Standards set by governments or international agencies are called “de jure” standards (Jayakar, 1998, pp. 721-722).

With the expansion of telecom networks, international agencies became the most important standard-setting body; the major formal telecom standard-setting organization (SSO) is the International Telecommunication Union - Telecommunications (ITU-T), which defines current world-wide telecommunication standards (ITU-T Recs).³⁸² China joined the ITU in 1972 and has been involved in international standard-settings for a long time. The standard-setting procedures of the ITU-T are usually as follows: the organization defines some technological scenarios, then

³⁸² Aside from the ITU, there are also some regional standard-setting bodies, such as ETSI (The European Telecommunications Standards Institute), and TIA (the Telecommunications industry Association).

various companies or research teams propose their own technical solutions (for example, for 5G Radio Access Technologies, different companies propose different codes, including the Polar, the LDPC, and the Turbo codes); in the end the organization would approve a certain solution for a specific scenario, and it becomes a standard (for example the Polar code proposed by Huawei was selected to be the coding scheme of 5G control channels).

Due to the requirements of high interconnection in this industry and the high density of patent claims per product, almost no single company can produce a product without using another company's patents; in the meantime, many patents are basic to production in this sector, and cannot be bypassed.³⁸³ Companies in the telecom equipment sector often talk about two types of basic patents that competitors cannot bypass (i.e. they have to use the technology in the patent to produce a product in this sector, either by getting a license or by infringing).

First, a patent that applies to an invention that must be used to comply with a technical standard is called a standard-essential patent (SEP), or an "essential patent". Standardisation organizations require licencing of essential patents to be on fair, reasonable, and non-discriminatory (FRAND) terms.³⁸⁴ In China, FRAND is emphasized in the *Interim Provisions on the Administration of National Standards Involving Patents*.³⁸⁵ With the limits from FRAND, essential patent owners may not be able to sue infringers whenever they want (because before suing they have to prove that a negotiation process following FRAND has been attempted).

Second, a patent that must be used in production in this sector (or where it would be very costly not to use it) but is not included in standards is called a "killer patent".³⁸⁶ One example of a killer patents is a patent issued to Lucent Technologies, about a method for ensuring that voice data packets get high priority on the Internet.³⁸⁷ Another example is Apple's killer patent behind

³⁸³ Interview 20160803, with a manager at the IP department of a top local state-owned telecom company; interview 20160512, with the IP Business Director of a top state-owned telecom company.

³⁸⁴ "Fair" means licensing terms should not be anti-competitive; "reasonable" means reasonable licensing rates, i.e. a rate charged on licenses which would not result in an unreasonable aggregate rate if all licensees were charged a similar rate; "non-discriminatory" means that licensors should treat each individual licensee in a similar manner.

³⁸⁵ See http://www.gov.cn/gzdt/2014-01/26/content_2576208.htm.

³⁸⁶ Interview 20160702, with an employee at the IP department of a top local private telecom company.

³⁸⁷ See: <https://www.technologyreview.com/s/402711/five-killer-patents/>.

Siri, which relates to an intelligent automated assistant implemented on an electronic device.³⁸⁸

It is easy to prove the infringement of an essential patent, because once the patent is included in essential standards, then it must be used by other producers in the area,³⁸⁹ but the ability of patent holders to sue infringing competitors are limited by the terms of FRAND. On the other hand, killer patent holders can freely sue infringing competitors, but its evidence collection would be harder, because it is not written in the standards, meaning that extra evidence collection is needed (Yesipo, 2014).

1.2 Sector Development

In the last three decades, China's internet and mobile phone users have perhaps represented the fastest market growth in the world. By the end of 2013, the number of internet users in China reached 600 million, and around 500 million of them were mobile internet and smart phone users (Jun Zhang, 2016). China is now the world's largest 4G wireless market by number of subscribers, with more than 300 million individuals connected. That accounts for roughly half of the global total (Kida, 2015). In the 1980s, China used to completely rely on imports for the acquisition of telecom equipment (Q. Zhang, 2000), but with the development of Internet technology and the domestic market, the telecommunications equipment sector has grown fast. Initially the development of capital goods laid a basis for the development of consumer products. Recently, the relationship has reversed and the growth of consumer products, especially the smartphone market has driven the development of capital goods. This is because larger numbers of consumer products require a faster network with a larger transmission capacity, and this requires the development of wireless communications equipment.³⁹⁰

There is a consensus that China has more or less caught up in wireless communications equipment, and now it is becoming more and more competitive in the mobile phone industry. This

³⁸⁸ See: <http://www.patentlyapple.com/patently-apple/2012/01/apple-introduces-us-to-siri-the-killer-patent.html>.

³⁸⁹ However, one technology can have multiple standards, so it is not necessary that producers producing the same product must use the same essential patent. For example, standards for 3G technology include WCDMA, T-CDMA, and Winmax (Interview 20160803).

³⁹⁰ Interview 20160601A, with the chairman of the Board of a local private telecom company.

is indicated by the fact that the ITU mentions China as a “telecommunication superpower” in its Telecom Asia report (ITU, 2002), and the fact that there is a lot of literature studying the Chinese telecom equipment industry as a successful example of an emerging economy that has caught up to and now competes with Western multinationals (Fan, 2006; X. Gao, 2011; Shan & Jolly, 2011).

Corresponding to the above-mentioned consensus, it can be seen that, Chinese producers are highly innovative in this sector. Now the four biggest Chinese telecom equipment manufacturers are: Huawei, ZTE, DTT, and GDT. They spend a lot of their revenues on R&D and generate a large number of patents.³⁹¹ Huawei and ZTE are especially prominent in terms of their R&D capacities and their production facilities. Huawei has emerged as a world-class telecoms-equipment company and one of the world's biggest generators of high-quality patents, and is now even at the forefront of research on 5G technology for the next generation of mobile phones, alongside Sweden's Ericsson (The Economist, September 12th 2015). Recently, according to the World Intellectual Property Organization (WIPO) report about Patent Cooperation Treaty (PCT) application numbers,³⁹² Huawei ranked number one in PCT applications among worldwide companies, while ZTE ranked number three (WIPO, 2016c).³⁹³

This sector is also highly internationalized compared to the medical sector discussed in chapter six and the film & TV sector discussed in chapter eight. Chinese producers are competing with foreign producers, both domestically and internationally. Many Chinese companies get the majority of their profits from overseas markets.³⁹⁴ For example, in 2011, Huawei’s customers served several billion people in over 140 countries, and it was involved in over half the rollouts of

³⁹¹ Huawei and ZTE are much larger than DTT and GDT. By the early 2000s, Huawei and ZTE had over 22,000 and 12,000 employees, respectively, which were comparable to the workforces of the two largest multinational corporations in China, Siemens and Motorola, who had about 21,000 and 13,000 employees at that time, respectively. In comparison, DTT and GDT only had about 4000 and 2500 employees, respectively.

³⁹² The PCT is an international treaty with more than 145 Contracting States. The PCT makes it possible to seek patent protection for an invention simultaneously in a large number of countries by filing a single “international” patent application instead of filing several separate national or regional patent applications. The granting of patents remains under the control of the national or regional patent Offices in what is called the “national phase”. For details, see WIPO website: <http://www.wipo.int/pct/en/faqs/faqs.html>.

³⁹³ According to the World Intellectual Property Organization (WIPO), Huawei Technologies lead for the second consecutive year with 3,898 published PCT applications, or an additional 456 applications over 2015. US-based Qualcomm Incorporated was the second largest applicant in 2015, with 2,442 published applications, while China’s ZTE Corporation ranked third with 2,155 PCT applications. See:

http://www.wipo.int/pressroom/en/articles/2016/article_0002.html.

³⁹⁴ Interview 20160422, with the Chief IP Officer of a top state-owned telecom company.

super-fast 4G mobile networks announced in Europe (The Economist, August 4th 2012);³⁹⁵ Huawei has surpassed Ericsson as the world's largest supplier of wireless infrastructure, by market share (Kida, 2015); it has also formed joint-venture subsidiaries with foreign companies to cooperate in R&D and investments (W. Li, 2005).

The fact that some leading Chinese telecom equipment companies have become world-class innovative manufactures which emphasize international markets may indicate very different IP behaviours, compared to those companies focusing more on the domestic market. There is also a difference between the mobile phone and the wireless communications equipment market in this sense. While the major market for many wireless communications equipment manufactures is the international market, many mobile phone manufactures still focus on the expanding domestic market. (The difference becomes clear with details from interviews in section 3 of this chapter). But, as I discussed at the beginning of this subsection, many companies have both business in both markets; in this case, differences in their behaviour may be neutralized to a certain extent. For companies focusing on the international wireless communications equipment market, to survive in the overseas market, a natural development is to follow international standards in IP-related issues.³⁹⁶ They may adjust their behaviour in the domestic market, but their whole operational system and their organizational structure have been developed to fit the international environment; as such, these have influence on their domestic actions. (The behaviours of these firms will be discussed in section 3).

2. Details of Industry Characteristics

In this section, I elaborate on the technological, administrative regulatory, market, and social network characteristics of the telecom equipment sector. These characteristics can limit companies' choices in IP-related issues, and thereby shape their strategies, actions, and priorities; they also determine the availability of various innovation protection methods (discussed in section 3).

³⁹⁵ See, *The Economist*, Aug 4th, 2012, at: <http://www.economist.com/node/21559929>

³⁹⁶ Interview 20160702, with an employee at the IP department of a top local private telecom company.

2.1 Technological Characteristics

As discussed in chapter five, two conditions are required for effective legal IP protection: (i) infringing behaviour can be defined according to clear legal definitions; (ii) the system must also have effective complementary enforcement, where the infringing behaviour can be identified, where it can be reasonably proven that there has been an infringement, and where the infringement can be stopped through a formal procedure, either judicial or administrative, at a reasonable cost. In this section I discuss how the technological characteristics of the telecom equipment sector affect these two conditions; I also discuss the possibility of technological barriers.

2.1.1 Defining and Identifying Infringements

To restate the distinction between discrete technology and complex technology, discrete technology products refers to a product or process that is comprised of one patentable elements (for example one chemical drug is usually comprised of a single patentable chemical compound), while products of complex technologies mean where one product or process is comprised of numerous patentable elements. In the case of discrete technology, one IPR can effectively define rights over a specific product or category of products (Hanel, 2006, p. 901), and it is very difficult to bypass or invent around (Taylor & Silberston, 1973). In comparison, in the case of complex technology one IPR is less likely to effectively define rights over a specific product or category of products. As a result, in the case of complex technologies, it is harder to identify a patent infringement, and the patent holder has less monopolistic power over a product, because the patent can only cover one of many components constituting that product.

Telecom equipment, like a mobile phone, is a complex-technology product, as one mobile phone can contain more than 100,000 patentable elements (X. Zeng, 2016). In theory, it should be comparatively easy for competitors to bypass or invent around a telecom equipment product, and it should be difficult to define infringements. However, because of the existence of standard essential patents, this is not the case in telecom equipment industry practice. Because essential patents are included in certain technology standards, manufactures producing in that area cannot bypass the standard, i.e. they cannot invent around the essential patent. According to interviewees from telecom equipment companies, defining the infringement of an essential patent is very

straightforward; if a competitor is producing in the area covered by the standard but does not get a license, then the patent owner knows it is infringing.³⁹⁷ If the patent owner has gone through the licensing negotiation required by the FRAND principle (see section 1.1 of this chapter), and no licensing agreement can be reached (possibly because they cannot agree on a “reasonable” price), then the patent owner can prosecute confidently.

2.1.2 How Essential Patent and Continuous Technology Affect IPR Defence

In the telecom equipment industry, many patents are process patents, covering methods used in the manufacturing process. As discussed in chapter five, because processes happen inside factories, and are less subject to public scrutiny than products, process patent infringements are more difficult to prove, i.e. it is harder for the patent holder to defend its right in a legal system with comparatively inadequate discovery rights. (See chapter two for details on the discovery system in China). This point is also supported by my interviews with telecom equipment companies.³⁹⁸ However, if the patent is an essential patent included in a technology standard, then it is much easier and much less costly for the patent holder to prove its infringement in court. To prove infringement of an essential patent, a company only has to find evidence to prove that the patent is included in a standard, and that the defendant’s product is subject to the standard. Some even claim that “being included in a standard” is a tool of “evidence collection” (X. Yang, 2014). However, owning a standard essential patent can be a double-edged sword, and can become a disadvantage in some cases, because the right holder has to abide to FRAND, i.e. the ability of patent holders to sue infringing competitors are limited by the FRAND terms.

Although it is relatively easy to prove infringement due to the existence of essential patents, in China it is nevertheless considered very hard for companies to prove the amount of compensation they might deserve. This is for the following two reasons. First, as mentioned in chapter three, there is a lack of complementary institutions such as mature corporate data management and accounting systems; this has created difficulties for damage calculation, because many companies cannot even provide relevant sales records. Second, even the companies that can

³⁹⁷ Ibid. This refers to the case when companies do not want to get license even under FRAND.

³⁹⁸ For example, interview 20160803, with a manager at the IP department of a top local state-owned telecom company.

provide sales records and calculate lost sales can have a hard time estimating how much a single patent accounts for in the final product price. This is because, in telecom equipment products with complex technology, the patent only covers a component of a final product. In addition, it is also not always feasible to use licensing fees in the calculation, because these fees can vary between companies and are often treated as secrets.³⁹⁹

In addition, even when patent infringements are easy to prove, patent holders may still face the difficulty of maintaining the validity of the patents (which increases the difficulty to appropriate their share of profits through patents). Patents can be challenged by claiming that they are similar to previous technologies that they emerged out of; these previous technologies are usually called “technology suggestions”, and the new patent may lose its standing with regard to “non-obviousness” (which is one requirement of patentability).⁴⁰⁰ Possibly because many patents in China are utility models with small improvements, with adequate effort it is possible for industrial participants to find technology suggestions for these patents.⁴⁰¹ In this case, challenging the creativity of a patent is relatively easy, making patents in this sector vulnerable to invalidation.⁴⁰² As such, even if infringements are clearly defined, patents are often under a large risk of invalidation (especially for patents on small improvements), and here patent holders may not completely rely on patents to protect their inventions. This does not mean there are no “solid” patents in this sector at all; for example, Qualcomm has many solid and profitable patents in making baseband processor chipsets.

In sum, in the telecom equipment sector, it is easy to prove infringement for essential patents. However, the low compensation rate and the high possibility of invalidation of patents still presents difficulties for IPR holders wanting to defend their rights. This is why multiple alternative protection methods are still frequently used in this industry. (See section 3.2 in this chapter.)

2.1.3 Technological Levels and Barriers to Entry

³⁹⁹ Ibid.

⁴⁰⁰ Non-obvious means that the invention should be an adequate distance beyond or above the state of the art, i.e. it should not only follow from "normal product design and development" in that industry. Being able to find technology suggestions for an invention means the invention may only follow from normal technological development from the prior technology.

⁴⁰¹ Interview 2016512, with the IP Business Director of a top state-owned telecom company.

⁴⁰² Ibid; interview 20160803, with a manager at the IP department of a top local state-owned telecom company.

As discussed in chapter five, factors that can be essential to the production process include: a certain amount of know-how, experience, or industrial technical base, all of which accumulate with the investments of time, financial and human capital. Without these factors, a potential infringer would not be able to produce identical products to the right holder, at least not in a restricted period of time. In this sector, this replication difficulty is much larger for high-end products than low-end products.

The difference between high-end and low-end in this sector is more relative than absolute. In general, wireless communications equipment manufacturing has a higher technological requirement than mobile phone manufacturing. But for mobile phone manufacturing, there is a difference between upstream manufacturing (which refers to the production of internal components like chipsets) and downstream manufacturing (which refers to the assembly of mobile phones by choosing cameras, screens and so forth to wrap around the internal components). Upstream manufacturing requires high technological capacity, which may only be attained by advanced and large companies, such as Qualcomm and Huawei; as for downstream manufacturing, recently, with standardised processors and integrated chipsets provided by chipset designers such as Qualcomm, MediaTek or Spreadtrum, even manufactures without high technological capability can produce mobile phones (including smartphones) (The Economist, April 5th 2014).⁴⁰³

In sum, for products requiring high technological capacities, technological barriers block imitators and potential infringers. But the significance of technological barriers cannot be completely determined by whether the products are capital goods or consumer goods. Each industry has a spectrum of products ranging from high-end to low-end.

2.2 Administrative Interventions

2.2.1 State Support

In present-day Chinese society, the government controls large amounts of resources (Feiyu,

⁴⁰³ Starting around 2000, Integrated circuit providers started to integrate, or “bundle” standard baseband chipsets with other important functions, such as the protocol stack; these functions, taken together, constitute what is called the handset’s “technology platform” (Imai & Shiu, 2011). The development of integrated chipsets made it easier for manufacturer to enter this market.

Huijuan, & Yanlong, 2016, p. 166). The development of the telecom equipment sector has been under state support from the very beginning. First, having realized the importance of telecommunications to development, beginning in the late 1970s the government initiated many funds and favourable policies to support the development of the telecom equipment sector (M. Li & Wang, 2009). This led to tremendous advancements in this sector over the last three decades. Since the 1980s, the Chinese government has tried to leverage access from multinational corporations to the Chinese market in exchange for advanced technologies, a practice called “market in exchange of technology” (Pecht, 2006, p. 170); both the importation of technology and joint venture settings were encouraged. For example, in the late 1990s, Nokia got access to the Chinese market on the condition that it would not charge licensing fees to GSM manufactures producing in China; similar agreements were made between the Chinese government and Motorola.⁴⁰⁴ Recently, according to an interviewee who used to work in a relevant government institution, because Chinese telecom equipment companies have accumulated a certain technological base and have developed their own innovation abilities, the government’s role has shifted to focus more on guiding and directing (for example, providing more subsidies for certain area of research).⁴⁰⁵ In present-day China, the government has retreated a lot in the telecom equipment sector; the leading private telecom equipment companies become strong enough to develop on their own, and company decision patterns have become more influenced by market and economic factors, and government intentions have exerted less influence. Due to this, as discussed in section 3, government support such as patent application subsidies are becoming less important to domestic companies.

2.2.2 State Regulation

According to Article 53 of the *Telecommunication Regulation of the People's Republic of China (2016 Revision)*, to enter the market, a piece of telecom equipment needs to have a license for network connections from the Ministry of Industry and Information Technology (MIIT), the

⁴⁰⁴ Interview 20160603 with a former government official.

⁴⁰⁵ Ibid.

approval of which requires document submissions, product tests, and factory inspection;⁴⁰⁶ the whole process usually takes half a year at most. This approval process focuses more on product quality, and the license is not hard to get for qualified products (G. Chen, 2013). The approval process is easier and shorter than the approval process for pharmaceuticals; as a result, it does not delay the market-entry process that much, and is less useful in creating market exclusion and blocking latecomers. In fact, during my interviews, no telecom equipment companies brought this up as a useful mechanism for delaying imitators.

2.2.3 State Intervention

As discussed in chapter two and three, judicial practices are not independent of state influence in China. The Chinese government considers telecommunications to be a very important sector and it has a lot of incentive to oversee this sector, possibly due to the following concerns: (1) this sector is relevant to information control, and this control is always a concern for the government in order to maintain social order; (2) the government needs to avoid large-scale unemployment caused by the possible failure of large telecom equipment companies; (3) the government needs to support internal market development to achieve independence from foreign telecom equipment companies.

One manifestation of the government's incentive is its intervention in legal disputes. For example, representatives from different telecom equipment companies told me that, if a large state-owned company is being sued, and if a large group of people lose their jobs due to the defendant's reduced profits caused by a lawsuit, the government might pressure a plaintiff to be less aggressive.⁴⁰⁷ However, this situation is less present today, and there is less possibility of local protectionism. This is the result of the fact that telecom equipment companies are usually not limited to a specific location, and relevant patents are technically complicated; therefore, local governments usually only have limited control over their cases. (This is very different from the situation in the medical device industry.) With growing economic power, some private companies

⁴⁰⁶ <http://www.china-certification.com/en/network-access-license-nal-for-telecommunication-equipment>

⁴⁰⁷ Interview 20160803, with a manager at the IP department of a top local state-owned telecom company; interview 20160702, with an employee at the IP department of a top local private telecom company.

can make decisions with less consideration for state pressures. An example of companies paying less attention to the government's pressures happened in the last few years when one company continued to sue another company, even after various levels of government agencies try to mediate between them.⁴⁰⁸

2.3 Market Characteristics and Complementary Resources

Market characteristics can determine how many advantages a first-mover can get, shape how hard it is for imitators to get into a market, and thereby affect how much an innovating company might be threatened by potential imitators in a certain market. In the case of the medical sector, as discussed in chapter six, after the innovative manufactures have sold their products in the first place, it would be very hard for imitators to get into the system; this is mainly due to the bidding distribution system and the risk-averse characteristics of state-owned hospitals, which, together, give the company that gets into the distribution channels first a long-term advantage. In comparison, because of the market characteristics of the telecom equipment sector, it is harder for companies to make use of such advantages brought by channel cultivation, for the following reasons:

First, with the rapid development of telecom technology, the product upgrade and replacement rate is very high in the telecom equipment sector (because there will always be new markets and new customers). In this case, it is very hard for a first mover to keep its market share, because it is relatively easy for latecomers to step in during this product replacement period, i.e. there is a chance of “creative destruction”, where new innovations reduce the advantage of incumbent dominant companies (Bresnahan, 2004).⁴⁰⁹ This chance is much larger than in sectors with a lower product upgrade and replacement rate.

Second, unlike the hospital distribution system in the medical sector, distribution channels for telecom equipment are much less concentrated and less controlled. (This is especially true for

⁴⁰⁸ Interview 20160512, with the IP Business Director of a top state-owned telecom company; interview 20160702, with an employee at the IP department of a top local private telecom company.

⁴⁰⁹ It can also be called a “shakeout” process, which tend to occur sooner in industries where technological progress is rapid (Jovanovic & Tse, 2006).

mobile phone distribution with the development of online retail channels.) In this case, it is harder for first movers to block imitators by controlling distribution channels.

However, although channel control is not effective in blocking latecomers, in this market, as a first mover, the producer of the original product can still distinguish itself from latecomers in many other aspects, including experience and bundling services (as elaborated in section 3). For example, more marketing experience can provide the first mover an advantage in the consumer product market, while having established business relations can provide advantages in the capital goods market. Aside from this, the characteristics of the telecom capital goods market necessitate that buyers need the bundling of technical services, such as one-on-one technical help in setting up a base station; with more experience in problem-solving and customer service, the first mover can provide better services bundles.⁴¹⁰

Market characteristics can also shape a company's dispute resolution strategies. For example, in the wireless communications equipment market, there are only a few fixed large players (i.e. manufactures), that are always watching the others. It is relatively easier for them to reach common understandings about market behaviours through private communication. However, in the mobile phone market, because there are more players, it is harder for them to reach agreements, leaving a greater chance of solving issues through legal (judicial) methods.⁴¹¹ This is perhaps why there are seldom any patent lawsuits with regard to wireless communications equipment in China, but many with regard to mobile phones.

2.4 Cooperation and Network Structure

As discussed in chapter five, a close-knit network and the importance of reputation inside the network can serve to reduce the incentive for IPR infringement in some cases. This is the case when the necessity of multilateral cooperation creates the incentive to use reputation information to reduce transaction costs (Williamson, 1975), and when the close-knit network makes reputation

⁴¹⁰ For mobile phones, because User Interface designs are more straightforward, there is much less need for the bundling of technical help services for setup. In this case, incumbent companies cannot rely on bundling based on accumulated resources or experiences to distinguish its product from those of latecomers.

⁴¹¹ Interview 20160702, with an employee at the IP department of a top local private telecom company.

information available and reliable. In general, in the telecom equipment sector, there is no lack of cooperation among different industry participants with regard to R&D of some standard technologies and co-investments, among other sorts of cooperation (De Paz, 2015). For example, in 2003 Siemens mobile and Huawei Technologies Co., Ltd. signed a Memorandum of Understanding (MOU) to form a joint venture to develop, manufacture and market TD-SCDMA technology; in 2015, the Semiconductor Manufacturing International Corporation, also known as S.M.I.C., announced the decision to form a new company with Qualcomm and with a leading Belgian microelectronics research centre to help it develop and produce a new generation of advanced semiconductors; in 2016, ZTE and its subsidiary Xinghe Capital signed an agreement with 47 investors to establish a joint venture with total investments of CNY1.2 billion (US\$176.5 million)⁴¹² (China Tech News, 2016; W. Li, 2005; Mozur, 2015).

In the situation where there is no lack of cooperation, if a company A is known to infringe on the patents of other companies D and E a lot, potential partners B and C may worry that company A may infringe their own patents (i.e. they might steal their technology) during their partnership, or that company A might create trouble for them such as disputes and lawsuits where company A infringes patents belonging to other peer companies D and E in the sector, and so B and C may hesitate to work with company A. What needs to be noted is that, in reality, the effect can be very subtle: sometimes only one or two infringements may not do much harm to company A's reputation and opportunity to find partners, as long as the company can innovate from time to time. But when most of company A's products are from copying or infringement, or if its most recent products are all from infringement, all things being equal, company A may have disadvantages in finding partners, because others inside the industry would somehow doubt company A's capacity to innovate in the future, i.e. its value as a partner, and be worried about the potential trouble it could bring.

In specific, the value of reputation manifests in two ways. First, positive reputation can reinforce business cooperation among the supplier, the manufacturer, and the buyer, and thereby

⁴¹² For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early 2017 (about 6.8, i.e. 1 US dollar equals to about 6.8 RMB).

prevent new market participants. Second, reputational damage might affect cooperation opportunities with other manufacturing companies, in the forms of R&D alliances or co-investment opportunities. (For more specific examples, see section 3.2.4.)

2.5 Summary of Industrial Characteristics: Open or Closed

In chapter five, I brought up the distinction between *open or easy-entry* and *closed or hard-entry* industries, indicating how industrial characteristics affect the ease and difficulty for latecomer companies (including imitators) to enter the market. From what I described in this section for the telecom equipment sector, it can be seen that easy-entry or hard-entry is not a definite characteristic for an industrial sector, but an issue of extent. Compared to the medical sector, in general the telecom equipment sector is more open, mainly due to the fact that there are fewer administrative market-entry controls and less distribution channel concentration; but in the sense that wireless communications equipment sales requires some long-term business relations, it is also to some extent closed. On the other hand, even though there are fewer alternative mechanisms that can block imitators, the technological characteristics of the telecom equipment sector, especially the existence of standard essential patents, makes it easier for patent holders to defend their rights through legal methods. In the next section, based on the industrial characteristics discussed above, I talk about how different companies use patents and how they protect their innovations in practice.

3. IPR and Company Behaviours

3.1 Functions of Patents

Due to the requirement of communication and interconnection in the telecom equipment sector (manifested in the existence of shared technology standards), it is necessary to publicize one's innovations;⁴¹³ in this case, patents are comparatively more important and more frequently

⁴¹³ Interview 20160803, with a manager at the IP department of a top local state-owned telecom company.

used, compared to, for example, in the medical device industry, where trade secrets are more commonly used. When companies use patents, as in the medical sector, they use them for multiple purposes. Each is elaborated in this section.

3.1.1 Traditional Functions of Patents: Appropriation and Exclusion

Because it is relatively easy to identify and prove the infringements of essential patents, patents are often used by companies, not only to ensure innovation appropriation and exclude competitors, but also to prevent themselves from being excluded by others. If a company does not have patents, it is more likely to be sued by competitors because they do not have to worry about counter suits. As one representative from a telecom equipment company said, after a lawsuit with an American company in 2003, they realized that intellectual property is a necessary ticket for them to enter the international market; without their own strong patents, they would be sued a lot and kept out of the market.⁴¹⁴ For them patents are mainly used as self-defence tools in the international market.

3.1.2 Alternative Functions of Patents

Besides functions related to innovation profit appropriation, some other functions of patents are also mentioned a lot by interviewees.

First, government support for patents applies in all industries. In the initial stage of industrial development of the Chinese telecom equipment sector (for example in the early 1990s), Chinese companies, were not that aware of the usefulness of patents, and had fewer resources, so they tended to apply for patents with the express purpose of using the patents to bring certain benefits offered by the government: companies with more patents had a greater chance to get state subsidies.⁴¹⁵ Nowadays, most telecom equipment companies are big companies with adequate resources of their own to reinvest, so government subsidies have become less significant for them. (This contrasts with small medical device companies, that still rely heavily on government resources.) In fact, among my interviewees in this sector, no one considered government subsidies

⁴¹⁴ Interview 20160702, with an employee at the IP department of a top local private telecom company. If a company does not have patents that can be used as leverage to get itself to the table and thereby make better deals in cross-licensing, other companies do not need to negotiate cross-licensing with it, and then it would be easily sued once it tries to enter a new market.

⁴¹⁵ Ibid.

to be an important thing. However, although specific subsidies are becoming less significant, the necessity to maintain a good relationship with governments still exists; in some local areas, especially in the western parts of China, companies may also be pressured by the government to apply for patents, simply to help make government performance look better.⁴¹⁶

Second, although companies apply for patents abroad to avoid being excluded, when they apply for patents inside China, the purpose is often to use them as a promotional tool.⁴¹⁷ This difference may be because patents are enforced more strictly in the Western market; as a result, their role, related to appropriation and exclusion, is more emphasized there. In the meantime, in China, due to the comparatively less strict enforcement and the lower compensation rate in IPR cases, patents are often used for appearances.

Third, unlike the medical sector, companies in the telecom equipment sector seldom mention the function of attracting venture capital. According to interview data, it may be because, as opposed to companies in the medical sector, many telecom equipment companies themselves are large and mature corporations; as elsewhere, large companies rely less on venture capital, because they have more of their own revenues to reinvest, and they have more access to the capital market (for example the stock market).

3.1.3 Functions of IPR Lawsuits⁴¹⁸

For many essential patents, it is comparatively easy for patent holders to identify and prove infringements in the telecom industry (section 2.1). Nonetheless, under the Chinese legal system it is still hard for a telecom patent holder to use lawsuits to defend its right and maintain profit appropriation. This is mainly because of the lack of preliminary injunctions and the low average compensation rate of infringements. It is difficult to get a preliminary injunction in China compared to in the West, so the patent holder's rights cannot be protected until the case is settled and this may take a long time. In this case, many IPR lawsuits are not about defending their patent

⁴¹⁶ Interview 20160901A, with the general manager of a local private technology company.

⁴¹⁷ Interview 20160702, with an employee at the IP department of a top local private telecom company.

⁴¹⁸ Here I only discuss patent holders that are manufacturing companies. It needs to be noted that many lawsuits in the telecom equipment industry are caused by non-practicing entities (NPEs) or patent trolls. Nonetheless, it is possible that they are less common in China, because compensation rates are low.

rights or recovering infringement damages, but rather for alternative purposes. This phenomenon is very common in the telecom equipment sector. Many telecom equipment companies complained during interviews that it is not worth bringing patent lawsuit in China merely for the purpose of protecting innovation, because of the long processing times for a case and the low average compensation level. Some company representatives told me that the compensation amount does not even cover their cost of raising the lawsuit; for this reason, they seldom bring patent lawsuits inside China.⁴¹⁹

In addition, for most telecom equipment companies, the patents they are using have been applied for many years ago; they admit that, at the time of filing, their patent writing skills were not very good. As a result, these patent claims are less useful in actual lawsuits.⁴²⁰ This has further added to the limited function of patent lawsuits with regard to recovering infringement damages and defending intellectual property rights.

In this situation, patent lawsuits are more often used for other purposes, many of which may depend less on the effectiveness of legal enforcement or the compensation rate. In fact, patent lawsuits have become a standard business strategy for many telecom equipment companies, and they can be used to push for cross-licensing and to suppress their competitors; the use of patents to push for cross-licensing is more frequent in the wireless communications equipment industry, while the use of patents to suppress their competitors is more common with mobile phone manufactures.⁴²¹ The details of how these companies use these strategies are as follows:

First, in the telecom industry in the West, patent litigation or the threat of litigation has been used a lot to send a signal to competitors, especially in cross-licensing negotiation; usually exemplar patents would be sent to litigation as a lever in negotiation (Ludlow, 2015; McHale, 1995). This behaviour is called "persuasive patent litigation", meaning companies litigate in order to obtain a better deal in a cross-licensing agreement (Galasso, 2007). Perhaps because of their high reliance on international markets (Section 1.2), recently a few wireless communications

⁴¹⁹ Interview 20160702, with an employee at the IP department of a top local private telecom company.

⁴²⁰ Interview 20160803, with a manager at the IP department of a top local state-owned telecom company.

⁴²¹ Interview 20160702, with an employee at the IP department of a top local private telecom company.

equipment companies in China have been picking up this international trend, and have started to use litigation as a tool in negotiations to send signals. For example, recently Huawei, for the first time, sued the world's largest smartphone maker Samsung over mobile device patents, clearly with the purpose of pushing for cross-licensing agreements (Thomas, 2016). As outlined in section 1.3 of chapter five, some companies intentionally raise big IPR cases, with the idea that if they win, they would have an image of being tough and good in legal battles, which would make it much easier for the company in future negotiations with other companies, and also to deter patent trolls.⁴²²

Second, in recent years, the Chinese government and the media controlled by it have been making efforts to publicize IPRs in China. Media coverage of IPR litigation could be used either to advertise oneself (being an IPR case plaintiff would bring publicity and present an image of being a strong innovator) or to defame competitors (spreading news that the competitor is infringing and is being sued signals the possibility that relevant product may not be sold in the future, and might make potential buyers hesitate about placing orders). Evidence suggests that, in the Chinese telecom equipment industry, this function is often used. Some company representative commented that, a case would bring much more publicity than a regular news report⁴²³. Sometimes a company would sue its competitor mainly for the purpose of defaming it (by releasing the news that it might be infringing); the plaintiff does not actually care about the court verdict, as long as relevant news spreads in the public sphere.⁴²⁴ A big Chinese company said that, even if it did not get adequate compensation during a lawsuit, simply winning the case would help improve its image, and increase its chances to win certain bids (for example government procurements or operators' orders), compared to the competitor who lost the case.⁴²⁵ This phenomenon is more manifest in China, possibly because engaging with the law, especially losing a lawsuit, is often still considered as “losing face” or a source of shame.

⁴²² Interview 20160801 with a lawyer; interview 20160803 with a telecom equipment company representative; interview 20160422, with the Chief IP Officer of a top state-owned telecom company; interview 20160702, with an employee at the IP department of a top local private telecom company.

⁴²³ Interview 20160601A, with the chairman of the Board of a local private telecom company.

⁴²⁴ Interview 20160503, with an employee at the Financial Department of a top router company.

⁴²⁵ Interview 20160702, with an employee at the IP department of a top local private telecom company.

3.2 Mechanisms of Innovation Protection

3.2.1. Limited Role of Administrative Market Access Control

As discussed, new telecom equipment needs the Network Access License (NAL) from the Ministry of Industry and Information Technology (MIIT) to enter the market. This may seem to serve as a protection, because this gives the innovator a head-start and keeps imitators away for a certain period of time. However, compared to the market-entry approval process in the medical sector (at the CFDA), the NAL has a much lower requirement, is not exclusive, and can only delay market entry for, at most, half a year. In this case, while administrative control is significant for medical companies, in the telecom equipment sector, almost no company I interviewed mentioned the role of administrative control in stalling imitators.

3.2.2 Established Capacity and the Limited Role of Channel Control

Because the distribution channel for telecom equipment is not as concentrated as that in the medical sector, it cannot be used as a mechanism by first movers to deter imitators. This is perhaps why, during interviews, companies do not mention channel control as a major method for blocking imitators. (In comparison, it is mentioned a lot by medical companies.) However, for both wireless communications equipment and mobile phone manufactures, there are still certain established complementary capacities, which the first mover can accumulate and use to distinguish itself from imitators. In the wireless communications equipment market, provided that buyers are corporations and institutions (e.g. operators and universities) who have many professional requirements, the major established capacity that helps the manufacturer to block imitators is the capacity to provide bundling services; the capacity is related to both technological base and experience. For the mobile phone market, because manufacturers face individual customers, a major established complementary capacity is the marketing capacity; this can help the more resourceful companies block latecomers or imitators.⁴²⁶ However, superior marketing can also be easily used by newcomers to seize the market in a short time, as represented by the success of Xiaomi and OPPO

⁴²⁶ Ibid.

(The Economist, Feb 4th 2017).

3.2.3. Technological Barriers Combined with Secrecy

Although the availability of integrated chipsets have, to some extent, lowered the technological requirements in producing mobile phones (The Economist, April 5th 2014), constantly upgrading technology keeps raising entry requirements.⁴²⁷ In general, in the telecom equipment sector, the effect of technological barriers as a mechanism to stop potential imitators is very prominent. In this sector, most products are technologically advanced, especially wireless communications equipment and baseband chips for mobile phones; these products would be hard to reverse engineer either in terms of coding or material composition.⁴²⁸ Furthermore, there is a great need for economy of scale due to the nature of communication itself (Value Line, 2017); this is to say that an imitator, new to a certain type of production, could not compete in terms of cost with an experienced company. In this case, there is a very high barrier to entry, and this may be why in this sector there are only a small number of large and profitable competitors. During my interviews, many big companies said that they do not worry much about small imitators, because such imitators do not usually have the technological base to produce similar products as their own.⁴²⁹

Not only does the technological requirement serve as a barrier to entry, the rapid rate of technological change in this sector also helps to limit the financial gains due to copying. For example, the change from 3G technology to 4G happened in a very short time; in the early 2000s, even as 3G mobile networks were first switched on around the world, attention was already shifting to 4G (The Economist, May 29th 2003). A company that was imitating 3G technology products, would have been essentially ensuring that its product was obsolete by the time it got to the market. However, the rapid rate of technological change is a double-edged sword for innovating

⁴²⁷ Interview 20160601A, with the chairman of the Board of a local private telecom company. According to the interviewee, how Shanzai phones gradually die out because they cannot produce according to 4G standards.

⁴²⁸ Ibid; interview 20160603, with the Vice President of a (telecom) industrial association.

⁴²⁹ Interview 20160702, with an employee at the IP department of a top local private telecom company; interview 20160803, with a manager at the IP department of a top local state-owned telecom company. On the other hand, large companies have more or less formed agreements in cross-licensing, and therefore would have less incentive to infringe. So, in general, the companies I interviewed have little concern about this.

companies, because they themselves cannot profit on a certain patent for very long,⁴³⁰ i.e. long-term patent protection in this sector may not be that significant compared to in the medical sector. This is possibly why many companies told me that they would rather spend time and resources on developing new products instead of defending old patents.

What needs to be noted is that, the effectiveness of technological barriers depends a lot on keeping trade secrets, and so data safety is especially emphasized in the telecom industry. This may be because many telecom technologies can be standardized into data sheets; this standardization would enable an imitator to reproduce the technology relatively easily; in this case they are vulnerable to leaking of this data, as indicated in the lawsuit between Alphabet and Uber (Lashinsky, 2017). In comparison, in the biomedicine industry, as discussed, even when the production process is known, due to its sensitivity to the outside environment (FDA, 2008), it is technically difficult, costly and time-consuming to develop facilities to control the stability and quality of biomedicine in large-scale production (BIO, 2017). In the telecom equipment sector, many companies emphasize the importance of maintaining secrecy in discouraging imitators: highly developed data security systems can ensure that the cost for imitators to reverse engineer a product is larger than the cost of getting a licence for that product.⁴³¹ Many companies emphasize various methods to maintain secrecy. For example, they decentralize information and avoid one person knowing everything about a project; they would for example also monitor employees' computers and USB drives.⁴³² This is where big companies with longer histories have advantages, because they may have already developed a mature system of data management and storage.

3.2.4 Cooperation, Social Network and Reputation

As introduced, a close-knit network and the importance of reputation inside the network can serve to reduce the incentive for IPR infringements in some cases. This happens when the necessity of multilateral cooperation produces the incentive to use reputation information to reduce transaction costs (Williamson, 1975), and a close-knit network makes reputation information

⁴³⁰ Interview 20160601A, with the chairman of the Board of a local private telecom company; interview 20160603, with the Vice President of a (telecom) industrial association.

⁴³¹ Interview 20160601A, with the chairman of the Board of a local private telecom company.

⁴³² Interview 20160702, an employee at the IP department of a top local private telecom company.

available and reliable. In the telecom equipment sector, the role of reputation is more apparent than in the medical sector, because, as discussed in section 2.4, interaction and cooperation is more frequent in this sector, especially with regard to aspects like buyer-seller cooperation, R&D, and co-investment (China Tech News, 2016; De Paz, 2015; Leiponen, 2006; W. Li, 2005; Mozur, 2015); in all these aspects, a reputation of frequent infringing could make other parties worry that their technology might be stolen during future cooperation, or make them worry about potential lawsuits (X. Yang, 2014).

Specifically, reputation provides information in repetitive games, i.e. repetitive cooperation, and helps the other party to make decisions about future cooperation. In practice, companies can use their own established reputations in the industry to strengthen their relations with buyers, and thereby prevent competition from products of unknown imitators. This mechanism is more prominent in the wireless communications equipment industry, and less so in the consumer product industry. This is because the distribution of wireless equipment usually requires long-term business cooperation with other companies who are product buyers. One representative from a telecom equipment company told me that, they have a relatively stable business network, consisting of familiar business partners; institutions in this network stick to the products of a company that has a high reputation and do not purchase products made by an imitator. In this case, this network or circle can make it harder for imitators to find purchasers.⁴³³

On the other hand, the fear of the cumulative effects of reputational damage can limit infringements, provided that frequent infringements might affect a company's cooperation opportunities with other manufacturing companies.

3.2.5 Summary of Alternatives

Perhaps due to the ease of proving infringements of essential patents, and the high level of internationalization of the telecom equipment sector, many telecom equipment companies seem quite ready to use legal methods in IP-related issues. In this case, in general, companies in this sector emphasize fewer alternatives, compared to in the medical sector. Because of the lack of

⁴³³ Interview 20160601A, with the chairman of the Board of a local private telecom company.

strong administrative control and centralized distribution systems, companies cannot rely on administrative methods or channel controls to block latecomers. However, wireless communications equipment companies can also use bundling services as a complementary ability, while mobile phone producers can use superior marketing strategies and experience to defeat imitators that are less resourceful. Innovative companies can also rely on technological barriers and dynamics to deter imitators, provided that they have a developed secrecy management system. Finally, provided that most companies are large companies who need to cooperate with each other to form standards, reputation is important to them and can serve to restrain infringing behaviours; stable networks are also important to make it hard for imitators to find customers. What needs to be noted is that, technological barriers and reputation effects may be more effective when they are combined together: technological barriers ensure that only big companies can develop the capacity to copy certain products, and when companies are big, reputation inside the industry becomes important.

4. Conclusion and Brief Comparison with the Medical Sector

I have introduced some general background to the Chinese telecom equipment sector, including the feature of the essential patent, an overview of the sector's development status, and the current extent of state intervention. I discussed how technological characteristics, to some extent, lead to the effectiveness of legal IP protection, how technological barriers and dynamics, administrative regulation, market characteristics, and social network structure affect how difficult it is for imitators to get into the market, and thereby affect the availability of alternative protection mechanisms. Then I elaborate why and how telecom equipment companies in China use patents and patent lawsuits, as well as how they use alternative innovation protection methods.

Overall, this sector exhibits less internal heterogeneity, compared to the medical sector. It may be because the difference between consumer products and wireless communications equipment is not so huge as that which exists between, for example, the chemical drug industry and the medical device industry. Essentially, the internal technological difference can be described as that between lower-end and higher-end products in the same technological area (which existed

inside each industry); consumer products and wireless communications equipment also face the same administrative regulation (negligible in both cases). The difference between the two industries is in market characteristics and social network structure: while consumer products directly face individual customers, the wireless communications equipment faces less scattered institutional purchasers. In this case, wireless communications equipment producers can to some extent exclude newcomers through reputation accumulated in their long-term cooperation networks.

In general, companies in the telecom equipment sector accumulate patents more frequently for the traditional function of patents: to appropriate profits and exclude others from exploiting the innovation, or to avoid being excluded; this is possibly due to the fact that telecom essential patents are more easily protected by legal methods. Because most companies are bigger in size compared to those in the medical sector, they give lesser value to government support and venture capital investment brought by patents. With regard to protection mechanisms, both administrative regulations and channel control as complementary capacity are seldom used. At the same time, technological barriers, bundling and marketing (as complementary abilities), and reputation are all in effect.

Chapter VIII. Case Study: Copyright and the Film & TV Sector

In this chapter, I talk about three industries related to film and scripted television series production and distribution in China; I call this the film & TV sector. These are categorized by end product: films (produced for theatrical distribution in cinemas), traditional series (scripted television series produced for the satellite and cable TV systems), and online or web series (original scripted series produced for broadcasting via the Internet; this market has developed significantly in China during recent years). Note that whenever TV series is referred to, it indicates a scripted television series, whether distributed through traditional means or by the Internet. In this study, I do not discuss online films (films produced to be broadcasted only on the Internet), because they are still a very marginal part of the whole film & TV sector in China for now.

All of the three major industries are included in one major group in the SIC code, i.e. “Motion Pictures” (Major Group 78), which includes motion picture production, distribution, and related services. They are also included in one category in the 2017 NAICS code, i.e. “Motion Picture and Video Industries (5121)”. In this study, I call them the “film & TV Sector”.

In previous cases about patents in the medical sector and the telecom equipment sector, I put more focus on the behaviour of producers (manufacturers) but, here, for the discussion of copyright, I focus on the producers, the distribution companies, as well as “screening channels” (this refers to the portals that serve as provider for the end user, including theatres, television networks and websites). The reason is twofold:

First, while in the medical and telecom equipment sector, producers, distributors, and retailers are usually separated, in the film & TV sector, producers, distribution companies, and screening channels can be and often are combined. For example, nowadays many companies owning cinema chains also invest in film production and distribution; television networks often invest in TV production and become producers themselves; the whole online series industry is based on the fact that video streaming websites (distributors and screening channels) are making original content themselves. In fact, it is common for industry reports

within the film & TV sector to focus on both production and distribution.⁴³⁴

Second, as discussed in detail in section 1.1.2, as opposed to the medical and telecom equipment sectors, where the distributors and retailers usually do not own or get licenses from the product patents, in the film & TV sector, the producers need to authorize or licence some part of the product's copyright (for example, the distribution rights or the broadcasting rights) to other parties (such as the distribution companies and the screening channels). In this case, the responsibility for copyright protection is more or less transferred to those entities, making their behaviours relevant for this study.

In the film & TV sector, I interviewed 31 people in total, including film and TV series producers, directors, scriptwriters, investors, market researchers, representatives from distribution companies, representatives from television networks, and representatives from video streaming websites. Aside from formal in-depth interviews, I also had the chance to communicate with some scriptwriters and producers in casual social activities; these casual conversations to some extent served to verify what I heard during my formal interviews.

In the first section of this chapter, I briefly introduce some background to this sector, including the characteristics of film and TV series and relevant copyright concepts, and the profit source of each industry. Then, in the second section, based on the framework I developed in chapter five, I discuss the four specific aspects of the industrial characteristics that affect the usefulness of legal protection, the functions that copyright serves, and the availability of alternative protection methods. These alternative protection methods are what a company can use to appropriate the benefits of its innovation investment (i.e. to preclude exploitation of their content by others and to monopolize commercial profits). The four aspects include: the “technical nature” of products; state intervention and administrative controls; market characteristics; and social network structure. Following that, in the third section, I elaborate, under these industrial characteristics, how Chinese companies in this sector use copyright and which alternative protection methods they use. As in previous chapters, I explain product characteristics and industry

⁴³⁴ For example, see <http://www.hoovers.com/industry-facts.tv-program-production-distribution.1472.html>. For Chinese reports, for example, see: (EntGroup, 2015).

characteristics before addressing company behaviour, because product features and industry characteristics set the context for company behaviour and limit their choices. In the fourth and concluding section, I summarize arguments made in this chapter.

1. General Introduction to the Film & TV Sector in China

In the film & TV sector, I distinguish the three industries based on the products involved: films, traditional series, and online series. All of them are cultural products and are primarily relevant to one category of IPR, copyright. What needs to be kept in mind is that, the three product types cannot be completely separated. Here, I only distinguish them by the targeted initial distribution channel (i.e. where they plan to be first screened or first consumed): films are produced to be first consumed in cinemas, traditional series are produced to be first screened by television networks, while online series are produced to be first screened on video streaming websites. However, after the initial screening, a product might continue to be distributed through other channels. For example, a traditional series can have a second-run screening on a website; films, after being screened in cinemas, can be broadcast by television networks or streamed on websites. (How this is related to the profit model in this sector is discussed in section 1.2.)

In this section, I first introduce the characteristics of cultural products like film and TV series, as well as the features of copyright in this sector. I introduced copyright and copyright infringement in chapter three (section 1.3). Copyright protects the expression of ideas with the goal of providing positive incentives for creators, by giving owners of a creative work rights meant to protect them against certain unauthorized use. In this chapter, I distinguish different types of film and TV copyright infringement, with a focus on aspects of copyright that are particularly relevant to the use or non-use of it by my interview subjects. Then I briefly introduce how industry participants profit from corresponding products in each industry (i.e. their business model); this determines the

importance of copyright, and shapes how companies make use of copyright in industrial practices.

1.1 Product Characteristics and Copyright

1.1.1 Product Characteristics

Compared to products in the medical sector and the telecom equipment sector, films and TV series have different features, that should be introduced before further discussion of IPRs in the sector:

First, nowadays, films and TV series are all digital products, which can be compressed through a cheap process, without losing much information or quality (Peitz & Waelbroeck, 2006); this has made piracy comparatively easy, and much harder to stop. In comparison, copying a medical product or piece of telecom equipment is comparatively more difficult, requiring various degrees of know-how and considerable facilities. In other words, there is no practical “technological or technical barrier” to pirating a film or TV product using digital methods when everyone has a computer and an Internet connection. (Infringement in the form of plagiarism is a separate issue, discussed in section 1.1.3.)

Second, film and TV viewing is a special type of good in economics, known as “experience goods” (Nelson, 1970); these specify a product or service where product characteristics, such as quality, are difficult to observe in advance, but these characteristics can be ascertained upon consumption.⁴³⁵ In this case, a consumer relies on other sources of information to make their consumption decisions, including advertisements, the reputation of the director, the popularity of the original IP (for adapted works), the popularity of actors, word-of-mouth (Kihlstrom & Riordan., 1984; Nelson, 1974). As elaborated in later sections, the importance of extrinsic knowledge and publicity shapes how companies attract customers

⁴³⁵ Nelson compares “experience goods” with “search goods”. For “search goods”, consumers can obtain information about quality through prior inspections. For example, consumers can try a pair of shoes on before buying them. In comparison, “experience goods” lose most of their value to a consumer after they have been viewed, i.e. a trial or test use is generally indistinguishable from consumption. This contrasts with both medicine and telecom equipment sectors where a trial does not reduce the value of the product. As such, it is more difficult to find out the quality of an experience good before purchasing.

and how they make use of copyright.

1.1.2 Film and TV Copyright and The Idea-Expression Dichotomy

The concept of copyright includes a lot of personal rights and property rights, such as the right of publication, authorship, alteration, integrity, reproduction, distribution, lease, exhibition, performance, projection, broadcasting, information network dissemination, production, adaptation, translation, and compilation. (*Copyright Law of the P.R.C.*, Article 10). As introduced in chapter three, section 1.3, different parts of copyright can be held by different parties, or authorized (“licensed”) to other parties; this contrasts with a patent right, where the right is a unit that cannot be separated and cannot be licensed in part.

This separability is manifested in the film & TV sector, where one product involves many different rights. For example, for a film product, the scriptwriters always enjoy the right of authorship (the right to be recognized as the author), but other parts of the copyright could be owned by the producer; the broadcasting right and the adaptation right could be authorized to other parties, such as to streaming websites or TV series production companies. According to the Chinese Copyright Law, the overall original copyright should be enjoyed by the producer, the one who puts the film or TV series together. (In this capacity, the producers are the ones who arrange for the screenplay to be written, hire everyone, finance the whole production, and pitch it to financiers, actors, other producers, and directors; sometimes they are also closely involved in the creative vision of the film or TV series.) Other relevant parties, such as the scriptwriter, director, cameraman, and editor, only enjoy the right of authorship of the film or TV series (the right to be recognized as the author and attach one’s name to the work) and can get remuneration as agreed upon in the initial contract (between them and the producer).⁴³⁶

Possibly because of the complexity of copyright definitions, the fact that copyright can be separated, and the uncertainty brought about by ambiguous contract terms, many parties who enjoy part of the copyright (for example, those who only have right of authorship, i.e. only the right to attach their name to the work) do not feel the need to protect it. A director told me that, he pays

⁴³⁶ The author of the screenplay, musical works and other works (that can be exploited separately) that are included in the film or TV series can exercise their copyright on those works independently.

little attention to infringement issues because he was already paid in advance and he only enjoys the authorship of the final TV series, not the overall copyright and corresponding income share.⁴³⁷

In practical cases, identifying the specific boundary of copyright protection can also be very complicated; this complication is related to a very discussed principle called the idea-expression dichotomy. The idea-expression dichotomy means copyright law does not protect ideas but only expression of the idea; it is a principle in copyright laws in the West,⁴³⁸ and is now treated as a basic worldwide principle in copyright cases (Rosen, 1992; Samuels, 1988). The TRIPS convention (Article 9(2)) provides that, “copyright protection shall extend to expression and not to ideas, procedures, and methods of operation or mathematical concepts as such”. This is to say, for a film or TV script, copyright may subsist in the particular story or characters involved, but generally not in the idea or genre of the story.⁴³⁹

One example that can show the idea-expression dichotomy is a case from New York in 2010, where the plaintiff alleged that a film infringed his copyright in a short story. The two works both told the story of a male protagonist, confined to his home, who spies on his neighbours and discovers that one of them is a murderer; then the protagonist is himself discovered by the murderer and attacked by him. According to the court, “although it is possible to characterize the plots of both works so they appear indistinguishable, such similarity is not, standing alone, indicative of substantial similarity (i.e. similarity in expression)” (“The Sheldon Abend Revocable Trust, v. Steven Spielberg et al.,” 2010). As a result, this case was not considered as infringing.

In practical application, the idea-expression dichotomy is often quite fuzzy and confused, and the line between an idea and expression is often difficult to draw (Jeng, 2015; Snapper, 1999). Without adequate precedent, copyright law judges have to make somehow arbitrary decisions depending on the individual facts of each case.⁴⁴⁰ As indicated in my interviews, this has led to

⁴³⁷ 20160418B.

⁴³⁸ As indicated in the US copyright law (2011), §102 (b), “In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.”

⁴³⁹ This idea-expression dichotomy principle also applies to software, where only the particular original codes are protected by copyright, but not the idea or method implied behind the codes.

⁴⁴⁰ As discussed in chapter three, a much longer history of copyright law enables the US courts to have many precedents that they can refer to, reducing the arbitrariness of the decisions; in comparison, Chinese courts are still in the process of “forming”

the problem that many copyright owners themselves cannot distinguish infringement from inspiration, reference, allusion, or homage; this confusion makes them hesitant to resort to legal procedures.

1.1.3 Infringement Types

In general, we can distinguish two major types of copyright infringement: piracy and plagiarism.⁴⁴¹

1.1.3.1 Piracy

Piracy is the act of using or reproducing a copyrighted or patented material without the owner's approval. The characteristics of piracy in the film & TV sector have evolved a lot during the past few years. Before the rise of the Internet and large video streaming websites, piracy of film and TV series was rampant, in the form of pirated DVDs (Priest, 2006, p. 188). In the late 2000s, with the prevalence of the Internet, viewers could download films and TV series online for free (reducing their incentive to buy DVDs); as a result, pirated DVDs, as a form of copyright infringement, had almost disappeared by 2010 (Zhuge, 2011).⁴⁴² Nowadays there are mainly two forms of piracy of film and TV. First, the more regular one is unauthorized online file sharing (e.g. peer-to-peer sharing, or "torrenting"; sharing links to download sites on online forums). Second, a less-known format that has developed quickly in recent years is called unauthorized "inline linking" (sometimes also called hotlinking, leeching, piggy-backing, or direct linking, or "dao lian (盗链)" in Chinese, which literally means "theft linking"); this kind of piracy is where linked content, legally available on one site, is displayed, illegally, on a second website. For example, a viewer may view a video from a link on website A, but the corresponding content is actually stored on website B, so website A steals page views (PV) from website B; this type of linking takes up

basic precedents.

⁴⁴¹ Recently there appears to be a new type of infringement: membership sharing. Some content on video streaming websites is only accessible by members. According to interview 20160614 (with an investment manager at a private VC focusing on the entertainment sector), although each membership can only be used by one viewer, in China many people share it with dozens of viewers. However, since this type of infringement does not reduce page views, it does not deprive the website of profits from advertisement (which is much more significant than membership fees); in this case it is not considered to be a serious infringement by websites. It is also still very marginal compared to the two traditional types of infringements, so in this study I focus on piracy and plagiarism.

⁴⁴² Interview 20160410B, with a scripted series planner.

the bandwidth of website B but does not bring it page views (and related advertising revenues). “Inline linking” is different from traditional piracy because what the viewers see is indeed the original content; it is just that the original content provider cannot benefit from the viewing.

1.1.3.2 Plagiarism

Plagiarism refers to using someone else’s work without providing attribution, for example one author taking a story from another and publish it as his or her own. While piracy is always infringement, plagiarism in a broader sense does not necessarily constitute copyright infringement, because of the principle of the idea-expression dichotomy in copyright law, where only plagiarism that leads to a certain level of expression similarity is infringement. Since my focus is on IPRs and infringements of IPRs, when I talk about plagiarism in this study, I mean plagiarism in the narrow sense, that which should constitute infringement, i.e. copying someone else’s expression without giving due credit. Nowadays, directly copying from original pages of one single work almost does not exist anymore in China; the dominant form of plagiarism is to borrow content from multiple stories and put them together into a new work (also known as cobbling together a new work). For example, in a case recently brought in China, a novelist was accused of plagiarizing 219 other novels (Y. Liu, 2017). This form of plagiarism is subtler and harder to identify as an infringement, because the similarity to any of the individual infringed novels is comparatively small. Because TV scripts are much longer than film scripts, it is easier for TV scriptwriters to plagiarize according to the method I describe here; this is possibly one reason why TV plagiarism is more common than film plagiarism in present-day China. (Other reasons are elaborated in later sections.)

1.1.3.3 Comparison

The two different forms of infringement differ mainly in a few aspects.

First, in the infringer’s identity: Today’s piracy is mainly conducted by individual consumers, by file-sharing;⁴⁴³ inline linking, as a new form of piracy, is comparatively rare and is mainly

⁴⁴³ As in many Western countries, the websites where individual Internet users post infringing files are not considered as infringers because of the “safe harbour” provision. The “safe harbour” provision originated in US DMCA 512 in 1998 and was adopted by China during the 2001 copyright revision. It means that, the administrator of a website will not be held liable for infringing content posted “at the direction of a user,” (sic) as long as the website did not know about the infringing activity, did not benefit directly from it, and acted expeditiously to remove the infringing material upon notice.

conducted by small streaming websites.⁴⁴⁴ Quite different from these, plagiarism is usually conducted by film and TV producers. Whether the infringer is an individual or a website determines which protection method would be effective, because the ease of monitoring and the capacity to pay fines would be different for individuals and for websites. (See details in section 3.)

Second, in the copying time: It almost takes no time to copy and share an existing electronic version of a film or of a TV series; it is just a matter of clicking some buttons on a computer, i.e. piracy has almost no time lag. However, even with the original work at hand, plagiarism takes more time; this means that the original work may be less threatened by plagiarism because there is a time lag before the plagiarizing work can get into the market.

Third, with regard to technical detection: Piracy, either in the form of file sharing or inline linking, can be controlled through technical measures such as monitoring software, but plagiarism is much harder to be detected by means of technical methods. Due to these differences, the behaviour of copyright owners in dealing with these two forms of infringement differ accordingly (as elaborated in section 3).

1.2 Business Models in Each Industry

How a company makes its profit affects how it makes relevant decisions; similarly, the role of copyright in profit-making shapes a company's copyright-related behaviour. During a meeting with both film directors and TV producers, I asked what they thought was the most important factor in bringing commercial success to a film or TV series; different participants mentioned different factors, including not only product content and quality, but also such things as marketing, networking, an actor's fan base, and popularity of the original adapted IP (usually an online novel). To understand the actual role of copyright in this sector, it is necessary to briefly introduce what strategies companies use to make profits in each industry in the film & TV sector. To do that, some features common to the whole sector need to be kept in mind.

First, as introduced above, the overall copyright of a film or TV work belongs to the producer

⁴⁴⁴ Interview 20160424, with an employee of the Marketing Department of a top video site.

(the production company); other authors, such as scriptwriters, usually only get authorship (the right to attach their names to the work). Correspondingly, except for the producer, other staff only get fixed payments for a film or TV series production, except when they are also investors, or when they are highly reputed so they can negotiate a profit share (for example a few famous directors).⁴⁴⁵ A TV scriptwriter I interviewed said that:

In the West (i.e. the US), everyone involved in film or TV series production has the right to benefit from copyright, but here only the producer can, so others do not care about copyright that much. [...] Scriptwriters are put in a very weak position in a big project. [...] I get paid for script-writing and, after that, the box office or the number of views is none of my business. I won't get any more money after the TV series or film starts shooting; afterwards, who buys⁴⁴⁶ the copyright and how it makes profit have nothing to do with me.⁴⁴⁷

Another scriptwriter said that, "In China [scriptwriters] are at the bottom of the industry value chain; we are very weak. [...] with regard to issues of infringement, we have no say."⁴⁴⁸

In this case, since the producer is the one who owns the overall copyright for the TV series or the film, I treat producers as the primary author and copyright owner.

Second, as opposed to the telecom equipment sector, products in the Chinese film & TV sector focus almost completely on the domestic market; the international market is marginal for local producers. There are three possible reasons for this: (i) language and cultural barriers; (ii) the Chinese market itself is still growing rapidly and has great potential (so it is less efficient in terms of a cost-benefit analysis to develop the overseas market); (iii) Chinese film and TV products are

⁴⁴⁵ This is perhaps due to the historical legacy in China: before market reform, everything was considered to belong to the state and authors such as scriptwriters only got a fixed salary; the overall profit belonged to the state (Interview 20160516, with the Associate Secretary General of a film copyright association).

⁴⁴⁶ Here the interviewee means "who gets the broadcasting right".

⁴⁴⁷ Interview 20160423, with a scriptwriter. Original Chinese: "国外是整个创作团队都有版权，但是国内是只有制作公司有。所以其他人并不太关心版权...当你放到大项目里，编剧是放在一个特别不重要的地位。谈好就签合同，给定金，写个梗概，之后多少，一步步给钱。之后票房收视跟我们没关系了，我的钱拿到开机就没了，这件事我只有一个署名权，版权归制作公司了。如果再卖给谁，做什么商业用途跟我一点关系都没有。"

⁴⁴⁸ Interview 20160427C, with a scriptwriter. Original Chinese: "中国（编剧）在产业链里也是比较底层，比较弱势...抄袭的东西，话语权不在自己这里"。

not competitive enough to be able to survive in the international market.⁴⁴⁹ Many interviewees in this sector expressed the idea that, the local market is large enough to support the sector, and that profits from the international market are both small and insignificant.⁴⁵⁰ In fact, most film and TV producers do not target the international market at all.⁴⁵¹ In this case, in this section, I only talk about each industry's profit sources inside the Chinese market.

1.2.1 The Film Industry: The Dominance of Box-Office Revenues

From production to screening, a film needs to go through the producer, the distribution company or distribution department inside the production company, then the cinema chains, then the cinemas. In general, within the film industry, there is a mix of public and private companies at each of these stages, but private companies are now the major players in most of these stages. With regard to production, by 2011, there were more than 1100 film producing units, among which the number of private producing entities exceeded 1000; more than 70% of annual feature films were produced or co-produced by private producers; among the top 15 film producers, the majority are private producers (CFA(China Film Association), 2011). With regard to distribution, in 2015, the ten biggest private distribution corporations contributed to more than 80% of the box office for domestic films; the five traditional private distribution companies (Huayi Bros, Bona Film Group, Le Vision Pictures, Enlight Pictures, Wanda Meida) accounted for 63% of the box office for domestic films (EntGroup, 2016). With regard to cinema chains, there were 48 cinema chains by the end of 2014; state-owned cinema chains still dominated the market, but private cinemas chains are also growing fast (Yang, 2015).

In present-day China, as opposed to the US, box-office revenue is the dominant income for a film. In the last few years, on average, for Chinese films the box office accounted for more than 70% of the total income; for American films it was the *non*-box-office revenue that accounted for

⁴⁴⁹ Interview 20160426A, with a researcher at a movie research company; interview 20160427A, with a film producer.

⁴⁵⁰ Interview 20160418B, with a TV series and advertisement director; interview 20160424, with an employee of the Marketing Department of a top video site.

⁴⁵¹ Interview 20160419, with a series producer and distribution manager of a film &TV production company. In addition, when some films did get target the international market, they would often fail.

almost 70% of the total income of a film (where non-box-office revenue means that from derivative products and copyright sales) (H. Liu & Lu, 2015; Yang Xiao, 2015). After a film's initial theatrical release is over, the Chinese producer can authorize (i.e. license) its right to broadcast on television networks or video streaming websites, getting a lump-sum payment for it. But, according to my interviews with film industry participants, box-office revenue is still "the major source" of a film's profit, while other parts are "not significant".⁴⁵²

For this reason, cinematic screenings of a film are crucial for its success. The schedule of a film's screening is determined by each individual cinema, and is usually affected by multiple factors: the reputation of the production team (including the director and actors), the relationship between the producer or distributor and the cinemas or cinema chains, and, perhaps most importantly, initial box-office performance. (As to initial box-office performance, to ensure profits, cinemas may schedule more screening for films who have a good box office in the first few days after release.)⁴⁵³

The way that box-office receipts of a film are split among these various players (discussed at the beginning of section 1.2.1) is called the "box-office splitting mechanism". In general, the net box-office receipts (box-office receipts after tax and fees)⁴⁵⁴ are split about equally between producers (including investors) and the cinemas (including chains), while the distribution companies often get a fixed payment according to initial contracts, which set a minimum number of screenings, unless it is also an investor or an owner of the cinema chain. However, recently, in order to get the distribution deal for films they want, more and more distribution companies use what they call "guaranteed distribution", where they either charge a nominal flat rate or nothing at all, on the condition that they get a percentage of box-office receipts if the box office exceeds certain guaranteed minimum levels.

According to the above mechanism, the party who should have the most incentive to guard against piracy during a film's screenings are the producer and the cinemas, both of whom can

⁴⁵² Ibid, interview 20160427A, with a film producer.

⁴⁵³ Interview 20160628, with an employee at the Distribution Department of a top film company.

⁴⁵⁴ Around 3.3% of box-office receipts go to sales tax; then, according to the Regulations on the Administration of Movies, 5% of the box office needs to go to a special fund for the development of the film industry, owned by the state.

directly benefit from box-office receipts. The distribution companies that use guaranteed distribution also put more effort into monitoring online piracy while the film is in theatres.⁴⁵⁵ Distribution corporations without guaranteed distribution (on fixed commission) concern themselves with normal marketing and screening negotiations but they do not directly care about the actual box office of the film.

A remarkable phenomenon that has happened in recent years is that film investors or producers in China have sometimes “bought the box office” in the first few days of their films’ screening. Which is to say, they buy up a lot of tickets with their own money to increase the box-office records. The result is that there may be no customer showing up at the actual screening; these have been dubbed “phantom screenings” by the media. The main purpose of this strategy is to create a better box office record, which can, in principle, increase the film’s future screenings.⁴⁵⁶

Many within the film industry take the view that buying some box office is an acceptable way of marketing when a film is first released, and the cost is treated as a normal marketing cost.⁴⁵⁷ In this case, a film’s overall box office often is most reflective of the means of the producer; the producer needs some connections with the cinemas to be able to buy box office as well as capacity for marketing and capital mobilization. These almost predetermine a producer’s success in the Chinese context. This phenomenon reflects the fact that, in the Chinese market, a film’s success does not only depend on the quality of the copyrighted work, but also many other resources and factors, including marketing strategies and networking. As discussed in later sections, this would affect the role of copyright, and affect the possibility of producers blocking less resourceful

⁴⁵⁵ Interview 20160628, with an employee at the Distribution Department of a top film company.

⁴⁵⁶ Interview 20160410A, with a film director and scriptwriter. In addition, according to Interview 20160427A (with a film producer), and some news reports, there is also the rare case where investment companies spend money to buy up the box office just to increase their stock prices. For example, the producer of the famous film <Ip Man 3> was reported to have a lot of “phantom screenings”; some newspapers revealed that, this was market manipulation (or a “capital game” in direct translation from the Chinese) by the investor Kuailu Group, with the objective of increasing its subsidiary companies’ annualized return and stock price (Yang Lu & Chen, 2016). This situation is comparatively rare, because once it is revealed by the media, the stock price would immediately go down, and the subsidiary company cannot benefit for long.

⁴⁵⁷ For example; interview 20160410A, with a film director and scriptwriter; interview 20160426A, with a researcher at a movie research company; interview 20160628, with an employee at the Distribution Department of a top film company.

infringers.

1.2.2 Traditional series: Television Networks as the Major Distribution Channel

While films get screened in cinemas, traditional series are usually broadcast by television networks; while most film producers hire another company to distribute their films, TV series producers usually directly license their work to a few television networks. (This is possibly because, although a film is screened at multiple cinemas, usually a TV series can only license the broadcast rights to one or two television networks, usually those the producers have good relationship with.) With regard to producers, by early 2015, in China there were about 8,563 companies or studios qualified in the production of scripted television, but only about 10% of them had produced series (chyxx.com, 2015);⁴⁵⁸ among these companies, private production companies are playing the larger role in the market than state-owned ones (Vlinkage, 2015). With regard to television networks, in China, they are all state-owned institutions; each province or direct-controlled municipality has its satellite television network, as well as each prefecture, county, and even town.⁴⁵⁹

While the box office from the theatrical release of films is split between cinemas and producers, TV producers license the first-run or second-run rights of broadcasting to television networks in advance, and they have no part in the broadcasting-related profits. As opposed to in the West, where TV series are broadcast by seasons, in China the whole series is produced in advance and licensed to diffusion networks (i.e. broadcasting channels) in a lump-sum payment.⁴⁶⁰ The producers can also license the reruns to websites and get a lump-sum payment. (Usually the website would broadcast a few episodes each week, right after they were broadcast on TV.) The major income of the producers is from licensing the right of first-run broadcast to the television networks; this fact makes the television networks their primary customers. Under this profit model, once the producers have licensed the broadcasting rights to television networks and collected their

⁴⁵⁸ Chyxx.com is an institution known for producing industry reports in China, “chyxx” is the abbreviation for “chanye xinxi wang” in Chinese, meaning “the website of industry information”.

⁴⁵⁹ This, in some sense, makes this industry similar to the pharmaceutical industry, where the major distribution channels are also state-owned hospitals.

⁴⁶⁰ Interview 20160521, with a film script editor and film & TV producer.

profits, they would hardly be affected by copyright infringement of the original series; as such, the burden has shifted to the purchasers.⁴⁶¹

As for the state-owned television networks, although their major source of income is from advertising and they do not rely much on government funding,⁴⁶² the network directors are still government officials, assigned by a higher level of government, and are in their positions for only a limited term of office (one to three years); what they focus on is their political careers, and a clean record when they leave, instead of business success. Because every decision in the television network needs the approval of the network director,⁴⁶³ the behavioural logic of television networks is more political than economic: the goal of the leaders is mostly to play safe during their term of office, not maximize profits.⁴⁶⁴ This does not mean that television networks do not care about profits and copyrights at all; after all, they still need audience ratings (like the Nielsen ratings) and relevant advertisement income to make ends meet. However, they are much more risk-averse than private companies, because their major goal is “not to make mistakes”; in comparison, private companies are more eager to try new things to increase their competitive advantage.

1.2.3 Online Series: The Rise of Streaming Websites

As defined in the beginning of this chapter, online series are those produced to be first screened on video streaming websites. The online series industry has been developing with the growth of video streaming websites since 2005. The recent “market shuffle” has reduced the number of streaming websites and increased industry concentration; as of 2015, about 20 major streaming websites dominated most of the market, and all of the top 20 websites were private; however, recently more and more state-owned television networks have started to develop their own streaming websites (Beijing Business Today, 2010; CWW, 2011).

Since 2009, there has been a proliferation of online series (J. Jia, 2014). The major streaming websites began to invest a lot in accumulating copyrighted resources to distinguish themselves from other websites, leading to the following two sources of online series. First, the websites would

⁴⁶¹ Interview 20160514, with a TV scriptwriter.

⁴⁶² Interview 20160608B, with an employee at the Market Evaluation Department of a state-owned TV Network.

⁴⁶³ Ibid.

⁴⁶⁴ Interview 20160608A, with an employee at the Copyright Department of a state-owned TV station.

invest in the production of in-house series and become producers themselves (similar to how Netflix produced *House of Cards*); this usually starts with getting the authorization to adapt popular online novels. Second, they can also seek to get authorized for the right of the initial broadcast of a TV series made by another producer.⁴⁶⁵ To establish customer loyalty and develop a reputation for originality, in-house series are becoming more and more prevalent. In 2015, there were 379 newly produced online series (while the number of traditional series in 2015 was 395), with 5,008 episodes totally, which amounted to 27.45 billion video views in total (Chinabgao, 2016) (where one “video view” is defined as when the video is streamed from the website once, usually for a minimum of about one minute).

In this industry, the producer and the diffusion network are often the same entity: the streaming websites. Regardless of whether the website produced their own series (and owns the copyright), or if they license the broadcasting rights from others, they are the ones who have the incentive to protect the copyright of the relevant online series from infringements.

Streaming websites have profited mainly through advertisements related to the online series.⁴⁶⁶ These advertisements are of two types: (i) pre-rolls (i.e. online video advertisements that play before the start of a video selected for viewing); (ii) product placement or embedded marketing (i.e. promotion of certain products through placement in the TV series, which is a major profit source for in-house productions⁴⁶⁷). Pre-roll fees are usually related to the video views of certain TV series, which would be affected by piracy in the form of either file sharing or inline linking; but, for embedded marketing, advertisement fees are prepaid before the broadcasting of the TV series, and so are not as directly affected by piracy.

In the online TV market, possibly because in China online series are directed overwhelmingly at young viewers (generally college students and teenagers), who usually have a short attention span (Newman, 2010), the life cycle of a series can be very short; in fact, the majority of attention,

⁴⁶⁵ Interview 20160424, with an employee of the Marketing Department of a top video site.

⁴⁶⁶ Interview 20160410B, with a scripted series planner; 20160508B, with a content editor at a top video site. Membership fees as a source of income are also growing, but they are still a much smaller revenue source compared to advertising (interview 20160424, with an employee of the Marketing Department of a top video site).

⁴⁶⁷ Interview 20160614, with an investment manager at a private VC focusing on the entertainment sector.

discussion, and video views happen during the initial broadcast of the series, which is called the “hit period”.⁴⁶⁸ For example, according to the Baidu Index (the equivalent of Google Trends in China), the search frequency of a certain TV show peaks during its first-run broadcast and then remains low afterwards. For example, there were as many as about 1.3 million daily searches for a famous online series *Go Princess Go* during its first-run release period; after the first-run release period was over, the daily search frequency has remained under 10,000. If profit is related to clicks and video views following the searches, this may indicate that reruns bring only a small portion of the revenue of the first run. (In comparison, according to data from Google Trends, the search frequency of the American online series *House of Cards Season 1* reached a peak following the original release and then had half again as many search results in each following year.) Due to these trends, infringements that happen after the first-run broadcast may not be treated as a serious threat to the producing or licensing websites.

1.2.4 Summary: The Limited Profit Window

In Hollywood, there is a profit window cycle during which producers can profit from their copyrights: usually a film is first released in cinemas (and this screening period is called the theatrical window); then, after two or three months, it is released on consumer media (e.g. DVDs) and video-on-demand (VOD) services (i.e. the video window) (Smith & Cathode, 2010); after an additional number of months, it is then released to premium cable networks (such as HBO), from which the producer could also get a share of payment made by audiences; then, approximately two or three years after the theatrical release date, the film is released to broadcast television networks, getting a lump-sum broadcasting fee (K. Peng, 2015). Aside from that, the film may also get profit shares from derivatives selling (e.g. miniature of film characters). In this process, the producer continuously benefits from the copyright for three years or more; in this case, it has the incentive to protect copyright for a long period of time.

In comparison, in China, the profit window cycle for films and TV is much shorter; for film

⁴⁶⁸ Interview 20160424, with an employee of the Marketing Department of a top video site.

and online series, the profit window cycle usually only lasts a few months. I do not have enough information to give definite reasons for this situation, but based on limited information, possible reasons could be that most Chinese investors do not have much interest in long-term investments, or producers and diffusion networks have bounded rationality where satisfying results are pursued instead of maximization, or there is no way to prevent piracy for long, or the market is geared towards young audiences who are very trend conscious. For films, the profit window cycle starts when a film is screened in cinemas and it ends about two months later, when the film's broadcasting rights are licensed to television networks or websites (or both); derivative markets are usually not developed. As for online series, the cycle starts when they are released on the websites and start to get video views; it ends about two or three months later, when the initial broadcast is over. For traditional series, usually, their life cycle starts when the initial right of broadcasting of the TV series is licensed to television networks and ends when its second-run right of broadcasting is licensed to other television networks or websites after the initial broadcast. Traditional series usually make only marginal profits after the second-run broadcast, i.e. from something like off-network syndication as exists in North America.

The limited profit window cycle exacerbates the tendency of short time horizons in the industry (introduced in chapter two, section 4.2) and reduces the incentive of companies to protect copyright in the long term.⁴⁶⁹ It is no wonder that, during my field study, I found that producers, cinemas, television networks, and websites only cared about copyright protection during the first few months of the release of a film or TV series (when they could make the most profit);⁴⁷⁰ infringing products that enter the market afterwards do not bother them, because the original

⁴⁶⁹ Interview 20160518B, with a manager at a consultation company focusing on medical industry.

⁴⁷⁰ Interview 20160508B, with a content editor at a top video site; interview 20160516, with the Associate Secretary General of a film copyright association; interview 20160517A, with a manager at a video site; interview 20160624, with an investment manager of a state-owned fund.

product is then more or less “off the market” by that time (and so there is no competition).⁴⁷¹

2. Industry Characteristics

In this section, I elaborate on the four dimensions of industry characteristics for the film & TV sector: product nature, administrative regulation, market characteristics, and network structure. These characteristics can limit companies' choices in IP-related issues, shape their strategies, actions, and priorities; they also determine the availability and effectiveness of various innovation protection methods (which are discussed in section 3).

2.1 Product and Copyright Nature

As discussed in chapter five, two conditions are required for effective legal IP protection: clear legal definition (i.e. relevant rights are effectively defined and the right claim is operational) and effective complementary enforcement (i.e. the infringing behaviour can be identified, proved and stopped through a formal procedure, either judicial or administrative, with a reasonable cost). In this section, I discuss how the characteristics of film and TV products and relevant copyrights affect these two conditions, as well as the possibility of technological or technical barriers.

2.1.1 Legal Definition

Both copyright and copyright infringement have multiple forms. Comparing the two different forms of infringement (see section 1.1.3), it is relatively easier to identify piracy than plagiarism. Nowadays, piracy (either unauthorized file sharing or inline linking) is mainly conducted through digital technology, where the original product is duplicated or relinked without any content change. In this case, it is possible to use digital technology to identify and monitor piracy.⁴⁷² When I asked my interviewees how they would monitor piracy, almost all of them mentioned digital search engines or relevant technologies. For example, recently, a technology called blockchain (a distributed database that is used to maintain a continuously growing list of records) allows users

⁴⁷¹ Interview 20160426D, with a researcher at a movie research company.

⁴⁷² Interview 20160508B, with a content editor at a top video site.

to timestamp their work,⁴⁷³ related services can also help track online usage of a client's work and send alerts to the infringer when there is any unauthorized usage (Willms, 2016).⁴⁷⁴ Following this trend, it may become easier to identify piracy (basing on copyright law) in the future.

As for plagiarism, it is much more complicated. Plagiarizing is not just technical duplication; it usually involves re-composing various components contained in the film or TV series. For example, a film or TV script includes various elements such as dialogue, scenes, plot, characters, settings, and writing style; a film and TV series includes various elements such as script, acting, scenes, music, and lighting. Plagiarizing work might only use parts of the original work. This complexity, combined with the idea-expression dichotomy, can create ambiguity and difficulty in infringement identification,⁴⁷⁵ if the legal system is not experienced enough to compensate for this difficulty. Many interviewees thought that "it is very hard" or "there is no way" to determine infringing plagiarism in the area of film and TV,⁴⁷⁶ especially for TV series, which are much longer than films and contain many more components.⁴⁷⁷

In a mature legal system, ambiguous concepts may get clarified after years of legal practice. For example, in the US, because judges and plaintiffs have more experience and there are more precedents to refer to, it is easier to find the line between infringing plagiarism and non-infringing inspiration, reference, allusion, or homage. But in present-day China, where the modern legal system of copyright has only been established for a short time, this is hardly the case. Many authors themselves cannot tell the difference between non-infringing similarity and infringing plagiarism; some even do not know about the idea-expression dichotomy.⁴⁷⁸ Judges' decisions are often

⁴⁷³ Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks and the collusion of the network.

⁴⁷⁴ Interview 20160511, with the founder and CEO of a copyright service company. This technology has already been introduced and used in China.

⁴⁷⁵ There are more ambiguities in copyright law than in patent law, possibly due the nature of literature and artistic works, which are not analysable in the same terms as patented products.

⁴⁷⁶ Interview 20160423, with a TV scriptwriter; interview 20160424, with an employee of the Marketing Department of a top video site; interview 20160703, with a TV scriptwriter; interview 20160714, with a book editor and IP operator (for film adaptation).

⁴⁷⁷ Interview 20160714, with a book editor and IP operator (for film adaptation).

⁴⁷⁸ Interview 20160514, with a TV scriptwriter at a state-owned TV production company; interview 20160427B, with a film producer at a private production company; interview 20160601B, with a TV scriptwriter who is also a script-writing professor.

arbitrary because law and jurisprudence provide poor guidance in legal decision making.⁴⁷⁹ In addition, the lack of copyright contract experience could lead to ambiguities in contracts, making it even harder for authors to defend their copyright afterwards.⁴⁸⁰

2.1.2 Legal Enforcement

In general, as discussed in chapter two and three, the weak evidence discovery system⁴⁸¹ and low compensation rates for IPR cases⁴⁸² in Chinese courts usually reduce the effectiveness of IPR legal enforcement, including copyright enforcement.⁴⁸³ But, in the area of film and TV series infringement, the actual enforcement result varies a lot by infringement type and specific industry.

With regard to plagiarism, not only it is hard to identify (see section 2.1.1), but it is also hard to calculate compensation.⁴⁸⁴ First, since a TV or film contains too many different components and inputs, among which the plagiarizing part may only accounts for a small proportion of the overall input, it is hard to determine precisely how that small part affects the overall profit of the infringing film or TV series; as a result, it is hard to evaluate how much an infringer has gained due to the plagiarism. Second, to some extent, each film or TV series is a unique product which has no identical precedents in the market, and its success or failure depends on too many aspects, including popularity of the actors, promotion, social psychology, media attention, among others. In this case, it is hard to predict how a film or TV series will perform without plagiarizing or without being plagiarized, i.e. it is hard to determine the infringer's gain or the right holder's loss.⁴⁸⁵ As a result, the compensation amount is often arbitrarily determined, and usually very low.⁴⁸⁶

With regard to piracy, since film and TV piracy happens mostly online nowadays, it is

⁴⁷⁹ Interview 20160704, with a judge at an IP court.

⁴⁸⁰ Interview 20160419, with a series producer and distribution manager of a film &TV production company; interview 20160601B, with a TV scriptwriter.

⁴⁸¹ See chapter two for a discussion.

⁴⁸² See chapter three for a discussion of the lack of complementary institutions such as mature corporate data management and accounting systems, which make damage calculation difficult.

⁴⁸³ Interview 20160423, with a TV scriptwriter

⁴⁸⁴ This is similar to the case with patents, especially patents for complex technologies which, like films, combine multiple profitable components.

⁴⁸⁵ Interview 20160427A, with a film producer; interview 20160628, an employee at the Distribution Department of a top film company.

⁴⁸⁶ Interview 20160418B, with a TV series and advertisement director.

relatively easy to use digital methods to monitor online piracy within a certain period. For example, the technology that YouTube uses can identify unauthorized piracy content through content comparison and automatically deletes it.⁴⁸⁷ In China, during a film's theatrical release, the film production company and the distribution company have a team to search for online piracy around the clock; when a TV series is being broadcast on a website, the website also has a team to monitor online content.⁴⁸⁸ Still, it is hard for copyright holders to effectively and consistently enforce their rights through the court system, especially against individuals; this is due to the large amount of scattered individual piracy,⁴⁸⁹ the difficulty of calculating how much compensation should be paid, and the "safe harbour" provision (see footnote 10 in section 1.1.3)⁴⁹⁰ which reduces the incentive of websites to actively monitor piracy. For example, according to the verdict of one case, where Sohu sued Tudou for the inline linking of a TV series, because "neither party can provide evidence for the actual loss of Sohu or the benefit gained by Tudou",⁴⁹¹ the court had to use its discretion, and the final compensation was only 3,000 RMB (about US\$441).⁴⁹²

However, as elaborated in section 2.1 of chapter five, sometimes, even though it is hard for the right holder to inspect, prove, or enforce the infringing behaviour through judicial process, some administrative institutions wade in due to political concern, i.e. the infringing behaviour can be still contained through formal administrative procedure based on IPR laws. Piracy can be used to disseminate "censored" content (discussed in section 2.2.1), including foreign films, that cannot get past the censors without significant editing, or domestic films that are (or are likely to be) banned in the formal diffusion networks. Possibly due to the concern that film and TV series, that are not distributed through standard channels, can contain illegal content (i.e. politically sensitive

⁴⁸⁷ Interview 20160508B, with a content editor at a top video site.

⁴⁸⁸ Interview 20160427A, with a film producer. Once the production company finds pirated content, it asks the website to delete the content; the website should act quickly to delete it and to avoid trouble; according to the "safe harbour" principle it can only avoid responsibility if it deletes pirated content once notified.

⁴⁸⁹ Interview 20160419, with a series producer and distribution manager of a film & TV production company.

⁴⁹⁰ The "safe harbour" provision states that the administrator of a website will not be held liable for infringing content posted "at the direction of a user," as long as the website does not know about the infringing activity, does not benefit directly from it, and acts expeditiously to remove the infringing material once notified.

⁴⁹¹ For the original verdict, see:

<http://anli.court.gov.cn/static/web/index.html#/alk/detail/5A2DAE1BC1F24AF22C10332A9C0371CD>.

⁴⁹² For convenience, the conversions between RMB yuan and US dollars in this study are based on the exchange rate in early 2017 (about 6.8, i.e. 1 US dollar equals to about 6.8 RMB).

or obscene), the Chinese government has made large efforts to monitor and crack down on online piracy.⁴⁹³ For example, in recent years, the anti-piracy "Sword-Net" campaign, conducted by various administrative agencies (the State Intellectual Property Office, The Ministry of Public Security, the Ministry of Industry and Information Technology) with the aim to improve online copyright management, lasts a few months every year (BBC, 2015);⁴⁹⁴ this has significantly limited online piracy.⁴⁹⁵

In specific, both forms of online piracy (file sharing among individuals and inline linking conducted by websites) have been under the influence of administrative legal enforcement, detailed as follows.

Infringing file sharing is individual behaviour conducted by Internet users; in China the number of Internet users had reached 731 million by the end of 2016 (Y. Zheng, 2017), making it very hard for a single copyright owner to monitor piracy in the form of file sharing. According to my interviewees, they usually have to count on administrative agencies to reduce individual file sharing through Internet controls or website reviews or else they simply ignore the problem. This is for many reasons: first, it is too costly for a right holder to pay attention to all the file-sharing that happens; second, court procedures are too slow to stop piracy during the profit-window of a film or TV series; third, in court cases the infringing individuals do not suffer much loss even if they lose the case, because they do not profit from the piracy (and so they do not pay any compensation, but are only required to stop pirating; however, administrative agencies may be able to charge a large fine as a punishment).⁴⁹⁶

As for inline linking, infringers are usually websites that are more visible and have a much larger financial capacity than individuals; as such, administrative agencies can impose a much greater penalty than the revenue the website would have gained from the infringing behaviour; this

⁴⁹³ Interview 20160521 with a film producer; interview 20160516 with a representative from a copyright association.

⁴⁹⁴ Also see <http://ip.people.com.cn/n1/2016/0826/c136655-28667239.html> for related report.

⁴⁹⁵ Interview 20160424 with a representative from a big streaming video website; interview 20160427A with a film producer. Interview 20160516, with the Associate Secretary General of a film copyright association.

⁴⁹⁶ Interview 20160410A, with a film director and scriptwriter; interview 20160410C, with a film & TV IP operator; interview 20160419, with a series producer and distribution manager of a film & TV production company; interview 20160608A, with an employee at the Copyright Department of a state-owned TV station.

serves as a warning to other potential infringers. (In comparison, in a court settlement, even with substantial evidence, the compensation would not usually exceed the revenue they would have gained by the infringement.) For example, in around 2014, Qvod, a famous website which used to conduct unauthorized inline linking, was fined 260 million RMB (about US\$38 million) by an administrative agency (the Shenzhen Market Supervision Administration) on the charge of “illegal operation” and had to shut down its site (Kan, 2014). Many industry participants I interviewed told me that, ever since the case of Qvod, big websites usually pay a lot of attention to copyright, and seldom take the risk of conducting piracy.⁴⁹⁷

2.1.3 Technical Expertise Barriers

There are almost no technological or technical barriers to making or sharing pirated digital copies of films or TV series, because that does not require much more than the click of a mouse. However, plagiarizing a film or a TV series requires a lot of technical expertise. The work involves not only script-writing skills, but also, for example, expertise in directing, music composition, and acting. In practice, producing a film requires more professional skill than producing a TV series, meaning there is a higher “technical” barrier in film production, that can help prevent plagiarism of films. This is possibly because, films are much shorter and are screened on much larger screens, and therefore require a lot of technical expertise regarding factors, such as staging, lighting, editing, movement and dramatic beats, to execute each scene well. In comparison, a TV series is much longer and shown on a much smaller screen, where the story is more important than the visual effects; in this case there are lower technical requirements.⁴⁹⁸

The higher requirements of film-making are partly reflected in the average shooting time: in China, one scene in a film may take several days to shoot, while for TV series dozens of scenes can be shot in a day.⁴⁹⁹ These higher requirements are also suggested by the fact that, most film script-writing requires a corresponding professional degree, while most TV series script-writing

⁴⁹⁷ Interview 20160424, with an employee of the Marketing Department of a top video site; interview 20160516, with the Associate Secretary General of a film copyright association.

⁴⁹⁸ Interview 20160521, with a film script editor and film & TV producer.

⁴⁹⁹ Interview 20160813, with an assistant film producer.

does not.⁵⁰⁰ All interviewees agree that film production requires a lot more from producers than TV production. In this case, the difficulty of plagiarizing a film is analogous to copying a piece of high-end medical equipment; even though imitators have the original product as a model, without adequate professional skills or know-how, it is impossible to produce a product that competes with the original one, i.e. without the expertise they will not be a threat.

2.2 State Intervention

The role of the state is also important in various sectors. One private company manager said during an interview that, to do business in China, “you should never do what the government is against, and always try to do what the government strongly supports; if the government subtly indicates restrictions, it is never promising so you should not do it.”⁵⁰¹ For example, if the government thinks an industry is plagued by overcapacity, the government will be stricter in granting market-entry approval (e.g. it is getting stricter in approving generic drugs). Another interviewee told me that, “to do business in China requires some kind of connection with the government to avoid inconvenience.”⁵⁰² For example, to organize any promotional activity or to make a film requires approval from local government with regard to the use of land; certain connections can smooth the process and avoid project lags caused by problems in getting administrative approval.⁵⁰³

In present-day China, the new leaders have put more focus on the cultural industry and have published a lot of policies benefiting the film & TV sector, including those providing financial and human resource services (EntGroup, 2015). In 2014, the state increased special funds for the film industry and adopted a lot of tax-reduction policies. However, with the recent flourishing of private

⁵⁰⁰ Interview 20160601B, with a TV scriptwriter.

⁵⁰¹ Interview 20160429A, with a representative from a local company. Original Chinese: “政府极力不主张，就不要去干，政府大力主张的，有条件就干，没条件不冲动，或者不能正面表达，只能隐约，引导措施限制的，就不要干，肯定没前途。”

⁵⁰² Interview 20160511, with the CEO of a copyright service company. Original Chinese: “在中国做事情难免要跟政府沟通，因为必须要有政治上的保证，来防止一些风险。”

⁵⁰³ Interview 20160419, with a series producer and distribution manager of a film & TV production company.

investment in the film & TV sector, the driving effect of the public policies and funds supportive of the sector are becoming less obvious (Yin & Feng, 2014).⁵⁰⁴ Nowadays the state's role in the film & TV sector is mainly manifested by the censorship system and the administrative enforcement of copyright. I elaborate them separately in the following subsections.

2.2.1 The Censorship System and the State Administration of Press, Publication, Radio, Film, and Television (SAPPRFT)

In China, there is no equivalent system to that of movie ratings, as in many other countries (that limit access to films depending on age), but, to review if the content of film and TV series are proper for screening, the Chinese state has maintained a censorship system. This is possibly because of the state's need to control ideology (and because film and TV series can have great social influence, including ideological influence). The censorship system has significantly affected both the development of the film & TV sector and the behaviours of companies, including their copyright-related behaviours. In the following paragraphs, I describe the basic process of film and TV series censorship, then I briefly introduce the censorship standards, and discuss how the censorship structure and standards affect industry behaviour.

The censorship policies are made by an institution called the State Administration of Press, Publication, Radio, Film, and Television (SAPPRFT), a powerful branch of the government that controls the content of all radio, film, television, satellite and Internet broadcasts in China. Censorship is largely applied before things go to market, but can also be applied later. Any films and TV series that are publicly screened inside China need to go through the censorship process before they can be screened. They may also get banned afterwards if the censorship administration discovers content that should not have passed the initial censorship process. (Usually this happens when the film or TV series become very popular and it draws the government's attention.)

Generally, censored films and TV series should not contain certain content, such as that which harms state sovereignty, safety, and reputation, as well as that which arouses racial discrimination, that which is superstitious or promote heresies, that which might disturb social stability, that which

⁵⁰⁴ Interview 20160514, with a TV scriptwriter.

promotes obscenity, gambling, violence, or crimes, and that which harms social morality.⁵⁰⁵ (Note that the censors do not examine whether the TV series or film is infringing or not.) In this situation, many foreign films and TV series cannot get past the censors without having a lot of scenes deleted; this is one of the reasons why there is much more piracy of foreign works than of domestic ones: watching uncut pirated versions online is a common way (probably the only way) for film fans in China to see original versions of movies, i.e. not heavily cut by Chinese censors; an example is Fox's R-rated film "Deadpool" from 2016 (L. Lin, 2017).

Depending on how much content the SAPPRT wants the producer to change in a film, the time needed to get through the reviewing process can last from a few days to a few years (or it may never pass). This censorship system has brought a lot of uncertainty and risk to film investors and producers. The uncertainty can come from two sources. First, most of the standards described in *the Regulations on the Administration of Movies* are broad and vague, with a lot of elasticity and they can be interpreted very differently; although there seems to be a tacit and common understanding in the industry about what content is absolutely safe, and what is definitely inappropriate, even the most experienced people in the film industry cannot make an accurate prediction based on government documents alone. Second, each work is reviewed by a group formed by certain committee members, who may have very different understandings of the standards (TTACC, 2015), and whose strictness can vary according to the producer's political connections; films or TV series from "producers with stronger political connections" may pass the censorship process more easily.⁵⁰⁶ As a result of the elasticity in standards and strictness, there is

⁵⁰⁵ For example, for films, see the complete list at: <http://www.lawinfochina.com/display.aspx?lib=law&id=5228&CGid=>, i.e. Provisions on the Archival Filing of Film Scripts (Abstracts) and the Administration of Films - chapter III, which is too long to be presented here.

The censorship standards are also getting stricter these years: in 2016, one of China's top political advisers emphasized that movies needed to be more "cantered on the people, guided by core socialist values" (Beech, 2016); in late 2016, the State Administration of Press, Publication, Radio, Film, and Television published some new censorship standards for TV series, which would forbid contents that expresses "overt admiration for Western lifestyles," jokes about Chinese traditions or defiles "classic materials"; the new standards also ask TV series to avoid sensationalizing private affairs, relationships or family disputes. (Griffiths, 2016). As a result, film and TV series are not allowed to promote or express in detail, for example, drug abuse, alcohol abuse, time travel, reincarnation, homosexuality (Griffiths, 2016; McDonell, 2016).

⁵⁰⁶ Interview 20160813, with an Assistant Film Producer. Original Chinese: "有些网剧或电影题材别人不敢拍，但是制作方有后台就会没事，比如《余罪》和《烈日灼心》。"

also the risk of a sudden ban even after the TV series or film has been screened, if the SAPPRFT later realizes that certain scenes should not have been allowed.⁵⁰⁷ In this uncertain environment, company producers or investors attempt to get a return on investment as soon as possible, contributing to the short time horizon and the short profit window; that is to say, in these cases, they would pay less attention to copyright exploitation and protection in the long run.

Although the censorship policies are similar in general for all three industries (i.e. film, traditional TV and online TV), there are differences in specific operations. In practice, traditional series are censored most strictly, possibly because they have the broadest audience (and the largest social influence); online series are censored least strictly, perhaps because the industry has stayed marginal until only very recently. Both film and traditional series have to be censored by corresponding committees in relevant administrative agencies, but online series only need to go through a process called “self-censorship” before being screened, meaning that the series are censored by a unit consisting of trained examiners inside the company itself, based on the policies published by the SAPPRFT (although there is the possibility of selective examination occasionally from administrative agencies).⁵⁰⁸ This freer environment is one of the reasons why video streaming websites have become so popular in China, and why distribution based on the Internet has developed so fast, and why novelty can become the key competitive element (because less strict censorship means more freedom in creation, leading to more novelty).⁵⁰⁹

With regard to market entry delay, in all three industries, the censorship system does not cause much market entry delay, or not as much as the review system in the medical industry. The film or TV series review process only takes about two months if no forbidden content is identified; in comparison, going through CFDA review to get a certificate to produce a new drug usually takes 3 years or more in China, not to mention the clinical trial approval process before that. Because of this, the censorship system is less effective as a method to block latecomers or infringers. (See

⁵⁰⁷ Interview 20160628, with an employee at the Distribution Department of a top film company.

⁵⁰⁸ Interview 20160424, with an employee of the Marketing Department of a top video site; interview 20160813, with an assistant film producer.

⁵⁰⁹ Interview 20160521, with a film script editor and film & TV producer.

section 3.2.2.)

2.2.2 The Role of Administrative Enforcement

In section 2.1.2, I introduced the idea that administrative institutions might use their control of the Internet to stop online piracy, due to the government's concern about the spread of uncensored information through the Internet (The Economist, July 1st 2017). However, this does not mean that online piracy is effectively controlled by administrative institutions in all cases.

First, as discussed in chapter two and three, with regard to administrative enforcement, there are problems of jurisdictional ambiguity and coordination difficulty caused by bureaucratic fragmentation. This is also a problem with regard to film and TV copyright enforcement. For example, "Internet bars" (the counterpart of "Internet cafés" or "cybercafés" in China, which have diminished in recent years) that present pirated films are always an awkward area, because Internet bars are within the jurisdiction of the Ministry of Culture, but the regulation of film screening should be the responsibility of the State Administration of Press, Publication, Radio, Film, and Television.⁵¹⁰ When the tasks are hard, and the responsibility is not clarified, it is possible that neither has the incentive to deal with them.⁵¹¹ This type of bureaucratic fragmentation has produced many gaps in copyright enforcement, and has created the need for alternative protection methods; but, in recent years, more and more institutions have started to form combined special groups to deal with copyright problems online; for example, the Net Sword campaign has been co-launched by the State Intellectual Property Office, The Ministry of Public Security, and the Ministry of Industry and Information Technology (BBC, 2015).

Second, this type of complementary enforcement does not cover all types of copyright infringements; it focuses mostly on controlling piracy conducted by streaming websites and pushing websites to monitor users on their platforms, but focuses less on direct regulation of individual file-sharing, possibly due to the fact that websites are much easier targets compared to

⁵¹⁰ Interview 20160516, with the Associate Secretary General of a film copyright association.

⁵¹¹ But if the task can bring enough resources and power to compensate for the cost, perhaps the ambiguous jurisdiction would cause both parties to compete for it (Mertha, 2006).

hundreds of millions of individual Internet users.⁵¹²

2.3 Market Characteristics: Which Features Deter Infringers

The framework developed in chapter five (and proposed for all the sectors under study), suggests that market characteristics determine how much complementary advantage the first mover can get, shape how hard it is for latecomers to get into a market, and thereby affect how much innovating companies would be threatened by potential imitators in the market. For example, consumer's taste for product novelty may determine their tolerance for imitating products, and thereby affect the original producer's first-mover advantage; the importance of marketing may affect the advantage brought by early market entry and corresponding accumulated marketing experience; distribution channel concentration determines the importance of channel cultivation, and also affects the ease of newcomers getting into the market. In the case of the film & TV sector, market characteristics work differently in different industries.

In both the film and traditional TV industries, the distribution channel is highly concentrated; this makes it possible for the copyright owner to block infringers through channel control. Films are screened (i.e. distributed) in cinemas belonging to a few large cinema chains, while traditional series reach their audiences through state-owned television networks. For films, the final box office of a film is mostly determined by the schedule of a film's screenings, and this schedule is mostly determined by two things. First, it is mainly determined by the expected box office returns of the film, which are based on factors such as the type of the film, the reputation of the production team, the popularity of the actors, the initial screening records; second, it is also affected by *guanxi* (connections) between the film producer and the cinema,⁵¹³ which are usually cultivated through repeated get-together dinners and drinks (Tencent Entertain, 2015). The situation is similar in the traditional TV industry: a television network's choices of which TV series to screen are mainly determined by the expected audience ratings of the show, but the choice among similar TV series

⁵¹² Interview 20160426B, with a manager at a movie research company.

⁵¹³ Interview 20160426C, with an employee in the Account Department of a movie research company; interview 20160628, with an employee at the Distribution Department of a top film company; interview 20160424, with an employee of the Marketing Department of a top video site.

would be shaped by guanxi (connections) and kickbacks (the possibility for which also relies on guanxi) between the producer and purchasing department of the television network.⁵¹⁴

In the film and traditional TV industries, the screening channels themselves can also provide certain complementary utilities (i.e. bundling) to dwarf the offerings of pirated goods. For example, cinemas can provide bundles including food and beverages,⁵¹⁵ posters, and space for face-to-face social interactions, while TV viewing provides the atmosphere of a family get-together.

As for online series, because the distribution channel is not so concentrated (not everyone can open cinema chains or put a video on television networks, but anyone with Internet access can upload content to big websites to reach audiences) and does not come with bundles such as social spaces, it is less possible for the first movers to use channel control or complementary utility to block infringers.⁵¹⁶ However, in this industry, two other market features serve to limit infringements. First, since the early 2010s, with the development of local video streaming websites and consumers' requirements for higher video resolution, the incentive for individual consumers to search through online pirated sources has also been reduced, because they can easily find high-resolution original resource on the few big video streaming websites.⁵¹⁷ Second, the online TV market is directed overwhelmingly at youth audiences, to whom curiosity and novelty are the dominant pursuits. Most of the time they watch TV series to keep up with trends; in this case they seldom watch or click on an "outmoded" series that is not "in". In a market like this, once a series is already screened, a similar one would not attract much of an audience;⁵¹⁸ this feature can serve

⁵¹⁴ Interview 20160514, with a TV scriptwriter; interview 20160624, with an investment manager of a state-owned fund. Note: Because the strict censorship system leads to homogeneity in TV series, many TV series end up having similar expected audience ratings; this situation makes guanxi even more important.

⁵¹⁵ According to data from the China Film Association, in the first half-year of 2014, 23% of Wanda Cinemas' profits were from non-box-office sales.

⁵¹⁶ Interview 20160624, with an investment manager of a state-owned fund; interview 20160424, with an employee of the Marketing Department of a top video site.

⁵¹⁷ Interview 20160628, with an employee at the Distribution Department of a top film company; interview 20160516; interview 20160612, with a representative from a box-office data platform. It has also been confirmed in a talk by the vice president of one of the biggest video streaming website at a film festival forum in 2014.

⁵¹⁸ Interview 20160423, with a TV scriptwriter.

to discourage plagiarizers. (Specific mechanisms are elaborated in section 3.2.3.)

2.4 Information Impactedness and Reputation

As discussed in chapter five, when the environment is characterized by uncertainty, and individuals are characterized by bounded rationality (both neurophysiological and language limits on the mind which prevent full appreciation of the potentialities of a situation) and by opportunism (the pursuit of self-interest by means of taking advantage of incomplete information possessed by other parties), there will be the problem of information impactedness, i.e. true underlying circumstances are known to some parties but that they cannot be discerned by others without a certain cost (Williamson, 1975). In China, to deal with this problem and make transactions possible, companies mainly rely on connections and reputation information to reduce the cost of searching for the right employees and cooperators, as well as the cost of monitoring imponderables such as performance. In a specific industry such as the film industry in China, the necessity of multilateral cooperation produces the incentive to use reputation information to reduce search costs, while close-knit networks make reputation information available and reliable; in combination, those two features make reputations significant.

In general, in the film & TV sector, reputation information gained through the social network is important in two aspects. First, inside the production team (all people involved in production), the production and distribution of a film or TV series requires cooperation from multiple positions, including scriptwriter, director, composer, cinematographer, camera operator, actor, costume designer, set decorator, choreographer, best boy, colourist, compositor, and editor. The producer uses reputation information to reduce search cost (reduce trial-and-error process) in finding and getting the appropriate employees for each position before signing contracts with them, and reducing the monitoring cost after signing contracts (because it is very hard to monitor whether one is being perfunctory or doing his or her best). Second, when the producer deals with other parties external to the production team, such as the distribution companies, diffusion networks, and advertisers, reputation can also be important; this is also due to the existence of information

impactedness.

There are different components of reputation. Working ethics is perhaps the most important one inside the production team, while honesty (i.e. not taking advantage of contract loopholes)⁵¹⁹ may be the most important one in external cooperation. Although not the most important, infringement records are also one of these components and can be useful when all other reputation components are the same. For example, reputation about infringements is negligible most of the time if the so-called infringer has a good reputation for work efficiency and a grasp of the market;⁵²⁰ however, when two competitors have more or less the same work ability, and one of them is said to infringe a lot, the cooperating party may choose another one just to play it safe (i.e. to eliminate the tiny chance of being banned, or being resisted by the infringed upon party and their fans).⁵²¹

Although companies tend to use reputation information to reduce transaction costs in all industries in the film & TV sector. The significance of that information differs in extent by industry, due to different levels of network closeness. Among the three industries in the film & TV sector, the cinema film industry has the most close-knit network structure, i.e. industry participants usually know each other, and it is very hard for an outsider without prior connections to get into the circle.⁵²² For example, most leading producers know each other; film directors in present-day China are alumni who know each other personally (Y. Yang, 2001); people inside the film distribution circle in Shanghai regularly communicate with each other in a group chat (through WeChat - a social app);⁵²³ the same names repeatedly appear at the end of many films.⁵²⁴ According to one industry participant, “this circle is all about social networks”.⁵²⁵ This makes

⁵¹⁹ Bounded rationality and limited contracting experience prevent full appreciation of the potentialities of a situation; as a result, there can be many loopholes in each contract, to be taken advantage of.

⁵²⁰ Interview 20160410A, with a film director and scriptwriter; interview 20160813, with an assistant film producer.

⁵²¹ Interview 20160703, with a TV scriptwriter. A recent case is of a famous adapted film *Once Upon a Time* being resisted (fans of the original novel refused to watch the so-called “plagiarizing” one) because, according to rumours, it was plagiarizing; On Weibo (similar to Twitter) there are many people clearly indicating that they would boycott the movie.

⁵²² Interview 20160410A, with a film director and scriptwriter; interview 20160612, with a representative from a box-office data platform.

⁵²³ Interview 20160628, with an employee at the Distribution Department of a top film company.

⁵²⁴ 20160517A, with a manager at a video site.

⁵²⁵ Interview 20160628, with an employee at the Distribution Department of a top film company. Original Chinese: “这个圈子

reputation information gained through social networks more reliable and important. In comparison, possibly because the professional requirement is lower (see section 2.1.3) and more people can get in, the TV industries have a relatively more expanded and less close-knit network structure, making reputation information less reliable and thereby less significant. As seen in the next part, this affects the effectiveness of alternative copyright protection methods.

3. Behaviours of Industry Participants with Regard to Copyright

3.1 Functions of Copyrights

As discussed in chapter five, a traditional function of IPR is to enable right holders to benefit commercially from their inventions and exclude its exploitation by others; this is called appropriability (Tidd et al., 1997, p. 181; WIPO, 2003, p. 2). But as in the previous two sectors, in the film & TV sector, in practice, industry participants also use copyrights for multiple purposes; this section elaborates each of them.

3.1.1 Traditional Functions of Copyrights: Appropriation and Exclusion

As discussed in section 2, although effective legal enforcement of copyright is hard to achieve (either against plagiarism or online piracy), administrative enforcement against online piracy is quite effective. Either a right holder's complaint or a discovery during an active government campaign can initiate an administrative investigation. In the case that the administrative enforcement is effective, the traditional functions of copyright are brought to bear and the right holders use these functions a lot, especially the streaming websites, to ensure the appropriation of broadcasting profits, and to prevent themselves from being excluded or punished by administrative institutions.⁵²⁶

3.1.2 Alternative Functions of Copyrights

As in many other industries in China, IPRs can be used to attract state subsidies or support in

就是玩关系嘛。”

⁵²⁶ Interview 20160424, an employee of the Marketing Department of a top video site; interview 20160427B, with a film producer.

the film & TV sector, they can also be used to reduce the tax base (e.g. a company can buy a large number of IPs before the tax season, which reduces their tax base by increasing expenses, but this does not reduce their overall capital amount).⁵²⁷ However, the most valued function of copyright in this sector is to send signals to customers, buyers, or investors; I discuss the three aspects in order, in the following.

Most importantly, the act of purchasing or the status of owning the adaptation right (one form of copyright) of a famous original work (e.g. novel or story or video game) can send out signals to existing fans and potential consumers about the expected nature of the film or TV series that will be produced, and increase its publicity.⁵²⁸ In recent years, many successful TV series and films in China have been adapted from online novels,⁵²⁹ which are referred to as “IPs”. (Here “IP” is a buzzword that refers to the original content that is often adapted into movies and television shows.)⁵³⁰ In 2015, some 43% of China's online population, or 297 million people, read novels online (Y. Li, 2016); with such an audience base, adaptation rights of famous online novels (“big IPs”) usually comes with millions of readers, providing a built-in fan base, which often translates into high box-office returns or audience ratings (Qin, 2016).

The fact that famous “IPs” attract audiences also makes buyers more confident in purchasing them. As one interviewee said, when they pay for the adaptation rights, what they pay for is just the name of the novel, which is a signal of popularity, and the news that they are going to adapt it; without the name and relevant publicity, even the same story would not bring such a big audience.⁵³¹ This is perhaps why recently the price of adaptation rights have become more and more expensive for these popular online novels, i.e. “big IPs” (T.-J. He, 2015). To make use of this function of copyright, some film producers have even revised an original film script into an

⁵²⁷ Interview 20160714, with a book editor and IP operator (for film adaptation).

⁵²⁸ Interview 20160410C, with a film & TV IP operator; interview 20160419, with a series producer and distribution manager of a film & TV production company; interview 20160426A, with a researcher at a movie research company; interview 20160426C, with an employee in the Account Department of a movie research company; interview 20160714, with a book editor and IP operator (for film adaptation).

⁵²⁹ China’s model of online novels — in which fans read daily updates of original online novels — has not been replicated in any other country; in other countries, online literature usually means digitizing physical books so that people can buy them and read them on their e-book readers or tablets.

⁵³⁰ Interview 20160516, with the Associate Secretary General of a film copyright association.

⁵³¹ Interview 20160714, with a book editor and IP operator (for film adaptation).

online novel in advance, and then “get” the adaptation right of that novel after it accumulated a certain number of readers, to send potential customers a signal that the film has been adapted from a popular novel.⁵³² With “IPs” that signal such popularity, it is easier for a film to get more scheduled cinematic screenings, because the cinema managers would expect it to attract a bigger audience; it is also easier for a TV series to license its right of broadcasting with such “IPs”, because television networks or websites expect it to bring them more clicks and page views.⁵³³

Related to this, because “IPs” (adaptation rights of famous novels) can bring attention and attract customers in a short time period, companies can use the adaptation right or “IPs” they own to increase investors’ interest in their projects. This is due to two characteristics of the investment market in China.

First, as discussed in chapter three and five, most domestic investors in China lack experience and have a short time horizon; in this case they need to rely on some straightforward measures such as IPs to guide their investments.⁵³⁴ One interviewee, who is a manager at an investment company focusing on entertainment, said that:

In previous years, various industries have high investment returns, so people’s appetites have become large; in the future, when economic growth goes down to a steady rate, they might learn that this high short-term investment return is unusual, and they may then go back to thinking about long-term investment. Look, in previous years, China grew so fast, short-term investment itself could bring the same profit as long-term investment, without sacrificing liquidity. Of course, we would make short-term investments! Nowadays the growth is too fast...there is no need to make long-term investments. Now this is what investors in China are concerned about: people are all getting a 2% investment return out there, so I want at least the same; people are getting investments back in three years, so I want the same. They are just

⁵³² Interview 20160514, with a TV scriptwriter; interview 20160703, with a TV scriptwriter.

⁵³³ Interview 20160803, with a manager at the IP department of a top local state-owned telecom company.

⁵³⁴ Interview 20160614, with an investment manager at a private VC focusing on the entertainment sector; interview 20160427C, with a film scriptwriter; interview 20160517A, with a manager at a video site; interview 20160521, with a film script editor and film & TV producer.

‘going with the flow’...Only the “US-dollar” brain would make long-term investments....⁵³⁵

In this case, many fund managers rely on some readily available indicators of likely investment performance in the short run;⁵³⁶ they treat the volume of “IPs” as one criterion which can indicate quick investment return.⁵³⁷

Second, many state-owned funds do not really care about profits; the only thing they worry about is to submit reasonable justification for their investments and the ownership of “IPs” can serve as such a justification.⁵³⁸ According to a report, in 2008, the 334 VC firms then active in China included 157 foreign, 123 domestic state-owned, and 54 domestic private firms (Jun Zhang, 2016, p. 5), indicating that state-owned funds have been influential. (Most major VCs have set up film and TV-related departments in recent years, influencing the film & TV sector.)

Because of the signalling function, film and TV production companies have scrambled to hoard “IPs” which they may never be able to adapt, either because they expect them to bring investment or because they expect to sell them at a higher price.⁵³⁹ This, to some extent, has led to a phenomenon of “speculative bubbles”, and copyrights, in this case, serve the function of speculative product (Shule Zhang, 2015; Shihao Zhang & Qiu, 2016).⁵⁴⁰

3.1.3 Functions of Lawsuits

Due to reasons elaborated in section 2.1.2, it is not easy to enforce copyright through the

⁵³⁵ Interview 20160614, with a manager at a private VC firm. Original Chinese: “前些年各个行业都回报很高，所以大家的胃口被养大了，以后平稳了，大家知道不太可能有这么高的短期投资，就会慢慢投长期了。你想之前中国增长这么快，投短期就能有跟长期一样的收益，还不用牺牲流动性，肯定投短期呀。现在发展太快了，一个公司三五年就能出来，就没必要投长期。现在投资人关心的是：外面都是 2% 收益，我也要至少这么多，外面都是三年就拿回来，我也要三年。就是有点随大流。不是因为经济不稳定的原因，我们不分析大经济环境，没用，都是看项目的团队和方向。人民币现在不投长期嘛，都是美元的脑子才会投长期。”

⁵³⁶ Interview 20160424, with an employee of the Marketing Department of a top video site; interview 20160427A, with a film producer.

⁵³⁷ Interview 20160614 with a private VC fund manager; interview 20160624, with an investment manager of a state-owned VC fund. (For the film & TV sector participants: interview 20160612, with a representative from a box-office data platform.)

⁵³⁸ Interview 20160424, with an employee of the Marketing Department of a top video site; interview 20160427A, with a film producer.

⁵³⁹ Interview 20160410C, with a film & TV IP operator; interview 20160714, with a book editor and IP operator (for film adaptation).

⁵⁴⁰ Interview 20160521, with a film script editor and film & TV producer; interview 20160624, with an investment manager of a state-owned VC fund; interview 20160714, with a book editor and IP operator (for film adaptation).

courts in China, however, there are still a large number of lawsuits about copyright infringement. It is clear from my interviews that, although the cost of hiring a lawyer can be very low in China (cf. chapter 2, section 3.3), this is not the only reason for so many lawsuits; another reason is that companies use copyright lawsuits to serve other functions aside from actual enforcement.

One of the most prominent functions is to use the lawsuit as a “tool to increase publicity”.⁵⁴¹ As discussed in section 1.1.1, publicity matters in the film & TV sector, because publicity leads to video views and film attendance (because, given the large number of TV shows and films on the market, audience members are more likely to try something they have heard about before).⁵⁴² Unsolved copyright disputes can attract a lot of media reports and generate a lot of discussion in China, and thereby give both parties to the dispute more exposure and publicity; ongoing lawsuits and their uncertain results may also stimulate heated public discussions, making consumers curious. However, once the result is known and discussion dies down, the benefit of attention may be reduced, and losing parties may incur more disadvantages by their works being banned and by identified as infringers.

For example, recently there have been two famous TV series copyright cases: one was about the TV show *Coming Home: The Lost Daughter*, where the scriptwriter was charged for having plagiarized the work of another author; another one was about the TV show *Legend of Miyue*, where the scriptwriter and production company were charged for infringing the authorship right (i.e. the right to be known as the author) of another scriptwriter and author. In the first case, the plaintiff won, while in the second the plaintiff lost, but in both cases, all parties gained a lot of publicity. In the first case, after the news about this lawsuit was released, both the discussion rate and the audience ratings of that TV show increased a lot (Hinews, 2014; Xinhua Entertain). In the second case, the day the plaintiff claimed the infringement and announced the decision to sue, on Weibo (a social media site similar to Twitter),⁵⁴³ that Weibo article got more than 3 million page

⁵⁴¹ Interview 20160423, with a TV scriptwriter.

⁵⁴² Interview 20160426C, with an employee in the Account Department of a movie research company.

⁵⁴³ See the original article: <http://weibo.com/p/1001603907575568561247>, last accessed at December 12, 2017.

views in one day, and the author's book sales increased a lot afterwards.⁵⁴⁴

Another function copyright lawsuits serve is with regard to emotional need. In many cases, the plaintiffs knew that the cost to sue would be larger than the expected benefits, and that they would get more compensation if they choose to solve the issue privately, but they would still bring charges to the court, just to “get even”, or to “vent the anger”, in their words.⁵⁴⁵

3.2 Alternative Mechanisms of Innovation Protection

The four major alternative mechanisms in IP protection, introduced in chapter five, are all present in the film & TV sector, including technological or technical barriers, administrative market entry control, first-mover advantage and established complementary capability, and social network. I explain each of these in this section.

3.2.1 Technical Expertise Barriers

Just as, in the medical and telecom equipment sectors, technological or technical barriers make it harder for infringers to copy the original product, barriers relating to techniques or expertise can make it harder for others to produce a plagiarizing version of a film or TV product and, sometimes, pirated versions as well.

With regard to piracy, to keep their works from being copied, the film and TV producers or broadcasters can use technical methods such as encryption. For example, film producers do not make digital versions of their films within the 30 days after the initial screening, but only an encrypted physical version for use in cinema screenings;⁵⁴⁶ websites can update their website design to avoid the possibility of unauthorized downloading or inline linking. As a result of encryption technology like this and its development, nowadays it is much harder to find high-

⁵⁴⁴ Interview 20160703, with a TV scriptwriter.

⁵⁴⁵ Interview 20160410B, with a scripted series planner; interview 20160601B with a scriptwriter, and interview 20160804 with a lawyer specializing in film and TV copyright.

⁵⁴⁶ Interview 20160426D, with a researcher at a movie research company.

resolution pirated film or TV series during the original version's release period.⁵⁴⁷

With regard to plagiarism, plagiarizing a film involves the production of a brand-new film or TV series (i.e. "new" in the sense that it needs to go through the whole production process). In this case, the expertise required in the production process can serve as a barrier, to keep away infringers who do not have that level of expertise. As elaborated in section 2.1.3, this expertise barrier is much higher in the film industry, compared to the TV industries, due to the difference in the nature of production. In fact, many film industry participants even question the concept of film plagiarism, because what makes a finished, commercial-quality film is much more than the script; it depends a lot on many other expertise embedded in the film, especially expertise in terms of direction, post-production, and video-editing, which cannot easily be mastered.⁵⁴⁸ In comparison, as long as the infringer gets the original script of a TV show, it can produce a watchable show with basic directing and videotaping skills. This is perhaps one reason why there is much less plagiarism news in the film industry than in the TV series industries.

3.2.2 Administrative Market Access Control

In the film & TV sector, if nothing needs to be revised, a film or TV series can pass the censorship review from the State Administration of Press, Publication, Radio, Film, and Television (SAPPRFT) in, at most, two months. Although it is not a short time considering the limited profit window for films and TV series in China (section 1.2.4), this mechanism is seldom mentioned by interviewees as a means of delaying infringers, possibly for the following reasons. First, if the infringer copies some elements of a story after the original film or TV series has been sent to censorship review (right after the final version has been produced), then when the plagiarizing one has finished production (which usually takes at least half a year), the original one should already be out on the market. (As introduced in section 1.2.4, the profit window for most films and TV series in China is two or three months.) In this case, the delay caused by the production process itself is enough for the original producer to avoid being hurt by infringing latecomers, making the

⁵⁴⁷ Interview 20160410B, with a scripted series planner.

⁵⁴⁸ Interview 20160521, with a film script editor and film & TV producer.

administrative delay itself of relatively minor importance. Second, even if the infringer copies some elements of the story and produces it before the original film or TV series has been sent to censorship review, because the censorship process only examines the content per se, and does not make judgement about infringements, it could not block the infringer. In both cases, the censorship system is not very useful in protecting the original author from plagiarism.

However, administrative access controls do work to block piracy, at least in terms of the formal channels (i.e. the cinema system, television network system, and big websites), because the reviewing process requires all kinds of production files, which the pirating party would not be able to provide.

3.2.3 Advantages and Complementary Capacities

Under certain market conditions, as a first-mover, the producer of the original content can distinguish itself from imitators in many aspects, including product novelty, marketing experience, and channel cultivation, as well as bundling sales.

3.2.3.1 Product Novelty

As introduced in section 2.3, the online TV market is notable for a taste for novelty and fickle customer taste (i.e. customers preferences in the market change constantly). One possible reason is that the online TV market is directed overwhelmingly at youth audiences who pursue novelty and watch TV series to “keep up with trends”; in this case they seldom watch or click on an “outmoded” series or one that is not “in”. Another possible reason is that there are a large number of newly produced TV series each year in China.⁵⁴⁹ In fact, When I asked an interviewee in the TV series industries why is there such a decided taste for novelty in the online TV market, she replied to me: “why watch old ones when you have so many new ones?”⁵⁵⁰

Under this market feature, once a series has already been screened, a similar one would not

⁵⁴⁹ According to the New York Times, in 2015, there were 409 original scripted television series on broadcast, cable and online services in the US (Koblin, 2015), while according to relevant industry reports, the number in China was around 1,100 (chyxx.com, 2015). By 2016, the number of online series alone in China had grown to 755 (chyxx.com, 2017).

⁵⁵⁰ Interview 20160703, with a TV scriptwriter. Original Chinese: “有新剧看，为什么还要看老的？”

attract much audience share, either because the story is not new anymore so it cannot get much publicity and attention, or because customer taste has already changed so the same story stops being popular.⁵⁵¹ A similar situation exists in the film market, but since there are many more other elements that can make a final product different, story repetition is not that detrimental when there are new actors, post production, and music. This aspect is not that manifest in the traditional TV industry because its market has comparatively more tolerance for repetition.

3.2.3.2 Marketing Experience and Channel Cultivation

If a company enters the market first, it may accumulate more marketing experience and develop relationships with more diffusion networks. These can help them block both infringers and piracy.

With regard to marketing experience, clever advertising and online hype strategies can provide information about where the original product can be found, as well as make consumers interested in finding it; this can block infringing products effectively.⁵⁵² As for distribution channels (i.e. cinema chains, television networks, streaming websites), because they are highly concentrated for the film and traditional TV industries, the first-mover who has cultivated a relationship with these channels would have more opportunities to reach customers and take over the market. In reality, almost all producers in this sector invest a lot to cultivate connections with distribution channels such as cinema chains, cinemas, or television networks.⁵⁵³

3.2.3.3 Bundling Sales

In the film & TV sector, the original producer can provide various bundling sales, to make pirated versions less attractive. As for films and traditional series, the fact that they have a unique screening space makes it possible for them to provide bundling sales or complementary utilities, which cannot be provided by pirated goods. For example, as introduced in section 2.3, cinema

⁵⁵¹ Interview 20160424, with an employee of the Marketing Department of a top video site.

⁵⁵² Ibid; interview 20160517A, with a manager at a video site; interview 20160614, with an investment manager at a private VC focusing on the entertainment sector.

⁵⁵³ Interview 20160426C, with an employee in the Account Department of a movie research company; interview 20160628, with an employee at the Distribution Department of a top film company. However, with the development of online distribution, the traditional channels (cinemas, television networks) may become less significant in the future.

screening can be complemented by bundles such as food and beverages,⁵⁵⁴ posters, and a space for face-to-face social interactions, while TV viewing provides the atmosphere of a family get-together. As for the online TV industry, recently, the big streaming websites have started to cultivate members and provide special treatment to their members, including extra film and TV content, online interactions with actors, advertisement filtering, and faster updates for TV shows. (Usually when an online series is broadcast, two new episodes are made available on the website per week, but, for members, two new episodes are made available per day.) Once consumers become members, they have more incentive to watch original content on the specific website.⁵⁵⁵

3.2.4 Social Networks and Reputation

As discussed in section 2.4, in general, in the film & TV sector, the necessity of multilateral cooperation produces the incentive to use reputation information to reduce search costs, while close-knit networks make reputation information available and reliable; in combination, those two features make reputation significant. When two competitors have more or less the same work ability, and one of them is said to infringe a lot, the cooperating party may choose another one just to play it safe.⁵⁵⁶ In this case, industry participants may have concerns about how infringement can affect their reputation inside the circle.

What needs to be noted is that, in reality, the effect can be very subtle: sometimes only one or two infringements may not do much harm to one's reputation and opportunity to find cooperators, as long as the infringer can produce good original work from time to time. (In fact, as discussed in section 3.1.3, news about disputes caused by the infringement may even increase the publicity of the author and do her or him some good.)⁵⁵⁷ But when most of an author's works are infringing, or if his or her most recent works are all infringing, this behaviour may create

⁵⁵⁴ According to data from China Film Association, in the first half year of 2014, 23% of Wanda cinemas' profits were from non-box-office sales.

⁵⁵⁵ Interview 20160424, with an employee of the Marketing Department of a top video site.

⁵⁵⁶ Interview 20160703, with a TV scriptwriter.

⁵⁵⁷ Interview 20160410A, with a film director and scriptwriter; interview 20160628, with an employee at the Distribution Department of a top film company; interview 20160601B, with a TV scriptwriter; interview 20160703, with a TV scriptwriter; interview 20160813, with an assistant film producer.

disadvantages when competing with another parties for cooperation opportunities.⁵⁵⁸

In specific, as discussed in section 2.4, the film industry has the smallest and closest network, and the online TV industry has the most expanded and open network; because of this, the effect of reputation concern is most prominent in the film industry. Almost all interviewees in the film industry expressed the feeling that the industry has a small and closed circle. According to the industry participants, for those who want to stay in the business for a long time, reputation concern is much stronger in guiding their behaviour than moral and legal concerns.⁵⁵⁹ If someone plagiarized repeatedly, the information would spread through the social network; as a result, when others inside the network have the choice of a “non-infringing” partner with similar capabilities, (to eliminate any potential risk) they may not choose to cooperate with the one with a reputation for infringements.⁵⁶⁰

What needs to be noted is that, although my interviewees considered the film industry’s social network to be quite close-knit compared to other industries in the film & TV sector, some also mentioned the fact that it has expanded considerably compared to the film industry of 10 or 20 years ago.⁵⁶¹ In this case, the importance of reputation may reduce with more capital inflow in this industry. According to my interviewees, the reason for this expansion is capital inflow, which works in two ways:

(1) Increasing capital requires more projects and the generation of more human capital, that naturally expands the industry network.

(2) Previously, potential new entrants who were outside the circle and had no social resources (e.g. industry connections) might have been excluded from the industry; nowadays, financial capital can provide resources to these potential entrants and give them an opportunity

⁵⁵⁸ Interview 20160624, with an investment manager of a state-owned fund.

⁵⁵⁹ Interview 20160426B, with a manager at a movie research company.

⁵⁶⁰ Interview 20160410C, with a film and TV IP operator. Original Chinese: “因为圈子比较小，大家都会打听。 [...] 名声不好，其他人不带你玩了，就混不下去了。”

⁵⁶¹ Interview 20160423, with a TV scriptwriter; interview 20160703, with a TV scriptwriter.

to enter the industry.

3.3 Summary of the Alternative Protection Mechanisms

As can be seen from the above, the film industry has more alternative protection mechanisms than either of the two TV industries, because it has the highest expertise barrier, a very concentrated distribution channel, and the smallest and most close-knit network. This conclusion confirms the observation that, although all industries in this sector share the same copyright institutions, there are more news reports in China about infringement of TV series than infringements of film copyright.

4. Conclusion: Comparison and Extension

4.1 Content Summary and Comparison

In this chapter, I introduced some general background to the Chinese film & TV sector, including (i) the nature of film and TV products, (ii) copyright and infringement categories, (iii) how industry participants make profit in each industry, and what is the role of copyright in the profit-making. Then I discussed: (i) how the nature of the product affects legal enforcement, (ii) how administrative enforcement helps improve copyright protection, and (iii) how the characteristics of the industry⁵⁶² can make it difficult for infringers to get in. Finally, I elaborate how participants in the film & TV sector use copyright and copyright lawsuits in practice, as well as how they make use of alternative protection mechanisms.

In general, compared to the previous two sectors, companies in the film & TV sector rely more on administrative than court enforcement, probably because administrative enforcement is much more efficient than court enforcement in this area in China, especially when it comes to individual file-sharing. With regard to the function of copyright, because of the abundance of private investment capital in this sector, companies rely less on state subsidies, but care more about

⁵⁶² These are: expertise barriers, the censorship system, advantages and complementary capacities of the original producer, and the social network structure.

using copyright to attract publicity, customers, buyers, and investors. With regard to alternative protection mechanisms, administrative market-entry regulation is seldom mentioned; instead, technical expertise barriers, complementary abilities, as well as network pressure are all in effect, especially in the film industry.

4.2 Foreign Content in China

Since the focus of this study is on domestic companies, this chapter is more about local content in the film & TV sector; many of the above analyses cannot apply to foreign content circulated in China. In fact, compared to local content, foreign films and TVs are infringed more frequently;⁵⁶³ according to my field study, this is due to a few reasons:

First, due to the strict censorship system in China, large amounts of foreign content cannot get into the Chinese market without serious abridgement. In this case, the complete version of many foreign works cannot be viewed through legal channels; the only means for Chinese people to see them is through piracy. It can be said that a lot of piracy of foreign works (through individual file-sharing) is induced by this supply-demand gap produced by the censorship system.

Second, trans-cultural plagiarism is even harder to define. Plagiarizing foreign works usually involves a lot of rewriting, to change the setting into Chinese ones; when national setting, historical setting, and language are all different, even if the story is similar, it is very hard to determine whether it is infringing.⁵⁶⁴

Third, trans-cultural infringement is subject to less monitoring. With regard to piracy, as opposed to local films and TV series, which can get into the market pretty soon if the censorship process is smooth, legally imported foreign works need at least half a year before they can get to the Chinese market. During that half year, although the original work has not gotten onto the Chinese market, it may already be circulating in foreign markets; in this case, it is possible for it to be available in China through the Internet. In this case, by the time the original version comes

⁵⁶³ Interview 20160427C, with a film scriptwriter; interview 20170423, with a TV scriptwriter.

⁵⁶⁴ Interview 20160427A, with a film producer

into China through legal channels, pirated copies may be too widely disseminated to eliminate.⁵⁶⁵ With regard to plagiarism, it is very hard for Westerners to detect due to distance and market separation (e.g. language, institutions, and laws are all different). This is especially the case for plagiarism of those films and TV series that are not planned to be broadcast in China; the producer has not expected to have a market there and so may not even have people to monitor the Chinese market.⁵⁶⁶

Fourth, there are fewer alternative protection methods available to foreign producers. For example, foreign companies may not have enough understanding of the Chinese market to develop effective marketing strategies.⁵⁶⁷ In addition, because foreign producers are not inside the local industry network, infringements to them would be subject to fewer reputational pressures. This may be due to the fact that local peers may not find out, or that no one in the network cares; in short, because no one is directly hurt, no one bothers to complain and let everyone in the network know.⁵⁶⁸

The above four points suggest that infringing foreign copyright has very low costs; so, when the infringers lacks money, the opportunity cost of copyright purchase would exceed the perceived cost of infringement. However, this reluctance to respect foreign copyrights is starting to change due to the inflow of a large amount of capital in this sector. With regard to piracy, since large streaming websites can afford to purchase more foreign copyrighted content (that which has passed the censorship process), these large streaming websites take up the responsibility to protect it, with their local resources and experience. With regard to plagiarism, purchasing the adaptation rights of foreign films and TV series is usually cheaper than purchasing the rights of local ones; therefore, with more capital,⁵⁶⁹ the producer has more incentive to seek licenses for the adaptation rights

⁵⁶⁵ Ibid.

⁵⁶⁶ Interview 20160514, with a TV scriptwriter; interview 20160516, with the Associate Secretary General of a film copyright association; interview 20160612, with a representative from a box-office data platform; interview 20160521, with a film script editor and film & TV producer.

⁵⁶⁷ Interview 20160517A, with a manager at a streaming video site.

⁵⁶⁸ Interview 20160427C, with a film scriptwriter.

⁵⁶⁹ Interview 20160703, with a TV scriptwriter. According to the interviewee, now one film or TV series production can get investments of more than a hundred million RMB, i.e. tens of millions of dollars, almost ten times more than a few years ago.

directly, both to avoid risk and also to get the fan base of the original works.

Chapter IX. Conclusion

Based on the paradigm developed in chapter five, this study analysed the following nine industries in three sectors in China: (1) the medical sector, including the chemical drug industry, the biomedicine industry, the traditional Chinese medicine (TCM) industry, and the medical device industry; (2) the telecommunications equipment sector, including the capital goods industry and the consumer product industry; (3) the film & TV sector, including the film industry, the traditional scripted series industry, and the online series industry. This study discussed the function of intellectual property rights (IPRs) that companies use, aside from profit appropriation based on potential or actual IPR litigation (which is, in general, less commonly used in the industries I studied). These alternative functions mainly include: (1) gaining government support (tax benefits, government subsidies, or policy privileges), (2) gaining publicity and attracting customer, and (3) attracting outside capital. Although previous studies suggest that the reasons companies apply for patents may differ across industries and technologies (Warshofsky, 1994), in the Chinese context, I found that there are many commonalities among the industries studied; each of these three functions is mentioned by interviewees from more than one industry.

This study has also discussed various methods of IP protection in these industries, aside from the legal enforcement available through the courts and the administrative agencies (both based on IPR law). These alternative enforcement methods include: (1) technological or technical barriers; (2) administrative enforcement control; (3) first-mover advantage (where the IP owner gains advantages due to market characteristics, including market taste for novelty, importance of marketing experience or channel cultivation, and the importance of bundling high value add-ons); and (4) network and reputation concern. Although each industry usually employs multiple methods, the focus can be different according to industrial characteristics.

Section 1 of this chapter briefly reviews these components in each industry, compares their salience in different industries, discusses complexities introduced by factors such as change over time and the interaction of different components. In section 2, the theoretical implications of this study will be discussed, in the context of development studies, sociology of law studies, and

organizational behaviour studies. After that, in section 3, I also briefly discuss the decision-making models that underlie the behaviours of companies in this study. In the final section, section 4, policy implications and future research possibilities based on this study are discussed.

1. Industrial Comparison and Summary

This section reviews both IP functions and protection methods based on table 9.1, by comparing industries. After that, the complexities brought about by the change of time and by interactions, as well as the limits of alternative protection methods, are discussed.

1.1 Industry Comparison

Table 9.1 briefly compares various sectors and industries alongside the relevant IPR functions and IP protection methods. (Although, as discussed in previous chapters, these differences are relative and not absolute.) It can be seen that, despite many cross-industry similarities, differences exist not only between sectors and industries but also, in some cases, inside the same industry. Based on table 9.1, in this section, the differences and similarities across the studied industries and sectors are briefly summarized.

Table 9.1: Sector and Industry Comparison

		The medical sector				The telecom equipment sector		The film & TV sector			
		Chemical drug	Biomedicine	Traditional Chinese Medicine	Medical device	Capital goods	Consumer product	Film	Traditional TV series	Online TV series	
Function of IPRs	profit appropriation	* compound patents	* compound patents			* standard essential patents	* standard essential patents	*	*	*	
	attract government support	*	*	*	*						
	gain publicity and attract customers	*	*	*	*	*	*	*	*	*	
	attract capital	*	*	*	*			*	*	*	
Protection of IPRs	effective legal enforcement	clear legal IPR definitions	* for compound patents	* for compound patents			* for standard essential patents	* for standard essential patents	* for piracy	* for piracy	* for piracy
		effective enforcement through the courts	* for compound patents	* for compound patents							
		effective administrative enforcement							* for piracy	* for piracy	* for piracy
	technological or technical barriers	*	*	*	*	*	*	* for plagiarism			
	administrative entry controls	*	*	*	*			* for piracy	* for piracy		
	market characteristics accentuating first-mover advantages (compared to latecoming imitators)	market taste for novelty									*
		importance of marketing experience or channel cultivation	*	*	*	*	*	*	*	*	*
		importance of bundling					*		* for piracy	* for piracy	
	network and reputation concerns					*		* for plagiarism			

Note: An asterisk indicates that the relevant phenomenon is manifest in that sector based on my interviews

1.1.1 Functions of IPRs

In general, there are companies in each sector that have been using IPRs for their profit appropriation function, i.e. excluding others from exploiting the IP through potential or actual IPR litigation. However, this usage varies by specific industry and IPR type. First, among the industries studied, it is relatively rare for the TCM industry and the medical device industry to use patents to assure exclusivity, because of the technical nature of the products makes it difficult to protect them with patents (see chapter six). Second, for the chemical drug and biopharmaceutical industries, as well as industries in the telecom equipment sector, this function is used more frequently for certain type of IPRs, such as patents on a compound (including chemical compound and protein)⁵⁷⁰ or

⁵⁷⁰ As specified in chapter six, patents for drugs can be categorized into four types, according to which feature of the product they apply to: the drug substance itself (an active ingredient or a composition of active ingredients); the method of use; the formulation; or the process of making it.

standard essential patents, because it is easier to identify and prove relevant infringements.

With regard to alternative functions of IPRs (i.e. alternatives to those that require legal enforcement), the medical sector more frequently uses IPRs for alternative functions, while the telecom equipment sector uses them less frequently. Specifically, there are three major alternative functions: to attract government support, to gain publicity and attract customers, and to attract capital. Each of them is summarized in the following.

The first alternative function, to attract government support (tax benefits, government subsidies, or policy privileges), is important for all industries inside the medical sector, while it is marginal in the telecom equipment and film & TV sectors. This function is important and useful in the medical sector because there are both a large supply and a large demand related to the function. With regard to supply, the government does provide support to companies with a large number of patents. With regard to demand, in the medical sector most companies are medium or small ones (i.e. there is a low concentration rate with a lack of large dominant companies) (EU SME Centre, 2015; Mossialos et al., 2016; Zhou & Gao, 2013); they rely heavily on external funds, but their long R&D process makes it harder to get private external funds such as private VCs, so they need a lot of government support. In fact, among the 17 representatives from local medical companies interviewed, more than 40% mentioned government support as an important function of patents.

In comparison, in the telecom equipment sector there are many large companies, that make huge profits or can get support from the stock market, and rely less on government support. As for companies in the film & TV sector, it is very easy for them to get investments nowadays, compared to other industries, presumably because of the short return period and the spotlight effect (i.e. media reports on successful films and TV series create an impression that the industry is profitable); in this case, they also have lower demand for government support.

The second alternative function of IPRs, to gain publicity and attract customers, is emphasized by many representatives I interviewed in all the industries in this study. There may be two factors behind this phenomenon. On the one hand, the fact that IPRs can be used as a publicity tool reflects the attention the government and the media have given to the concept (BBC, 2004,

2008). On the other hand, in most cases, especially with regard to patents, the reason that IPRs can attract customers is that they are considered “international” and “advanced,” i.e. they are still treated as a foreign concept, as opposed to a local one.

The third alternative function of IPRs, to attract capital, is eventually derived from the second one (because usually people are more likely to invest in a project if they think it can attract customers and make a profit); it is also prevalent except in the telecom equipment sector. It is prevalent in the other two sectors because Chinese investors tend to rely on extrinsic measures such as the number of IPRs to direct or justify their investments; these investment characteristics, as stated before, are due to the fact that the investors lack experience, deal in short time horizons, or that the investment companies are state-owned and therefore care more about legitimacy than profit maximization (The Economist, July 22nd 2017)). The exception of the telecom equipment sector is perhaps due to both industry-level and company-specific characteristics. First, at the industry level, in the telecom equipment sector, a large amount of revenue usually goes to new product research that carries a high degree of uncertainty and risk, making it less attractive to outside investors, other things being equal. Second, at the company-specific level, companies in the telecom industry are comparatively less reliant on external support; for example, the most dominant company in the Chinese telecom equipment sector is famous for the leader’s insistence on not becoming a publicly listed company and investing in research with its own revenue.

1.1.2 Industry Characteristics and The Effectiveness of Legal Protection

A major theme of this study is to understand in more detail the various methods industry participants use to protect their IPs. After analysing the industries in previous chapters, it becomes apparent that legal protection is only effective for specific types of IPs or specific types of infringements in certain industries; it is far from being a universal mechanism. As discussed in previous chapters, effective legal protection of IPs requires both a clear legal definition (i.e. the infringement can be identified without much ambiguity) and an effective enforcement (i.e. the infringement can be proved, stopped or punished, and the IP owner can get fair remedy).

With regard to legal definitions, especially the definition of infringement, it is clear for the infringement of patents on a drug substance in the medical sector, of standard essential patents in

the telecom equipment sector, and in the form of piracy in the film & TV sector. However, in other areas, it is often the case that legal definitions are not clear, and that infringements are hard to identify or prove; this is especially true for patents in the TCM industry, and for infringements in the form of plagiarism in the film & TV sector. As already discussed, the difference is related to the characteristics of the IPR and the product itself, especially whether or not the IP-embodied product is of discrete or complex technology.

Even when infringement can be clearly defined, formal IP protection requires effective legal enforcement. This study distinguishes two types of formal legal enforcement (formal enforcement based on IP law): enforcement through the court and administrative enforcement. Among the industries where IP infringements can be clearly defined, only a few can count on legal enforcement; this is mostly due to the fact that average compensation rates for IPR infringement are low in China, which, in turn, relate to the difficulty of calculating losses or benefits caused by the infringements of certain products. Here the most important difference comes from the difference between complex technology (where one commercializable product or process is comprised of numerous patentable elements) and discrete technology (where one commercializable product or process is comprised of relatively few patentable elements).

To be specific, in the medical sector, compound patents usually can be effectively enforced through the courts; as a product patent of a discrete technology, a compound patent is clearly defined by a chemical structure, and covers a single product (where financial benefits brought by the patent can be easily determined from sales data of that product). In comparison, in the telecom equipment sector, although infringement of standard essential patents can be clearly defined and proved, due to the fact that a telecom product can be comprised of thousands of patents, it is usually hard to determine how much one patent accounts for in the final sales price (unless some meticulous calculation system is well developed), and so it is hard to determine relevant compensation rates. As discussed in previous chapters, in countries where there is a mature calculation system developed through experience, this situation might improve; but this is not the case in China, as indicated by the fact that, even though Apple and Samsung have sued each other a lot in North America, they have never sued each other in China (Duncan, 2014).

Aside from the difference between discrete and complex technology, the characteristic of the infringer is also a relevant factor in determining the effectiveness of legal enforcement. In the film & TV sector, although the definition of piracy is clear, a lot of piracy is conducted by scattered individuals instead of institutions or companies, making it hard for the right holder to find its target. However, administrative enforcement can be quite useful in this situation: because administrative agencies have adequate motivation and the ability to monitor the Internet and detect infringement, when infringers are individuals or small scattered entities hidden behind the screen, piracy can be controlled through administrative enforcement.

1.1.3 Alternative Protection Mechanisms

With regard to alternative protection methods related to industrial characteristics, I have explored the effectiveness of four alternatives in various industries, including (1) technological or technical barriers, (2) administrative market entry controls, (3) market characteristics that accentuate first-mover advantages (taste for novelty, importance of marketing experience and channel control, importance of bundling), as well as (4) social network and reputation concern. Obviously, the availability of these alternatives is related to industry-specific factors including the nature of technology or techniques, administrative regulation of product distribution, market characteristics, and social network structure. Based on these factors, I have categorized industrial sectors into two types: *hard-entry* or *closed* ones versus *easy-entry* or *open* ones. It is harder for imitators to make a profit in the market of closed or hard-entry sectors, because there are more alternatives to legal methods that can help the first mover or the pioneer to block latecomers or imitators; open or easy-entry sectors are the opposite, i.e. it is easy for latecomers or imitators to make a profit in the market.

1.1.3.1 Technological or Technical Barriers

The effectiveness of technological or technical barriers as a mechanism to prevent imitators is manifest in all industries in the medical and the telecom equipment sectors, as well as in the film industry within the film & TV sector. This is because the production in both the medical and the telecom equipment sectors are highly technological and requires a lot of know-how, while film production has a high expertise requirement. In comparison, there is not much of a technical barrier

in scripted series production, in the sense that it has a comparatively lower expertise requirement; this is indicated by the fact that there are a large number of scripted series producers and scriptwriters who do not have professional degrees.

1.1.3.2 Administrative Market Entry Control

The mechanism of administrative market entry control is emphasized in industries where there is strict administrative control regarding the examination of the relevant products and regarding the monitoring of distribution channels. In specific, this mechanism is manifest in all industries in the medical sector, as well as in the film industry and the traditional TV industry (in the film & TV sector).

The distribution of this mechanism makes sense when we know that all drugs must get approval from the China Food and Drug Administration (CFDA) before going to market, and that the distribution of medical products is mainly through state-owned hospitals. Similarly, all films and traditional scripted television series need to get through censorship review from the State Administration of Press, Publication, Radio, Film, and Television before being broadcast and the distribution is mainly through the state-owned cinema chains, or state-owned TV networks. In this case, infringing drugs and infringing film and TV products without approval certificates cannot get into the market through these official channels (but plagiarizing products are not affected, because it is not obvious to administrative agencies whether or not a product is illegally plagiarizing). In comparison, this mechanism was not emphasized by my interview subjects in the telecom equipment sector or in the online TV industry (in the film & TV sector), where pre-market examination is not strict; furthermore, in these industries a large part of product distribution is through the Internet (or e-commerce), and this is also less strictly controlled by the government.

1.1.3.3 Market Characteristics

This study identifies a few market characteristics that can help the first mover to develop advantages and hinder imitators, including a taste for novelty, the importance of marketing experience and channel cultivation, as well as the importance of bundling.

For starters, a taste for novelty is most evidently manifested in the online TV industry, mainly because the market for this industry is directed overwhelmingly at youth audiences, who prioritize

novelty and “keeping up with trends” in choosing what to watch. This factor is less obvious in other industries under study, but may still have some effect in some niche markets where target customers are overwhelmingly young people. In an industry with this factor, it is harder for imitators to succeed in the market.

The importance of marketing experience or channel cultivation is manifest in all industries under study. Almost all representatives from innovative companies I interviewed emphasized their advantages in marketing and channel cultivation in blocking latecomers, including infringers. This reliance on marketing and channel cultivation to some extent reveals the fact that products in the Chinese market in these industries cannot be adequately distinguished through technological level and quality.

Bundling can also be useful in hindering imitators, when the original producers can provide complementary utilities that are important to consumers and that cannot be duplicated by imitators. This mechanism is most manifest in the consumer product industry (in the telecom equipment sector), and in the film & TV sector generally with regard to hindering piracy. Specifically, the characteristics of the telecom capital goods market make it so that buyers require technical service bundles, such as technical help in setting up the equipment (e.g. base stations); in the film industry and the traditional TV industry, cinemas can provide bundles such as food and beverages,⁵⁷¹ posters, and a space for face-to-face social interactions, while TV viewing provides the atmosphere of a family get-together.

1.1.3.4 Social Network and Reputation Concerns

In an industry where multilateral cooperation is frequent (similar to repeated games) and where industry participants form a close-knit circle, reputation inside that circle can become significant and can limit infringing incentives from within the circle. Multilateral cooperation produces the incentive for different parties to use reputation information to reduce search or transaction costs (Williamson, 1975), while close-knit network makes reputation information available and, to some extent, reliable.

⁵⁷¹ According to data from the China Film Association, in the first six months of 2014, 23% of Wanda Cinemas' profits were from non-box-office sales.

This mechanism is manifest in the capital goods industry (within the telecom equipment sector) and the film industry (within the film & TV sector), because both are characterized by frequent multilateral cooperation (e.g. co-investment or shared R&D in next-generation technology) and a relatively close-knit circle (which is possibly due to the high level of expertise and technological requirements). In comparison, in principle, companies in the medical sector usually do not cooperate with other companies in developing new drugs; moreover, due to the large number of medical companies in China and their small size, the industry circle is quite extensive. The consumer product industry (in the telecom equipment sector) also has many medium and small participants, possibly because its lower-end market has a low technological requirement. Similarly, due to the relatively low level of expertise required, the industry circles of the traditional and online TV industries are also quite extensive, making this mechanism less effective.

1.1.3.5 Summary

In sum, at the general sector level, the medical sector resembles a hard-entry sector to a larger extent than the other two sectors, mainly due to the fact that there is more administrative market-entry control. But the capital goods industry (producing wireless equipment in the telecom equipment sector) and the film industry (in the film & TV sector) also stand out as relatively more closed or hard-entry industries, mainly due to the importance of bundling and their close-knit network structure. Interviewees from the more closed or hard-entry industries are less worried about infringement. However, what needs to be kept in mind in the process of comparison is that there are no absolute judgments about the easy-entry or hard-entry level of these industries because different industries exhibit different combinations of alternative protection methods, which cannot strictly be compared in terms of significance.

1.2 Complexities Introduced by Time and Interaction

1.2.1 Changes Over Time

The characteristics described in the last section (1.1), including functions of IPRs and different IP protection methods, should not be considered fixed or static; in fact, they are constantly

changing with the development of the Chinese legal institutions and the market economy.

For example, with regard to the function of IPs, attracting government support is becoming less important in recent years and is expected to be less significant in general in the future, because the government has been cutting IPR-linked support in the last few years. According to my interviewees, the government seems to be doing this for the following two reasons. First, government support based on IPRs in the medical sector have produced too many “form-over-substance” patents that have not been useful in practice; second, recently, with the accumulation of profits and the development of the capital market, the industries have become less dependent on government resources. In addition, with the maturing of consumer and investor decision-making in China, the quantity of IPRs may become less important in their decisions; this would reduce the significance of the function of attracting customers and investments.

In the meantime, with the improvement of the Chinese IPR legal system, the clarity of legal definitions and the effectiveness of legal enforcement may be improved; for example, the reform to establish a special unit of “judicial police for enforcement (*zhixing sifa jingcha*)” inside the court system, and the reform to allow a larger role of IPR precedents are both already happening. With regard to the use of precedent, first, the Supreme People’s Court have been publishing some landmark cases each year, to provide a reference for future lawsuits; second, various forums and seminars, attended by lawyers and judges and government officials, are organized to discuss the potential benefit of introducing a precedent system in the area of IPR, which should lead to more reform attempts. In this case, the traditional function of excluding exploitation of the innovation by other parties may become more and more important.

What are also prominent are the changes in alternative protection mechanisms. While technological barriers may always be relevant, administrative control of market entry is constantly under adjustment. For example, the strictness of film censorship review changes every year. In fact, the review standards for online TV series has been strengthened a few times in the last few years (although they are still much more lenient compared to the standards for films and traditional TV series). In general, with regard to this mechanism, due to political uncertainty, in this study it is hard to predict the direction of change (i.e. whether the control will become more or less strict).

With regard to market characteristics that shape first-mover advantage, first, taste for novelty may change with the target population. For example, watching commercial films used to be a youth-centred activity when it first developed in China, but now it has become an entertainment for all ages. Similarly, market demand for novelty may decrease when the audience group expands, compared to when the major audience is the youth. Second, the importance of marketing may change with the level of homogeneity of products in the market. For example, marketing is important for generic drugs to distinguish themselves, because they are all similar and cannot be distinguished by the products themselves; however, with the growth of new drugs in China, technological levels and functional differences may become more important in distinguishing products, reducing the importance of mere marketing.⁵⁷² Third, the importance of bundling (of add-ons) might alter with technological development and social change. For example, when the telephone was first made widely available in China at the early 1990s, technicians were required to train consumers about how to use them; but now, the user-interface of smartphones is so well developed that most of the time people can figure out how to use them by themselves. It may still be a long time away, but bundling services for wireless telecom equipment may become less important in the future. Social interaction opportunities accompanying film and traditional TV are also under constant change. With regard to watching films in the cinema, more and more it is considered a socializing activity in China; in this case the complementary utility of people socializing face-to-face bundled with going out to see a film in the cinema will become more significant in the future. However, with regard to traditional TV watching, the function of providing atmosphere for a family get-together is becoming rarer with the erosion of traditional family structures; in this case the complementary utility bundled with traditional TV watching may become less significant.

Finally, a theme that constantly resonated in my field work was the effect of the modern market economy and capital on traditional industry network structures, especially in the film industry. For example, as mentioned in chapter eight, although my interviewees thought that the

⁵⁷² Here I only discuss the type of marketing that distinguishes a product from a competitor's product, not the type of marketing that introduces a brand-new type of product, which is always important.

social network for the film industry is quite close-knit compared to other industries in the film & TV sector, some of them also mentioned that the social network has expanded more compared to the film industry of a few years ago. The reason for this expansion is the inflow of capital into this industry, which works in two ways. First, increasing capital requires more projects and the generation of more human capital, which naturally expands the industry network. Second, previously, potential new entrants who were outside the circle and had no social resources (i.e. connections inside the closed circle) might have been excluded from the circle, but now financial capital can provide resources to these potential entrants and give them an opportunity to enter the industry. As discussed in previous chapters (see, e.g. chapter five, section 2.2.4), the necessity of multilateral cooperation produces the incentive to use reputation information; close-knit networks are what make reputation information available and reliable. With the economic growth in China, this trend towards network-expansion is expected to be more and more evident, making reputation less important as an alternative protection mechanism.

1.2.2 An Interactive View

In this study I have only focused on one form of IP per sector, i.e. patented innovations in the medical and telecom equipment sectors, and copyrighted works in the film & TV sector. But, in practice, different forms of IPs (e.g. patented innovations, copyrighted works, trademarks) are not completely separated; they are usually seen as interconnected, and are managed together as one IP portfolio in many companies (WIPO, 2006). Furthermore, the protection of one form of IP may depend on the intactness of other forms. For example, as discussed in previous chapters, most of the time, a patented technology can be protected through technological barriers only when relevant know-how is properly protected; also, marketing experience and channel cultivation can bring advantages to companies and companies (and serve as a protection method) only when trademark identification is possible.

Similarly, with regard to different protection mechanisms of any specific IP form, they are not mutually exclusive either, but can work together and sometimes reinforce each other; in practice, the company may combine legal and alternative protection mechanisms. For example, administrative entry control works in blocking piracy of film and traditional TV series, because

the reviewing process excludes illegal products; a clear legal definition of piracy serves to make this mechanism work by identifying the illegal version. Furthermore, companies can also simultaneously benefit from different alternative protection mechanisms; this is indicated by the fact that most company representatives mentioned more than one mechanism in interviews.

1.2.3 The Limit of Alternative Protection Methods

In the end, what needs to be remembered is that, while the alternative protections serve to help protect IPs and reduce IP infringement, they are also a double-edged sword, and may create problems when they interact with other social conditions.

First, compared to legal enforcement, alternative protection mechanisms, to some extent, embody more unfairness. Many alternatives such as marketing experience, channel cultivation, and bundling capacity rely heavily on resources that are unequally distributed among companies. In fact, compared to big companies, more interviewees from small and medium companies expressed a wish for what they called “fairer” protection methods, probably because smaller companies have fewer resources and can benefit less from alternative mechanisms.

Second, over reliance on some alternative mechanisms may create rent-seeking behaviour and breed corruption. For example, over-reliance on market entry controls or channel controls may induce bribes and kickbacks. For example, in the medical sector in China, kickbacks to hospital doctors (who can influence purchasing choices) are common in the marketing process. Because of these problems, the benefit of alternative IP protection methods should not be overemphasized.

2. Theoretical Implications

In this section, I discuss the theoretical implications this study presents, in the context of development studies, sociology of law studies, and organizational behaviour studies.

2.1 IPR and Development

According to many development studies of IPR, the historical experience of developed countries suggests that, with industrial growth and increasing local innovation, local companies with growing portfolios of IPRs will seek protection against infringers under local IPR laws; under

this hypothesis, IP enforcement will eventually improve in developing countries (Adelman & Baldia, 1996; Jianfu Chen, 2011; Massey, 2006a; M. Peng, 2013; P. K. Yu, 2007). For example, in his study of China, Peng (2013, p. 138) suggests the following pattern: "as these economies developed, indigenous industries grew, and IP protection was enhanced." Massey (2006a, p. 237) claims that, in the long run, in an increasingly competitive and unified Chinese market, new interests are growing and that these interests will look to the rules laid down by the "Emperor" in Beijing for protection to keep the pirates far away.

However, this type of unilinear evolutionary argument, which basically considers industrialized nations as the unquestionable models for developing countries, has been criticized a lot as Eurocentric in more general development studies; these argue that developmental paths are historically contingent (Escobar, 1994; P. a. J. S. Evans, 1988; Frank, 1998; Portes, 1973). In development studies of other economic institutions, it has been acknowledged that, in many cases, Western institutions do not work in developing countries as in developed countries, because the political, economic, and social conditions there are different, or there is a lack of complementary institutions.

For example, in Scott's study about state-initiated development projects in different countries (James C. Scott, 1998), he argues that, given Western origins, the modern schemes of agricultural planning inherited a series of unexamined assumptions about cropping and field preparation that turned out to work badly in other contexts; in the meantime, some of the practically successful techniques involve a large number of interacting variables and local knowledge might be ignored. J. Stiglitz (2002) discusses development projects run by the World Bank and the International Monetary Fund (IMF) and, by comparing different countries, he argues that the IMF's projects failed because it tried to apply the Western model of privatization directly, but was not sensitive to the broader social context and did not realize that economic reform could not work without establishing underlying (or complementary) institutions.⁵⁷³ Stiglitz points out that, the IMF

⁵⁷³ The IMF treated privatization as a goal instead of a means; they assumed that the market would arise to meet every need and they ignored the cost of privatization, the preconditions, how change occurs, and the expense for consumers and workers. In fact, privatization needs to be part of a more comprehensive program, that includes creating jobs in tandem with the inevitability of job destruction; there is not just one market model; the market and the government should work together, and the nature of partnership

approach tries to transform local economies to market economies without establishing underlying institutions, including bank regulation, anti-unemployment policies, legal infrastructure, and competition policies; according to him, IMF did not take into consideration that it takes time to develop prerequisites for market economies to work. The result was economic crisis and increasing poverty.⁵⁷⁴

My findings resonate with this line of development literature. Based on my findings, it is clear that the studies that argue that economic development necessarily leads to a stronger legal IP protection system presume an oversimplified and linear relationship between local innovation and IP protection needs; these studies fail to appreciate the complex interactions between individual company practices and the IPR system. What I found is that, as many other development studies about economic reforms already reveal, the Western model is not the only one that could work in developing contexts. With regard to IP protection, in China, the effectiveness of the Western-originated formal IPR institution is limited without complementary institutions, including, for example, civil procedure related to evidence discovery, corporate management systems, and relevant accounting standards; this fact makes local alternative protection mechanisms a more common choice than the formal IPR laws in the industries I studied.

Specifically, it is true that, in China, IP assets owned by local companies have been rapidly growing, and local companies invest a lot in IPRs with industrial growth; but, these companies do not necessarily worry about infringements or have adequate motivation to push for stronger IP protection. As already discussed in the beginning of this chapter, this is for two reasons. First, local companies may invest in IPRs not necessarily for their function of appropriation or exclusion, but some other function that would not be harmed by infringement, such as attracting government

differs among countries.

⁵⁷⁴ A more remote example is Ferguson's study of economic transformation and live-stock management in Lesotho (Ferguson, 1994), she finds that intentional development plans (e.g. the Thaba-Tseka project) interacted with unacknowledged local structures to produce unintended outcomes; the project was frustrated because it tried to provide technical solutions to problems that were not entirely technical in nature, but were related to a larger political-economic situation and local conditions (i.e. a certain structuring of property and entrenched power relation). For example, with regard to property structure, in the area under study, livestock was a special domain of property and a source of prestige, not freely convertible with cash; with regard to power relations, the project measures necessarily met resistance because they were not in the interests of those who had the power to implement them (because the measures did not support the local coercive apparatus).

support and gaining publicity. Second, even if local companies in certain industries want to ensure the exclusion function of IPRs, many alternative mechanisms can be used by them to block infringers and stay “monopolistic”; this has reduced the significance and indispensability of legal IP protection, as well as the motivation to push for changes in formal institutions.

As discussed in section 1.2.2 in this chapter, small start-up companies have fewer alternative resources and benefit less from alternative IP protection mechanisms; in this case, they may have a strong desire for a stronger legal protection mechanism. However, these small start-up companies are also the ones who have little influence on government action, compared to large companies. This has created a dilemma: those that can affect policy do not have enough incentive because they can benefit from alternative protection methods, while those that have enough incentive cannot (or dare not) influence policy and law. This is the reason why it may be unrealistic to assume that local industry growth and IP asset growth naturally lead to a push for stronger formal IP protection; the incentive to lobby for formal changes is shaped by the alternative use of IPRs and the existence of alternative protection mechanisms, which are themselves determined by various aspects of industrial characteristics.

What needs to be noted is that, the lack of incentives to push for legal changes does not mean that industrial companies do not seek to affect the government at all. Most companies, no matter the size, emphasize "guanxi" (connection) with political authorities; they tend to rely on personal connections with local governments to benefit in specific issues, instead of influencing national policies. For example, most medical companies never considered changing national policies, but because local governments to a large extent determine market entry and the distribution of drugs and medical devices, medical companies indicate that to do well in business in China one needs a good "guanxi" with the government.⁵⁷⁵ This type of private connection, although allowing industrial companies to influence the government, may have less to do with changes in the formal legal system in general.⁵⁷⁶

⁵⁷⁵ Most of the time they seek connections not to get privileges, just not to be treated unfairly (Zhang, Jing 2005).

⁵⁷⁶ However, as introduced in section 1.2.1, things in China are in constant change; the incorporation of more and more entrepreneurs in the National People's Congress (NPC) proposal process has provided a formal channel for industrial companies to influence policies at a low cost. Recently, although still rare, a few company representatives have started to bring proposals about

2.2 IPR and the Sociology of Law

In the sociology of law literature, it has been shown that, even in legalistic societies, the vast majority of conflicts are handled without going to court, and alternatives to law are growing (Black, 1984, 1989; Galanter, 1983; Gulliver, 1979).⁵⁷⁷ There are surveys indicating that Americans turn to the legal system only as a last resort (Ellickson, 1994; Glenn, 1999; Greenhouse, Yngvesson, & Engel, 1994), perhaps due to the existence of legal costs. In a society like China, where the current legal IP protection institution was transplanted from the West only recently, alternative mechanisms developed in local society may play an even more important role, making the formal protection mechanisms less relevant.

One relevant tradition in the sociology of law studies alternative dispute resolution (ADR) mechanisms, which play a vital role in complementing the formal court system in all countries (Peerenboom, 2002, p. 20). Most studies of ADR overwhelmingly focus on pre-trial negotiation, mediation and arbitration (Fiadjoe, 2013; Fuller, 1970-71; Kesan & Ball, 2006; Kritzer, 1998; LaFree, 1996; Ridley-Duff & Bennett, 2011), possibly because they are comparatively more formalized (more related to the legal institutions) and more commonly noticed. As a result, although claiming to step outside the traditional rule-of-law perspective focusing on litigation, many ADR studies actually still discuss the problem inside the legal system; the premise of the most discussed alternatives (negotiation, arbitration, and mediation) is the existence of a officially filed dispute, and these alternatives are still guided or mandated by official legal institutions (Ridley-Duff & Bennett, 2011). However, different social orders are hospitable to different procedures for dispute resolutions and inimical to others (Donald C. Clarke, 1991). Outside of the context of Western society, other mechanisms, although less noticed as ADR, might be more influential.

In specific areas of law, alternatives to law have been discussed more thoroughly, and less

strengthening IP protections through national policy (China Economic Net, 2016; K. Wang & Feng, 2017). This happens more for international companies, or companies established by “returnees” (those who have studied abroad and have gone back to China), who have accumulated enough resources to make use of the legal system, and have less access to and reliance on the alternatives.

⁵⁷⁷ Although this does not mean that these resolutions are not affected or assisted by the availability of the law.

formal arrangements have been studied. One area that has had a lot of discussion is contract law: many studies have discussed how people cope with the problem of uncertainty in contracts in a society where the legal framework is non-existent or poorly developed. Studies of contract enforcement in different societies point out alternative coping strategies such as personal relations and social norms (Macneil, 1980), reliance on reputational consequences (Coase, 1988), and ethics (Macneil, 1983). With regard to the contract system in China, Landa (1981) points out that alternatives such as the cultivation of personal relations are used to cope with contract uncertainty in the Chinese environment where contract law is poorly developed; Standifird and Marshall (2000) argue that guanxi-based exchange is a significant alternative to contract law.

Resonating with these studies of specific areas of law, the present study on IPR in China expands the scope of alternatives to law, and reveals that, in developing societies such as China, alternatives to law not only include those used in addressing disputes, but also those used in preventing harm (i.e. infringement in the IPR context); these include technological or technical barriers, administrative controls, first-mover advantages based on certain market characteristics and resources, as well as reputational pressures formed through certain social network structures. These alternatives to legal enforcement are manifested in Chinese industries due to the specific social and industrial characteristics in China, including the immaturity of the legal system, the strictness of administrative market access controls, the market characteristics accentuating marketing and channel cultivation, and the existence of close-knit networks in certain industries.

2.3 Interaction Between Organizations and Their Environment

Organizational ecology literature, especially inertia theory, argues that a mature organization tends to continue on its current trajectory, and often has difficulty devising and executing changes fast enough to meet the demands of an uncertain, changing environment (Baum & Shipilov, 2006; Gavetti, 2005; Gilbert, 2005; Hannan & Freeman, 1977, 1984; Tripsas & Gavetti, 2000). According to Gilbert (2005), this inertia can be described as being made up of two elements: resource rigidity (i.e. failure to change resource investment patterns) and routine rigidity (failure to change organizational processes). I found this inertia also manifested in the IPR behaviour of

companies operating in China, in both resource and routine rigidity.

With regard to resource rigidity, for example, some companies keep relying on traditional alternative methods of IP protection and may stick to these methods and avoid adopting legal methods, because they have more experiences here and can expect more benefits generated from the same investment of resources.⁵⁷⁸ In contrast, some companies were forced to use legal weapons while facing lawsuits from foreign companies, which may have generated more social resources in this area and increased the efficiency of using formal methods, thereby making them more desirable and more important for these companies.

With regard to routine rigidity, many of the processes that organizations use to create stability can make them rigid and limit their choices (G. F. Davis, 2005). In my interviews with company representatives, I noticed that, to a large extent, different existing organizational structures lead to different IP-related decisions, even in the same environment. For example, foreign multinational corporations (MNCs) usually have a relatively mature modern corporate structure, and it is common that decisions need to be made by one centralized committee through long and repeated discussion meetings.⁵⁷⁹ According to a few representatives with MNC subsidiaries in China, as well as a few lawyers that have experience dealing with foreign MNCs, this bureaucratic structure makes the effort to interact with these MNCs during mediation very “troublesome”, because their decisions have to go through multiple layers of reporting.⁵⁸⁰ In comparison, in Chinese companies, usually the management structure is not so developed, and decisions are made by one leader (even

⁵⁷⁸ A manager at a consultation company focusing on medical industry in interview 20160518B that, "suing consumes too much energy; [...] a company might as well use that energy to expand the market". Original Chinese: “国内不愿意打官司主要是这个花费的精力太多，影响企业发展，国内市场容量大，一直在扩展，精力不如用来投市场，开拓市场。”

⁵⁷⁹ Interview 20160417, with a representative from the subsidiary of a foreign medical company; interview 20160629, with a representative from the subsidiary of a foreign medical company. Original Chinese from interview 20160629: “外国企业或是跨国公司一般决策都是有一个委员会，然后流程很长，讨论一个事儿要讨论个十回八回，个体都不愿意承担责任呀（反正经理干三年就走了），所以就交给委员会了。中国企业就比较结果导向，虽然有股东利益和私人利益在里面，但是做决定都很快，做就做，不做就拉倒，比较直接，务虚的少，往往就是一个人拍板就行了。[...] 国内是不一定要走流程的，可以跳过的。”

⁵⁸⁰ Interview 20160510, with a lawyer majoring in IP cases. Original Chinese: “可能是因为国外的公司治理结构完善，什么事都要层层汇报，流程很麻烦，做个决定很麻烦，还不如按程序来。”

in publicly listed companies), where “decision-making can be very straightforward”.⁵⁸¹ In this case, communication and negotiation during mediation can be efficient. This is possibly one of the reasons why foreign companies seldom resort to mediation and usually prefer litigious procedures, but local companies tend to more frequently use mediation to solve disputes.

However, by labelling company behaviour as “inertia”, this view of organizational ecology focuses mainly on the demands and influence of environment on organizations; it tends to treat the social environment as an external and relatively fixed context. Following this view, previous studies of Chinese IPR either look at how companies make strategies under fixed legal conditions (organizational studies) (Hoecht & Trott, 2014; Kumar & Ellingson, 2007; M. Zhao, 2010), or how local companies may push for legal changes after they catch up (development studies) (Adelman & Baldia, 1996; Jianfu Chen, 2011; Massey, 2006a; M. Peng, 2013; P. K. Yu, 2007). But, in my fieldwork, it gradually became obvious that there is an ongoing dynamic interaction between companies and the external environment (i.e. the IPR system in this study), instead of a static one-way influence.

In fact, company strategies and the external environment are intertwined instead of separate factors, and the influence is never one way; they are constantly interacting and affecting each other. Companies choose strategies to stabilize the environment and achieve certainty and, through this process, the environment is changed and provides an updated basis for companies to form strategies. In the context of the legal environment, when a new legal institution is introduced, companies try to incorporate it into their customary decision-making and actions; this can shape the workings of such a legal institution, and create new uses for that institution in practice.

The process described in the previous paragraph is manifest in the Chinese case. First, IPR as a new concept and new institution is introduced, and companies try to utilize this new concept to increase their resources within the old structures (e.g. industry structure, network structure, market structure); this interaction process constantly gives the IPR system new roles, and yields alternative

⁵⁸¹ Ibid. Original Chinese: “而中国企业，治理结构不健全，很多是老板说了算，除了很大的公司，基本都是这样，这样就方便做决定方便商量。”

mechanisms of IP protection; the new role of IPRs and alternative protection mechanisms then continue to shape company behaviours. For example, in the film & TV sector, the use of IPR as a signalling tool to gain publicity and customer attention comes from the companies' efforts to incorporate the new IPR system into their traditional marketing strategy. This new use of IPR as a signalling tool then changes the role of IPR; this makes the traditional sense of IP protection (i.e. to ensure appropriation and exclude imitators) less important. In turn, because of this new signalling function, film and TV production companies start to hoard "IPs" which they would never be able to adapt into projects. This, to some extent, has led to a phenomenon of "speculative bubbles", and, in this case, IPRs develop a new function of serving as speculative products (Shule Zhang, 2015; Shihao Zhang & Qiu, 2016).⁵⁸²

3. A Discussion of Organizational Decision-Making in China: Satisficing or Optimizing

With a focus on company strategies and behaviours, this study is inherently related to decision-making models. I initially started with a rationality model of decision-making in explaining company IPR-related decisions this assumes that companies compare various alternatives with regard to benefit and cost, and make decisions that maximize utility. As the expected-utility variant of the rational choice theory predicts, most of the time, companies maximize expected utility (B. D. Jones, 1999); this expected utility can vary by the characteristics of the company, and can be very dynamic in practice. For example, ownership shapes a company's primary focus in making decisions. State-owned companies have a different incentive structure than private companies. In China, aside from profits, state-owned companies also care about political factors, company image, and social order. In this case, they tend to avoid suing infringers because they do not want to present an image of being aggressive to the public. They also tend to act in a conservative way, because, under political rather than economic logic, leaders are most afraid of taking responsibility for mistakes; for most of them, safe choices are

⁵⁸² Interview 20160521, with a film script editor and film & TV producer; interview 20160624, with an investment manager of a state-owned fund; interview 20160714, with a book editor and IP operator (for film adaptation).

preferred over taking risks regardless of potential benefits.⁵⁸³

As a refinement of the rational choice model, scholars coined the term bounded rationality to emphasize cognitive limits in the process of decision-making (B. D. Jones, 1999; Simon, 1956); a large literature has been built upon this and has tried to develop specific decision-making models (Kahneman, 2003; Todd & Gigerenzer, 2000).⁵⁸⁴ Simon suggests that, organizations usually adapt to satisfice, not to optimize. In organizational decision-making studies, this view is emphasized with the theory of the adaptive decision maker; the theory states that the satisficing principle suits the real-life environment of decision-makers; in this case, the satisficing principle holds (Gigerenzer & Todd, 1999; Gilovich, Griffin, & Kahneman, 2002; Payne, Bettman, & Johnson, 1993; Tversky, Kahneman, & Moser, 1990). According to the theory, to adapt to the practical environment, companies usually make decisions to maintain their aspirational level of performance, not necessarily to optimize it.

With regard to IPR behaviour, it seems that a similar decision-making process underlies the decisions of Chinese companies. When I asked the companies why they did not try to pursue longer and stronger protection for their innovative products, although the answer sounded strange, many companies just pointed out that, under current conditions, they could make enough profit. In fact, “it’s enough” was one of the most frequent phrases I heard during interviews. This was especially manifest in the Chinese context, possibly due to the following factors.

First, most companies are still affected by the Confucian tradition, especially “the doctrine of the mean” (as translated by Legge, 1861), which states that one should never act in excess. Some interviewees said that it is “ruthless” to take over all the benefits in the market, and they think leaving space for others contributes to a healthy industrial environment. One representative from a big company said that, “[we will ignore it] as long as the other party is not infringing too seriously, and as long as the industrial structure is not seriously affected”.⁵⁸⁵ According to another

⁵⁸³ With the development of the economy, now more and more companies have a hybrid ownership structure, so the differentiation between state-owned and private may become increasingly blurred in the future.

⁵⁸⁴ This is the common definition in behavioural economics.

⁵⁸⁵ Interview 20160422, with the Chief IP Officer of a top state-owned telecom company. Original Chinese: “只要对方不要太过分就好，产业秩序还能维护。”

company representative, “the market space in present-day China is large enough for many participants to survive, and there is no need to fight to the death”.⁵⁸⁶

Second, doing business in Chinese society can be more complicated and challenging than in many developed societies, due to potential intervention from the government, the significance of *guanxi* (personal connection), as well as unclear and constantly changing rules. For example, according to the 2016 Corruption Perception Index from Transparency International (Transparency International, 2017),⁵⁸⁷ China was ranked 79th out of all the countries in the world (where the number one spot is the country perceived to be the least corrupt); it had a score of 40, even lower than the global average of 43 (where 100 is considered “very clean” and 0 is considered “highly corrupt”). Furthermore, in China, *guanxi* is embedded everywhere, and to have more success in business usually requires more networking, favour-seeking, and fawning over authorities, which requires people to, according to my interviewees, swallow their pride. According to the World Bank report measuring the ease of doing business in 2015 (World Bank, 2016), China was 84th, with a score of 62.93, much lower than the average of OECD countries (which is above 75).⁵⁸⁸ In an unstable environment where the possibility of corruption, the importance of *guanxi*, and unclear rules constantly introduce a lot of uncertainties, people tend to work on a short time horizon and a doctrine of “safety first”.⁵⁸⁹ According to one interviewee: “In China, you should play it safe and avoid trouble whenever possible”.⁵⁹⁰

Third, perhaps because this generation of Chinese has experienced serious scarcity in their

⁵⁸⁶ Interview 20160515, with the Vice President of a medical device company. Original Chinese: “现在基本是市场容量足够大，所以企业都可以生存，不用斗得你死我活。”

⁵⁸⁷ It is based on aggregated data from a number of different sources that represent perceptions of business people and country experts about the level of corruption in the public sector.

⁵⁸⁸ It measures regulatory quality and efficiency; the rankings are benchmarked to June 2015 and based on the average of each economy’s Distance to Frontier (DTF) scores for the 10 topics included in the year’s aggregate ranking. The DTF score captures the gap between an economy’s performance and a measure of best practices across the entire sample of 36 indicators, where 100 is the frontier and 0 is the furthest from the frontier.

⁵⁸⁹ As Scott states when he describes the “subsistence ethic” (James C. Scott, 1976), in an unstable environment, people’s doctrine may be “safety first”, meaning that profit is less important than survival. The “subsistence ethic” means the principle that peasants are primarily focused on survival; it is used by Scott to describe the strategies of agrarian communities that privilege stability as opposed to a maximization of profits.

⁵⁹⁰ Interview 20160517B, with a sales representative of a state-owned pharmaceutical company. Original Chinese: “在中国，多一事不如少一事嘛。”

early lives (i.e. two or three decades ago), they feel they have made great improvement compared to the past; this may increase their satisfaction with the status quo and reduce their incentive to complain about not getting more than they do. During my fieldwork, at least ten company representatives mentioned “lack of energy” to pursue larger profits through IPR litigation; it became clear in the fieldwork that this actually indicates a lack of incentive to invest in making a change and maximizing benefits they could get from IPRs.

4. Policy Implications and Further Research

Previous chapters could provide insight in how to improve IPR-related institutions in developing countries like China. It seems that an improvement in the text of the law and in the court system is not enough; to make the law work in practice, adjustments in other underlying or complementary institutions are also needed. For example, to increase the average compensation and makes infringement more costly, it is necessary to gain experience in evaluating IPRs in industrial practice; it is also necessary to improve the evidence discovery system—and these improvements rely a lot on the development of corporate management and accounting systems. In addition, since many alternatives are more common for local companies to use, to improve IP protection, the state may also need to pay attention to these alternatives, and try to coordinate legal institutions with such alternative mechanisms.

With regard to how foreign pressure on IPR enforcement works in China, many previous studies have discussed this issue from various viewpoints and suggested many ways for foreign countries to influence the Chinese IPR system. For example, Mertha (2005, pp. 225-230) points out that, top-down external pressure in the form of confrontational negotiations may have an immediate impact on the formal legislation but may be less effective in promoting effective and sustained enforcement; lateral pressure⁵⁹¹ between foreign actors and local Chinese enforcement agencies may have little impact on the national legislation, but it is crucial in establishing effective enforcement (because it facilitates inter-bureaucratic competition and so brings about a high

⁵⁹¹ Lateral pressure refers to pressure exerted by foreign entities operating in China, which appear exogenous to the formal political system, in contrast to direct pressure which focuses on legislation and top-down implementation.

volume of enforcement). Dimitrov (2009), on the other hand, argues that, increases in lateral pressure often are in the form of additional bribes, which can only lead to enforcement of easy cases and actually undermine high-quality enforcement (i.e. enforcement that is consistent, transparent, and procedurally fair). Dimitrov claims that high-quality enforcement is most likely to emerge when the enforcement structures are given a chance to develop outside the spotlight of foreign pressure.

From my study, it has become apparent that, the improvement of IPR enforcement is not just about formal enforcement (both administrative and in the courts). Although top-down national pressure may lose momentum in specific industrial or local contexts, lateral pressure focusing on private connections with the government may also not do much good to institutional improvements to IPR enforcement. Foreign companies who want better IP protections should not only focus on pushing the government for IPR-related policy or legal changes, but also pay attention to other complementary institutions. They need to understand how the weaknesses in the complementary institutions constrain legal institutions. For example, foreign entities should not only push for changes in IPR laws, but also take into consideration factors such as civil procedure laws (which are related to evidence discovery), corporate management systems, and accounting standards. In addition, it may also be beneficial for foreign companies in China to make use of alternative protection methods in the current context, including, for example, channel developing and bundling.

This research builds a framework for understanding the interaction between specific industries and the IPR institution in China. I studied the medical sector, the telecom equipment sector, and the film & TV sector, and interviewed 88 people in total in China. A lot of follow-up research based on this framework can be done. For example, more industry participants in each sector can be interviewed to make the sample more representative, or more sectors can be explored. In such a case, there are more details that can be brought out to confirm or expand the framework. Comparative studies may also be valuable after a corresponding field study of Western IPR institutions.

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Appendix: The Initial Interview Guide

(It was adjusted during individual interviews)

Potential Interviewee categories:

1. Industry participants in film, medical, and smart phone industries, including: (1) IP owners: related personnel at IP-owned companies (exp. Staffs at IP department, law department, or research department), individual IP owners (scriptwriters, film producers/directors, original novel authors, patent owners, etc.). (2) Investors.

Interview theme: (1) IP owners: Under current IP system, IP owners would choose which methods to prevent/solve IP disputes, and protect their IP rights. (2) Investors: How much do investors value IPs in this industry, how would IPs affect their investing behaviours.

2. Industrial association or other IP-related social organizations: include industrial associations, other local IP protection associations, People's Mediation Committees, etc.

Interview theme: How would existing social organizations play their parts in IP protection and IP disputes settlements.

3. State agencies: include judges, IP offices, copyright administrations, etc.

Interview theme: how would different state agencies deal with IP disputes; what's the relationship between administrative enforcement and court enforcement.

4. Other IP-related individuals/institutions: include lawyers, mediators, IP-news reporters, IP-related medias, etc.

Interview theme: The specific process and characteristics of IP dispute resolutions.

Potential Interview Guides:

1. Industry Participants

(1) IP owners

- Did you seek / Do you plan to seek any IPs? Why (purpose)? Or why not?
- Do you use IPR laws? Why?
- Did you experience any IP disputes? What's the specific story?
- Did/didn't you choose judicial approach to solve that dispute? Why? (reveal their trust in judicial system)
- If you choose judicial approach, what factors did you consider?
- If you did not choose, which alternative resolution method did you use, why?

- Have you ever experienced other (non-IP) commercial disputes? What is it?
- Did/didn't you choose judicial approach to solve that dispute? Why?
- If you choose judicial approach, what factors did you consider?
- If you did not choose, which alternative resolution method did you use, why?

- What innovations have you made?
- What do you do to facilitate innovation?
- To what degree theft of your innovations is a problem and how you defend yourself against theft.

(2) investors

- To what extent would IPs affect your investing decision? Why?

2. Industrial associations

- How many IP disputes have you processed? Are they increasing or decreasing recently? Do you know why?
- Which firms/individuals are more likely to resort to your association? Do you know why?
- Could you tell me more specifically about the usual process of settling a case (include cost bearing)?
- In general, what's the biggest challenge in the process of settling IP disputes?
- What makes the settlement valid (source of authority)?
- Have you encountered any special cases, how is it special?
- Will you interact with state agencies? How?

3. State Agencies

(1) Judicial agencies (judges)

- Compared to other civil cases, how is IP cases different dealt in court?
- Since the IP laws only gives a general scope, how are the compensation amounts determined?
- Is there any scenario where the disputing parties' interest is in conflict with the public interest or local development?

How is it settled?

- Which cases will be more likely to be publicize, why?
- What's the court's relation with administrative enforcement agencies?
- Will court decisions be affected by state policies?

(2) Administrative agencies

- What's the usual procedure of current administrative enforcement of IP?
- In specific cases, how would punishment measures or compensation amounts be determined?
- Is there any scenario where the disputing parties' interest is in conflict with the public interest or local development?

How is it settled?

- How would administrative enforcements be coordinated with the court system?

4. Other IP-related individuals/institutions

- What are the dispute resolution costs for different cases (example); which costs are involved?
- Do you think current IP system is more beneficial to IP owners or IP infringers?
- What proportion of IP infringement cases are resolved? Why are some not resolved?
- What are the commonly used dispute resolution methods? What are their pros and cons in practice (in your experiences)?