# THE FUBLIC REGULATION OF THE BELL TELEPHONE COMPANY OF CAMADA

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## THE PUBLIC REGULATION OF

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#### PREFACE

The term "public utility" is generally used to define a group of privately owned businesses which are regulated by a Board or Commission established by a government. The application of public utility regulation is fraught with many problems. What conditions exist within the industry to attract this status? What is the purpose of establishing regulatory control? What returns should investors be allowed to receive? How should these returns be measured? In determining the investors' returns, what items should be allowed as expenses, and how much should be allowed? How should the prices charged to consumers be structured so that they are "just" and "reasonable"?

These questions are not easily answered. In practice each one requires an element of judgment. In many cases there is inadequate information available from which to draw the necessary conclusions. But the answers must be given by the regulators whether they are stated explicitly or merely implied.

The purpose of this thesis is to examine these and related questions and see how they have been answered by The Board of Transport Commissioners for Canada in their regulation of The Bell Telephone Company of Canada.

We shall begin with a brief review of certain aspects of the history of The Bell Telephone Company, in Chapter I, and also examine those sections of the Railway Act which govern the regulation of the Company. In order to understand some of the problems in the regulation of the telephone industry, Chapter II is devoted to a partial study of its technology and economics. Here we will see the circumstances which tend to make the industry a monopoly in a given market area, and some of the factors which affect the rates charged and costs. Cost studies of the industry are reviewed and their implication on pricing and regulation is considered.

Chapter III is an examination of the questions originally posed in our opening paragraph and how they are generally answered in practice. Much of this material is drawn from American experience since it is in the United States that the public utility concept has its most widespread application.

These questions are again examined in Chapter IV when we study the regulation of The Bell Telephone Company. We shall see how The Board of Transport Commissioners has answered these questions and how their answers have in themselves provided some new questions which remain unanswered. We shall also see that in accordance with the type of regulation practiced, certain deficiencies exist in its powers of review. The problem of "Deferred Income Tax" and discriminatory features of the Federal Government's orders to the Board concerning its application to The Bell Telephone Company are also considered.

The concluding Chapter will show that the application of demand and cost studies could be of assistance in the regulatory process. In addition, it is recommended that certain changes should be made in the governing regulation and Income Tax legislation. The author wishes to acknowledge the debt owed to the officers and employees of The Bell Telephone Company of Canada during the course of preparation of this thesis. In particular, Mr. J. A. Coombs and Mr. L.E.N. Selkirk of the Chief Statistician's Office, Montreal, have been most helpful in the provision of information and helpful suggestions. Miss Joyce Stafford has checked much of the data in earlier drafts and has been of great assistance in correcting errors. Professor A. Asimakopulos of McGill University has also been most helpful in providing assistance and suggestions. And finally the author wishes to acknowledge the assistance of his wife, who persevered through the whole process and typed the original drafts. Needless to say, the errors and conclusions are the responsibility of the author.

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### CHAPTER I THE BELL TELEPHONE COMPANY OF CANADA

EXTENT OF ACTIVITIES

Four years after the invention of the telephone in 1876 by Alexander Graham Bell, The Bell Telephone Company of Canada, hereinafter referred to as "the Company", was incorporated with the power "to manufacture telephones and other apparatus connected therewith, and their appurtenances and other instruments, used in connection with the business of a telegraph or telephone company, and to purchase, sell or lease the same and rights relating thereto, and to build, establish, construct, purchase, acquire or lease, and maintain and operate, or sell or let, any line or lines for the transmission of messages by telephone, in Canada or elsewhere, and to make connection, for the purposes of telephone business, with the line or lines of any telegraph or telephone company in Canada or elsewhere ... " At that time a number of small local exchanges were in operation in Canada, principally in the larger cities in Ontario and Quebec. The intention of the founders of the Company was to acquire the exchanges already in operation and, together with new exchanges to be set up and the establishing of long distance lines connecting them, provide a single unified telephone system. British Columbia was apparently never included in the plans due in part to the problems of erecting a wire over the mountains.<sup>2</sup>

- 1. Statutes of Canada, 43 Victoria, Ch. 67. Assented to on April 29, 1880.
- 2. Patten, William, Pioneering the Telephone in Canada, Private Publication, Montreal (1928), p. 90.
- 3. Ibid, p. 126. Some confusion exists as to the Company's activities in British Columbia. In spite of Patten's contention, the Annual Report of the Company for 1889, in its recapitulation of subscriber growth, indicates that "310 sets have been transferred to the Victoria and Esquimalt Telephone Company", the latter being a British Columbia company.

At one time or another, however, the Company has operated in all other provinces.

Large capital requirements were needed to finance the acquisition of existing companies and the construction of new exchanges and the long distance lines. Certain difficulties were encountered in carrying out the original plans for the development of a single telephone system over such a large area. As a result separate companies were formed in 1888 to develop the telephone in Nova Scotia, Prince Edward Island and New Brunswick.<sup>4</sup> The Company received capital stock in return for its plant and properties and these local companies were able to obtain local funds for the further development of the telephone in their respective areas.

In the west, the Company opened an exchange in Winnipeg in 5 1881 and other exchanges were added as time passed. The Prairie Provinces became dissatisfied with the private ownership of the telephone industry, and in 1908 the Provinces of Manitoba and Alberta purchased the assets of the Company located within these provinces, to be followed a year later by Saskatchewan.

Since 1909 the Company has essentially restricted its activities to Ontario and Quebec,<sup>6</sup> although it has maintained its position as a shareholder in the principal companies operating in the Maritime Provinces. In 1962 it also acquired almost all the shares of the Avalon Telephone Company, the major telephone company in Newfoundland.

5. Patten, <u>op. cit.</u>, p. 124.

6. The Company also provides service in Labrador and the North-West Territories.

<sup>4.</sup> The Bell Telephone Company of Canada, <u>Annual Report</u>, 1888. Further statements on the history of the Company are taken from the Annual Report for the year indicated unless otherwise referenced.

The Company is not the only supplier of telephone service in the Provincesof Quebec and Ontario. At the end of 1964 there were 330 independent telephone systems in operation servicing some 382,000 telephones or about 8 per cent of the total telephones in these two provinces. Approximately one-half of these telephones are operated by four of the independents.<sup>7</sup>

In its initial operations certain legal difficulties were encountered in the placing of telephone poles and a legal suit on this matter was lost by the Company in Quebec City in 1881 on the basis that certain clauses of the Charter of the Company were ultra vires of the Dominion Government.<sup>8</sup> The Company sought and obtained Provincial Acts to correct the apparent weakness. In 1882 the Dominion Government passed a further Act amending the original Charter of the Company and added "the power ... to extend telephone lines from any one to any other of the several provinces in the Dominion of Canada, and from any point in Canada to any point in the United States of America."<sup>9</sup> This legislation also provided that "the works authorized, are hereby declared to be for the general advantage of Canada" thus placing the telephone industry within the jurisdiction of the Dominion Government.<sup>10</sup>

- 7. Dominion Bureau of Statistics (DBS), Telephone Statistics, Preliminary Report on Large Telephone Systems, Ottawa, (1963)
- 8. Patten, op. cit., p. 99.
- 9. Op. Cit., 45 Victoria, Ch. 95.
- 10. This jurisdiction has only been applied to telephone companies incorporated under Dominion Charter and not to provincially incorporated or provincially owned systems.

### CAPITAL STRUCTURE AND TELEPHONES IN SERVICE

The original Act of Incorporation of the Company provided that the capital stock would be 5,000 shares of one hundred dollars each, with a further provision that this amount could be doubled. The first public offering of shares was made on December 19, 1880, and by the end of the year the total paid-up capital amounted to \$377,600. At that time there were 2,100 subscriber stations installed. The Company had been advised by an American telephone executive that the future of the Company would depend upon the unification of the system by the erection of long distance lines, even if they would not pay.<sup>12</sup> The first long distance line was started on May 15, 1881, to connect Toronto and Hamilton. 13 but no toll revenue was reported until 1882. By the end of 1883 the Company had some 6,000 telephones and some 660 miles of long distance lines in operation. The Company had by this time issued all of its authorized capital stock and in 1884 it obtained an increase in the authorized capital to an amount of \$2,000,000.

This new capital, together with the issue of \$500,000 in bonds which had been authorized in the Charter revision of 1882, provided the Company with adequate funds to finance its expansion until 1891. During the interim the service had been expanded to the point where 22,224 telephones were earning rental together with 9,213 miles of wire lines on 4,432 miles of poles. By this time underground wires were

- 11. Patten, <u>op. cit.</u>, p. 91.
- 12. <u>Ibid</u>, p. 90.
- 13. <u>Ibid</u>, p. 100.
- 14, Op. cit., 47 Victoria, Ch. 88.

being placed in both Toronto and Montreal. In 1892 the authorized capital was increased to \$5,000,000 although the power to issue bonds was limited to \$500,000, the amount then issued.

The limitation placed on the amount of bonds to be issued by the Company was altered in 1894 by legislation which allowd the directors of the Company to borrow up to 75 per cent of its actual paid-up capital stock.<sup>16</sup>

The Company was again faced with inadequate funds to finance its expansion by the end of 1901. During this period the number of telephones earning rental increased from 22,224 to 42,858, and the long distance facilities were increased to 24, 193 miles of wire on 6,634 miles of poles. This doubling of the facilities during the ten years from its previous increase in authorized capital apparently did not satisfy the demands of the general public for service. In addition to doubling the authorized capital to \$10,000,000, the Act of 1902<sup>17</sup> provided, in Section 2, that "upon application ... within (any) territory within which general service is given, ... the Company shall, with all reasonable despatch, furnish telephones, of the latest improved design then in use by the Company in the locality ..."

So great was the subsequent expansion of the Company that four years later, in 1905, it had issued almost all of the authorized capital to provide the necessary funds. The number of telephones was almost doubled to 78,195 and 12,900 miles of wire on about 2,000 miles of pole were added by the end of 1905. As a result the Company applied

15. Ibid, 55-56 Victoria, Ch. 67.

16. Ibid, 57-58 Victoria, Ch. 108.

17. Ibid, 2 Edward VII, Ch. 41.

for, and received, a trebling of the authorized capital, from \$10,000,000 to \$30,000,000.

During the period from 1905 to 1919 the Company raised a total of \$22,555,460 in new funds, \$13,731,460 through the issue of shares and \$8,824,000 in bonds. These funds were used to provide a considerable increase in service. By the end of 1919 there were 337,476 telephones in service, as compared to 81,891 telephones in 1905.<sup>19</sup> The total long distance lines more than doubled to 96,753 miles of wire. This equipment allowed the Company to handle a daily average of some 2,593,000 local calls and some 29,000 long distance calls. However, the heavy demand for service following the First World War necessitated the further raising of considerable sums of money so the authorized capital stock was increased from \$30,000,000 to \$75,000,000 by an Act passed in 1920.<sup>20</sup> This same Act also removed the restriction, enacted in 1894, which limited the issue of bonds to 75 per cent of the paid-up capital.

The increase for telephone service continued throughout the 1920's. The Company more than doubled the telephones and miles of wire in service from 1919 to 1928. At the end of the period there were 714,245 telephones in service and 2,449,857 miles of aerial, underground and submarine wire. The introduction in 1924 of machine switching (dial telephones) also placed heavy demands on the Company's finances.

18. Ibid, 6 Edward VII, Ch. 61.

19. Part of this increase results from a difference in the method of reporting. Prior to 1912 the Annual Reports Show "subscriber stations" or "stations earning revenue." For 1912 and thereafter the Annual Reports show total company telephones, some of which do not earn revenue.

20. Op. cit., 10-11 George V, Ch. 100.

6.

During this period the Company raised \$38,004,200 through the issue of shares and increased its long term debt by \$30,285,094 for a total of \$68,289,294 in new funds. In 1929 the authorized capital was doubled 21 to \$150,000,000.

There was a slackening of demand for telephone service from 1930 to 1933 and it was not until 1939 that the number of telephones in service attained the 1930 level. During the war the Company's expansion was severely restricted. Only a small portion of the requests for service could be handled by the existing idle facilities and the modest construction program. The return to peacetime found the Company faced with a tremendous demand for new and upgraded telephone service.

The number of telephones put into service in 1946 and 1947 was 256,862 - more than one quarter the number in service at the beginning of 1946. At the end of 1947 there were still 94,000 applications for service which were unfilled. The Company had 1,306,975 telephones in service on December 31, 1947, slightly over 70 per cent of which were dial, and handled an average daily connection of 8,497,000 local and 165,000 long distance calls. The major source of funds to handle the large expansion in service provided in 1946 and 1947 was obtained from two stock issues, in September of each year, which together produced in excess of \$54,000,000. This amount, raised in two years, almost equals the total amount of capital provided by shareholders from the date of incorporation in 1880 to 1927. By December 31, 1947 the Company

21. Ibid, 19-20 George V, Ch. 93. This Act also provided that issues of capital stock must first be approved by the Board of Railway Commissioners for Canada as to price, terms of issue, etc.

had raised a total of more than \$150,500,000 from the issue of capital stock (including premium) and in addition had outstanding long-term debt of \$81,000,000. In view of the increasing demand for service and the necessity of obtaining funds to finance equipment, the authorized capital of the Company was increased to \$500,000,000 in 1948. At this time the par value of the stock was reduced from \$100 to \$25 per share. This reduction of par value was undoubtedly intended to afford a wider distribution of share holdings. The \$100 par value shares had traded at an all-time high of \$216. in 1946. Subsequent to the four-forone stock split which was carried out on September 30, 1948, 2,374 new shareholders - more than half the total new shareholders added in 1948 were added by the year end. At that time a total of 5,136,004 shares were fully paid and issued and a further 415,045 shares had been subscribed under the Employees' Stock Plan. The issued shares were held by 38,889 shareholders of whom 96.1 per cent were Canadians owning 80.7 per cent of the shares.

The most recent addition to the authorized capital of the Company was granted in 1957.<sup>23</sup> This increase gave the Company an authorized capital of one thousand million dollars. The financial statements for 1956 indicate the continued expansion of the Company. During that year alone more than \$108,000,000 in new funds was obtained from external sources; \$40,000,000 through the issue of bonds, and some \$68,000,000 from the issue of new stock, which includes \$5,000,000

22. Ibid, 11-12 George VI, Ch. 81.

23. Ibid, 6 Elizabeth II, Ch. 39.

raised by the Employees' Stock Plan. At the end of 1956, the Company had more than 15,500,000 shares outstanding which had provided more than \$502,800,000, in addition to \$305,000,000 in long-term debt. The large capital requirements of the Company during the 1947-1956 period can be indicated by the fact that the funds raised by capital stock were more than two and one third times the capital stock at the beginning of the period, and the increase in bonds outstanding was more than two and one half times.

These new funds provided for the continued expansion of the plant and equipment of the Company. There were 2,766,153 telephones in service on December 31, 1956, more than double the 1947 number. The miles of long distance circuits more than trebled, from 331,000 to 1,058,000. These increased facilities handled almost twice the number of local and long distance calls. The average value of plant and equipment per telephone increased from \$250. in 1947 to \$385. in 1956. In part this was due to an increase in the percentage of dial telephones, from 70.1 per cent to 86.1 per cent and a 70 per cent increase in the number of central offices.

The most recent annual report of the Company, for the year ended December 31, 1964, continues to show the tremendous expansion of the Company. In this year alone the Company spent \$233,500,000, which is only \$600,000 less than the record amount of the preceding year, on replacement, expansion and modernization. The total construction expenditures from December 31, 1956 to December 31, 1964 amount to \$1,644,000,000.

Of this amount \$930,000,000 was provided by external financing; \$430,000,000 from funded debt and \$500,000,000 through Capital Stock and Premium. The number of shareholders increased from 140,726 in 1956 to 207,150 in 1964, of whom 97.4 per cent, owning 93.6 per cent of the shares, are resident in Canada. The new construction expenditures brought about further increases in the number of telephones in service and the upgrading of service. There were 4,312,577 telephones in service at the end of 1964, handling an average of 26,020,000 local and 495,000 long distance calls daily. The proportion of dial telephones in service was increased from 86.1 per cent in 1956 to 99.1 per cent in 1964. These factors and the introduction and expansion of other services to be discussed below raised the value of the average telephone plant per telephone from \$385. in 1956 to \$542. in 1964. During this same period the average operating revenue per average telephone in service increased from \$103.96 to \$129.46. It is also worthwhile to note that in 1956 each dollar of operating revenue required an average investment in plant of \$3.58 as compared with \$4.10 in 1964.

COMPANY PROFITS, DIVIDENDS AND INTERNAL SOURCES OF FUNDS.

Before examining the record of profits<sup>24</sup> dividends and internal sources of funds, a word of caution is in order. The financial statements of the Company are not entirely comparable over its 85-year

<sup>24.</sup> The definition of "profit" or "income" presents certain problems at this stage. For our present purposes we shall consider "profit" in an accounting sense as indicated in the financial statements. This allows interest as an expense but returns to shareholders (dividends) will be considered as a distribution of profits. In partial recognition of the economic concept of cost which allows a "normal" return to all investors, a "deficiency of profit" shall mean that the accounting determination of profit was inadequate to provide for the dividends actually paid. (It is assumed for this purpose that dividends actually paid represent a "normal" return).

history. The method of reporting may essentially be broken into three distinct periods; 1880-1911, 1912-1923, and 1924-to date.

During the period from 1880-1911 the annual reports are presented in a uniform manner and indicate in considerable detail amounts set up as "Reserves" although some of these items do not conform to modern practice. In addition increases in some of these amounts appear to be made in lump sums rather than on the basis of any calculation. "Depreciation" as an expense first appears in the 1911 statements. Other items, which today would be treated as expenses, similarly were treated as appropriations of profit during this period. With all of these qualifications the Company earned profits adequate to pay the dividends declared in each year. The dividends actually paid were 2 per cent<sup>25</sup> in 1881 and 1882, 7 per cent in 1883,  $3\frac{1}{2}$  per cent in 1884, 2 per cent in 1885 and 8 per cent from 1886 on. At the end of this first period the Balance Sheet for 1911 shows a "Revenue Account" (Unappropriated profits) of some \$120,000, or just under 1 per cent of the issued capital stock and "Reserves" totalling about \$7,469,500.

The financial statements of the second period, covering 1912-1923, have many of the same deficiencies indicated for the earlier period,<sup>26</sup> and in addition become much briefer and less meaningful.<sup>27</sup>

25. Dividend rates are expressed as a percentage of the par value of capital stock only. No account is taken of premiums paid on issue of the stock, or changes in market value.

26. Until 1918 depreciation is shown to the nearest \$5,000. As will be seen below, even this was not based on any scientific measurement.

27. The new format may be attributed to Mr. E. Palm, a Company official who later became Comptroller and Vice-President. The prior financial statements may have been drawn up by the Auditor. An interesting note in passing is the fact that the same firm, now called Touche, Ross, Bailey & Smart, have been the auditors since 1881.

Dividends paid throughout this period remain constant at 8 per cent. In 1920 and 1921 the Company had a "deficiency of profits" amounting to about \$1,832,000 and \$776,000 respectively. The dividends paid in these years were \$1,800,010 and \$1,883,630. In spite of these two years' results, the Company had a "Surplus"<sup>28</sup> on December 31, 1922 of \$5,250,000 or roughly 16.4 per cent of the issued capital, and a "Reserve for Depreciation, etc." and "Employees' Benefit Fund" totalling almost \$19,488,000.

The final period of the financial statements is from 1924 to the present. The basis for the start of this period is that in 1924 the statements were based on The Uniform System of Accounts approved by the Telephone Association of Canada.<sup>29</sup> Since then it must be assumed that the financial statements are comparable.<sup>30</sup> Dividends paid to shareholders remained at the 8 per cent level until 1932 when they were reduced to  $7\frac{1}{4}$  per cent. From 1933 to 1936 the rate was reduced to 6 per cent, and in 1937 it was increased to  $7\frac{1}{2}$  per cent. Subsequent to 1937 the rate was returned to the normal level of 8 per cent, which was the amount paid in 1959. The final quarterly dividend in 1959 was increased by 10 per cent (from 50 cents to 55 cents) and all payments since then have been paid at the new rate of 8.8 per cent.

- 28. The inadequacy of the statements from 1912-1923 make it impossible to determine whether the "Surplus" resulted solely from operating profits, or whether it includes the premium on stock issued, which in 1911 amounted to approximately \$1,330,000.
- 29. Jas. G. Ross, Auditor, in The Bell Telephone Company of Canada Annual Report for 1924.
- 30. There are two minor qualifications to make:
  (1) It was not until 1935 that the Auditor mentions "accepted accounting principles consistently maintained" or words to that effect in his report.
  (2) In 1952 the method of accounting for pension costs was changed with the result that "net income available for dividends was increased by \$1,098,646". The net income available for dividends as

creased by \$1,098,646". The net income available for dividends, as reported, in 1952 amounted to \$22,570,350. The result of the application of the new procedure in succeeding years is not known.

Over the 41-year period from 1924-1964 the Company has had a "deficiency of profit" in 9 years. These were recorded in 1925 and 1926, 1930 to 1933, 1935, 1949 and 1950.<sup>31</sup> Taking the surplus as a percentage of issued capital in 10-year stages, it declined to 5.0 per cent in 1934, rose to 10.9 per cent in 1944, fell to 7.6 per cent in 1954, and was 12.9 per cent at the end of 1964. The accumulated Provision for Depreciation of Telephone Property amounts to \$533,053,000 on a total investment in telephone plant of \$2,337,428,000 as at December 31, 1964.

### SERVICES PROVIDED

The provision of local telephone communication is the principal service provided by a telephone company. Local service is the provision of facilities whereby, within a given (exchange) area a subscriber may call any other subscriber in the area without extra charge. Extended Area Service, first introduced by the Company during 1951 in the Montreal area, provides customers in suburban communities with toll free service to and from neighbouring metropolitan centres. This service, which costs the same or slightly more than service in the metropolitan area, is introduced where a considerable number of small toll charges would otherwise have been made. In 1964 local service calls made up over 98 per cent of the calls handled by the Company and provided about 54 per cent of the total revenues.

<sup>31.</sup> In addition from 1943 to 1945 the provision for the Refundable Excess Profits Tax reduced reported earnings below the dividends paid. Since this amount was to be refunded after the war there was no deficiency of profits in this period.

The Company itself provides long distance facilities in the Provinces of Quebec and Ontario. The other telephone systems in these provinces are connected to the Company's facilities in order to handle long distance calls.

Throughout Canada each telephone company or system provides the facilities necessary to handle long distance calls originating or terminating within, as well as "transiting" through, their respective area. The problem of co-ordinating the long distance network throughout Canada is handled by the Trans-Canada Telephone System, a voluntary organization of the major telephone systems in each area. Calls between Canada and other countries utilize the facilities of the Long Lines Department of the American Telephone and Telegraph Company (A.T. & T.), overseas cables of the Canadian Overseas Telecommunication Corporation (a Crown Corporation), or Eastern Telephone and Telegraph Company. Long distance telephone calls accounted for about 29 per cent of the Company's revenues in 1964 although they accounted for only 2 per cent of the calls handled.

Long distance calls may be handled by wire, cable or radio facilities, and in the near future these will be augmented by communications satellites, for example COMSAT. The primary purpose of these systems is for telephone communications but the equipment can also be used to relay any type of data which can be transformed into electrical impulses. The Trans-Canada Telephone System, which was founded in 1932, provides the facilities for the radio and television networks in

operation in Canada. The introduction of television required the construction of a more complicated carrier system to relay the video as well as audio impulses.

The application of electronic computers to the processing of business data has also added to the demand for rapid direct communications. Although special problems are involved with this kind of input, the knowledge, experience and equipment accumulated to carry audio and video transmissions have been utilized to broaden the type of input accepted for transmission. It is now possible under a number of different procedures for the telephone companies to carry data originating from a number of inputs such as photographs and drawings, punched tape, magnetic tape, typing, and even handwriting. In this area, i.e. nonvoice input, the telephone industry faces competition from telegraph companies who can also utilize this type of relay.<sup>32</sup>

These more recent developments in transmission facilities have come about as a result of extensive research in the use of cables and radio relay.<sup>33</sup> Radio is also used to provide mobile service for automobiles, aeroplanes, ships, etc., and to provide service in remote areas where the costs of establishing and maintaining wire connections are too great.

- 32. At the present time the Trans-Canada Telephone System has at its narrowest point four "paths" of 600 voice circuits; one used for communications, two for television, and one spare. The joint Canadian National-Canadian Pacific Telecommunications network: just recently completed has two "paths"; one for communications and one spare.
- 33. The position of the Company with respect to the use of radio was clarified by an amendment to its Charter in 1948 (11-12 George VI, Chapter 81, Sec. 5) which states: "The Company has and always has had the power to furnish wireless telephone and radio telephone systems and to provided services and facilities for the transmission of intelligence, sound, television, pictures, writing or signals."

Other special services provided include public (pay) telephones, colour telephones, private lines - both local and long distance and advertising through the "Yellow Pages".

#### INTERCOMPANY AFFILIATIONS

Included in the assets of the Company are investments in subsidiary and other companies.<sup>34</sup> The only important telephone subsidiary is The Avalon Telephone Company, Limited, which is the major telephone system in Newfoundland.<sup>35</sup> Avalon was taken over by the Company in 1962 by an exchange of shares. The principal subsidiary company is Northern Electric Company Limited (hereinafter referred to as Northern).

- 34. These investments on December 31, 1964 and the proportion of common shares owned are: Subsidiary Companies The Avalon Telephone Company, Limited 99.5% The Monk Rural Telephone Company, Limited 100.0% The North American Telegraph Company, Limited 100.0% Télécommunications des Iles-de-la-Madeleine, Limitée 100.0% 100.0% Télécommunications Richelieu, Limitée Northern Electric Company, Limited 100.0% This company in turn owns more than 50% of the common shares of: Dominion Sound Equipments, Limited Norel Realties Limited Northern Electric-Caribbean, Limited Other Investments - (The proportion of stock owned is not known but is less than 50%) Northern Telephone Limited The New Brunswick Telephone Company, Limited Maritime Telegraph and Telephone Company, Limited This company in turn owns 50% of the common shares of: Island Telephone Company, Limited (Prince Edward Island) It has been announced (Financial Post, October 31, 1964, p. 26) that the Company is in the process of acquiring the assets of La Compagnie de Telephone Summerset, Plessisville, P.Q. There were two "telephone systems" in 1962 in Newfoundland which 35.
  - meet the standards of D.B.S. See <u>Telephone Statistics</u>, <u>1962</u>. One was operated by the Federal Government serving 8685 telephones. Avalon serves "more than 58,000" of a total of 61,092 telephones provided by other than the government service. The approximately 3,000 telephones not serviced by Avalon are operated otherwise than by "telephone systems" as defined by D.B.S.

Northern is essentially the manufacturing arm of the Company producing telephone supplies and equipment for it and other telephone companies, as well as electrical supplies for other users. The Company itself generally accounts for more than 50% of Northern's sales.

The Company was granted powers in its original charter of 1880 to manufacture apparatus which could only be used by a telegraph or telephone company. A manufacturing branch of the Company was set up in 1881. The irregular demand for equipment led to the establishment in 1895 of a separate company to provide these services. This company, Northern Electric and Manufacturing Company, Limited, together with the Wire & Cable Company, a subsidiary company set up in 1897, and its successor were to become the present Northern Electric Company Limited, which was incorporated in 1914. The Company has always had an investment in these companies. The Western Electric Company of New York, the manufacturing arm of the American Telephone and Telegraph Company, started to enter the Canadian market in competition with the Canadian companies. In order to prevent the further intrusion into the Canadian market, the Company sold approximately forty per cent of its 37 holdings to Western and Western Electric withdrew from Canada. This relationship continued until 1962 when the Company acquired the shares beneficially owned by Western Electric Company. Since then all of the outstanding shares have been acquired by the Company.

36. An important action of the predecessor of Northern was its acquisition in 1895 of a telephone line from the Company's office to its own office. The continued ownership of this line, consisting of a pair of wires covering a distance of some 19,000 feet, was to play an important role in a recent decision as to whether Bell could continue its investment in Northern.

37. Patten, op. cit., p. 96.

Northern owns and operates five large manufacturing plants in Quebec and Ontario. Thirty-two sales offices are operated across Canada together with warehousing and repair facilities in Montreal, Toronto and Saint John, N.B. In addition, in 1961 a new research centre was opened in Ottawa to design and adapt equipment to meet the needs and special conditions in Canada.

In addition to the shares of other companies owned by the Company an important relationship is the ownership of its shares by the American Telephone and Telegraph Company. At the present time it is estimated that A.T. & T. owns about 750,000 shares or 2.8% of the total shares now outstanding. Although at one time A.T. & T. owned as high as 48% of the total issued shares,<sup>38</sup> its proportion has declined in recent years. The earliest information available in the Annual Reports for the Company indicate that at the end of 1931 A.T. & T. owned 24.5 per cent of the total shares outstanding, or about 187,500 shares. Subsequent financial statements indicate that approximately the same number of shares, adjusted for the 4 for 1 split in 1948, are still owned. A.T. & T. has always had representation on the Board of Directors, three out of 12 from 1913-1924,<sup>39</sup> and one, presently the Vice-President-Engineering of A.T. & T., since 1948.

39. In 1913 the Board was increased from 10 to 12 members. The Annual Report for 1912, the first one listing the Board, contains at least two A.T. & T. officials.

<sup>38.</sup> Board of Transport Commissioners for Canada, "re The Bell Telephone Company of Canada", <u>Judgment and Order</u>, Ottawa, (November 15, 1950), p. 17.

Further study of the relationships between the Company and Northern Electric, and A.T. & T. as they affect the regulation of earnings will be deferred until a later section of the paper.

### PUBLIC REGULATION OF THE COMPANY

The first legislation regulating the rates of the Company was in 1892 when the Parliament of Canada required that the existing rates "shall not be increased without the consent of the Governor-in-Council."<sup>40</sup>

Ten years later, in 1902, this regulation was amended to <sup>41</sup> require authorization from the Governor-in-Council for reductions as well as increases in rates.<sup>42</sup> The Act further provided that "any Judge of the Supreme Court or Exchequer Court or of any Superior Court in any Province (could) inquire ... whether such increase or diminution should be made." The application for a change in rates could be instituted by the Company or any interested party.<sup>43</sup>

Considerable discontent built up between the Company on the one hand and municipalities, independent telephone companies and the general public on the other. A select committee of the House of Commons was set up in 1904 "to inquire into and report regarding the various public telephone systems in operation in Canada and elsewhere, and

- 40. Op. Cit., 55-56 Victoria, Ch. 67, Sec. 3.
- 41. Ibid, 2 Edward VII, Ch. 41.

42. In a letter obtained from the Company's files, dated September 20, 1898 from Z.A. Lash, a lawyer who became a director in 1911, to Mr. Sise, the President, mention is made of a contract with the City of Toronto but it was his opinion that rate reductions could be effected unilaterally by the Company.

43. Apparently no use was made of this procedure, either by the Company or by any other party. See Canada, House of Commons, Select Committee on Telephone Systems, <u>Proceedings</u>, (1905), p. 403 and 687.

determine what changes, if any, are advisable in respect of the methods at present in force for furnishing telephone service to the public."<sup>44</sup>

Considerable evidence was presented but after the resignation of the chairman, Sir William Mulock, the committee was unable to provide any final report. A recommendation that legislation compelling railway companies to admit the lines of all telephone companies to their premises and compelling the telephone companies to interchange traffic on terms and conditions approved by the Railway Commission or the Governor- $\frac{45}{10}$  in-Council, was defeated. Instead, the committee found it was impossible for them to come to any conclusions or to make any recom- $\frac{46}{100}$ 

Undoubtedly a result of the inquiry was an amendment to the Charter of the Company in 1906 which placed it under the provisions of the Railway Act, 1903,  $^{47}$  and thus subject to the regulation of the Board of Railway (subsequently Transport) Commissioners for Canada (hereinafter referred to as the Board).

Under the provisions of the Railway Act, the Board is empowered, in part, to regulate all telephone companies within the 48 legislative authority of the Parliament of Canada. The Board is composed of six commissioners of whom two constitute a quorum although in special circumstances one may act on its behalf. The Board has

44. Canada, House of Commons, Select Committee on Telephone Systems, Proceedings, (1905), p.v., (Orders of Reference)

45. Ibid, p.v., (Orders of Reference)

46. Ibid, p. Xlvi (Minutes of Proceedings)

47. Ibid, p. viii, (Reports, Interim)

48. The Railway Act RSC 1952, Ch. 234, S. 380 (1) (a). Although the telephone has been declared for the benefit of Canada and is thus subject to the jurisdiction of the Parliament of Canada, the Board has only exercised its power over the two telephone companies incorporated under the powers of Parliament, The Bell Telephone Company of Canada and The British Columbia Telephone Company. full jurisdiction to enquire into any application duly filed by any interested party, <sup>50</sup> or may initiate any inquiry on its own behalf. <sup>51</sup> Orders of the Board are binding upon all parties who are subject to its control. The Governor-in-Council may vary or rescind any order of the Board. <sup>52</sup> Otherwise the findings of the Board on matters of fact are binding and conclusive, <sup>53</sup> although an appeal may be made to the Supreme Court of Canada on matters of law or of jurisdiction. <sup>54</sup>

The Board may require information from the companies in order to assist its regulatory functions. These returns shall be provided annually, <sup>55</sup> monthly, <sup>56</sup> or at such times as the Board may require. <sup>57</sup> Railway companies are required to use a uniform classification and system of accounts as prescribed by the Board, <sup>58</sup> but it is not entirely clear whether this power of the Board extends to telephone companies. <sup>59</sup>

Although the Board has additional powers over telephone companies, we shall limit our concern to the power of the Board to approve the tolls of the Bell Telephone Company of Canada, as provided under Section 380 and other relevant sections of the Act.

50.	Ibid,	Sec.	33.									
51.	Ibid,	Sec.	36.									
52.	Ibid,	Sec.	53.									
53.	Ibid,	Sec.	45.									
54.	Ibid,	Sec.	53.									
55.	Ibid,	Sec.	384.									
56.	Ibid,	Sec.	385.									
57.	Ibid,	Sec.	391.					•				
58.	Ibid,	Sec.	387.									
59.	In any	y case	e, the	Board	has	not p	rescr	ibed	accou	nting	practices	for
	telep	hone of	compani	es. S	See b	elow.	Chap	ter 4	ь. р.8	0.	-	

All telephone tolls to be charged to the public must be submitted to the Board for approval.<sup>60</sup> These tolls may provide for the grouping of messages into classes and different rates may be charged to the different classes.<sup>61</sup> The Board may, upon application, deal with matters of unreasonableness or unjust discrimination and may require the company to substitute satisfactory tolls or it may prescribe its own schedule of tolls.<sup>62</sup>

The Act does not make any provision as to how the Board is to determine an appropriate level of earnings for a regulated company, nor how the tolls for any particular service are to be established.

The major rate judgments of the Board to date have, with one exception, all resulted from applications made by the Company. The exception was the Judgment and Order of March 15, 1940 which resulted from an application of Mr. Wilfred Lacroix M.P. In addition the Board has instituted a hearing which started May 4, 1965 and lasted 23 days, but no judgment or order has been released. Table I-1 below divides the judgments into six major groups and shows the date and main object of the applications of the judgments, and a very brief summary of the results obtained. There judgments will be discussed more fully in Chapter IV below.

60. Op. Cit., Sec. 380 (2).

64. The Board of Transport Commissions for Canada,"In the matter of the application of Mr. Wilfred Lacroix, M.P., Quebec for an order or the Board directing a reduction of 25 per cent in all rates of the Bell Telephone Company of Canada", Judgment and Order, (March 15, 1940) pp. 10.

<sup>61.</sup> Ibid, Sec. 380 (5)

<sup>62. &</sup>lt;u>Ibid</u>, Sec. 380 (6) This power of the Board was added in 1938 originally as sub-section (5A) of the then Sec. 375, 2 Geo.VI, Ch. 12.

<sup>63.</sup> The only reference to this in the Act requires a company issuing a "competitive rate tariff" to provide information establishing that "the rates are compensatory". Sec. 334 (2).

## TABLE I - 1

	MAJOR JUDGMENTS OF THE	BOARD OF TRANSPORT COMMISS	IONERS GOVERNING TH	E BELL TELEPHONE COMPANY OF CANADA
Group	Date of Application	Principal Items Requested	Date of Judgment	General Results Obtained
1.	August 26, 1918 and October 15, 1918 July, 1920	Increase in toll rates) 20% increase in rates ) 20% increase in rates	April 24, 1919 (April 1, 1921 (April 12, 1921	10% increase in rates as an emergency measure 10% increase accepted Adjustment to 12%
	July 23, 1921	20% increase in rates	February 7, 1922	No adjustment allowed
2.	January 25, 1926	Increase in local ex- change rates of 10%	February 21, 1927	Minor reduction in some rates applied for by the Company
3.	August 11, 1938 - by Wilfred Lacroix, M.P.	25% reduction in rates	March 15, 1940	Request denied
4.	October 12, 1949	20% increase in rates	November 15, 1950	Application accepted in all major respects
5.	August 31, 1951	Increases in certain rates	(November 13, 1951) (February 21, 1952)	Interim increase of $5\%$ in all rates Further increase of $3.5\%$ in rates
6.	August 16, 1957 June 25, 1958	7% increase in rates 5% Rate adjustment	January 10, 1958 October 10, 1958	3% increase in rates (see Note) Application accepted

Source: Judgments of the Board of Transport Commissioners for Canada.

Note: By Order-in-Council P.C. 1958-602 the resulting Order of the Board was rescinded and the Board was directed "that, as a matter of rate-making policy, credits to tax equalization reserves shall not be regarded as necessary expenses or requirements in determining rates and charges."

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Although not bearing directly on the telephone rates or earnings of the Company, a recent decision of the Board of importance for this study resulted from an application of Industrial Wire and Cable Company Limited requesting the Board to state either: (a) the investment of the Company in the shares of Northern Electric is contrary to the provisions of the Railway Act, or (b) that the Board 65 should regulate the affairs of Northern Electric. The Board dismissed both parts of the application on a finding that (a) Northern did not come under its jurisdiction, and (b) since Northern has owned 19,000 feet of telephone line since 1895 it may be classified as a "telephone company" and "such status is sufficient authority for Bell to hold shares in Northern. <sup>66</sup> A motion to the Supreme Court of Canada to appeal the Board's decision was dismissed by the Court on April 28, 1964.

65. The Board of Transport Commissioners for Canada, "In the matter of the application of Industrial Wire and Cable Company, Limited, dated January 24, 1963 and as amended August 13, 1963", Order and Judgement (Certified Copy), (January 14, 1964), pp. 19, P.2.
66. Ibid, p. 15 and 16.

67. See the Montreal Gazette, April 30, 1964, p. 13.

#### CHAPTER II ECONOMICS OF THE TELEPHONE INDUSTRY

#### THE TELEPHONE INDUSTRY

Communication between individuals who are removed from each other may be carried on by many methods. The principle function of the telephone industry is to provide an almost instantaneous and private two-way communications service. Once connections have been established, the transmission is carried by electrical impulses travelling at the speed of light. The greatest proportion of telephones in Canada may be classified as providing private conversations. Radio can also provide as rapid a service but privacy is only available to the extent that the user has had certain frequencies reserved for his exclusive use and no other users have equipment adapted to handle those frequencies specifically reserved for others. The telephone industry does make use of radio for radio-telephone and long distance transmission using frequencies which have been specifically allotted for these purposes. To the extent that no other body acquires equipment to handle these frequencies, telephone conversations using radio may be considered as private.

The telegraph also provides high speed transmission of data but does not directly use audio inputs. The translation of data from the original source to impulses, and from impulses back to a form suitable for human usage, generally requires manually-operated electromechanical equipment which is either too slow or too expensive for

Of the total telephones in Canada at December 31, 1963, only 23.1 per cent (21.3 per cent for the Company) of the telephones are on party lines. See: D B S <u>Telephone Statistics</u>, Preliminary Report for 1963.

general usage by private individuals. This limits the usefulness of the telegraph as a means of general communication except where private, immediate, and two-way transmissions are not important.

The basic operations of a telephone system are conversion of sound waves (voice) into electrical impulses, transmission of these impulses, and reconversion back to sound at the receiving end. To the extent that other source material can be translated into electrical impulses, virtually any data can be carried by a telephone system. Since the telegraph industry also operates on the basis of transmission of electrical impulses, it can also handle a new variety of input and output devices. The ever expanding needs of business and government for the rapid transmission of data create new markets for both telephone and telegraph communication. It is in this area of meeting the demand for data transmission, as opposed to sound transmission, that the telephone and telegraph industries are in direct competition to each other.

#### UTILITY OF THE TELEPHONE

In order to use the telephone, both parties must employ both sending and receiving equipment connected to each other. The greater the number of individuals who can be contacted by telephone, the greater is the utility of the telephone system.

It is this factor which tends to make the telephone industry a "natural" monopoly.

If competition exists between two telephone companies not interconnected, customers will tend to obtain service from the company

providing them with access to the greatest number of subscribers. The alternative would be to obtain the services of both companies which would be expensive and provide duplication of at least some service.

The addition of a new subscriber to a telephone system adds to his utilities by providing him with facilities to communicate with the other subscribers. His addition to the system adds to the utility of some, but not necessarily all, of the subscribers in providing them with improved facilities for contacting him. This factor may also provide some disutility to a subscriber who receives unwanted calls. The existence of a telephone available for use but not used in itself may have a certain utility. The utility of a telephone in use can vary depending upon many characteristics of the particular call. The consumption of successive units of any good or service will provide different marginal utilities to the consumer.

The writer is not aware of any attempt to measure the utility of a telephone. The Board has accepted the principle of charging telephone subscribers on the basis of the value in service.<sup>2</sup> This involves the implicit assumption that the average total utility of a telephone depends on the number of subscribers in the local calling area. Discussion with company officials does indicate that there is a higher average calling rate as the number of telephones in the local area is increased. However, no information is available as to the relationship between the size of the area and the average number of calls made.

<sup>2.</sup> Further discussion of this topic is deferred until Chapter IV, pp.105-111.

### COMPONENTS OF A TELEPHONE PLANT

The basic components of the plant of a telephone company consist of input and output converters or sets to translate the data into electrical impulses and back again, a transmission system to carry the impulses and switching equipment to select the set to which the input is addressed.

The data to be sent must first be converted into impulses for transmission. The impulses must also be converted back into a form usable to the receiver. A component of the receiving set, in addition to the converter, is some means of indication that another subscriber wishes to establish contact. In the telephone industry, this type of equipment is described as "Station Equipment."

Once the input has been converted into impulses to be relayed by the telephone system, it is necessary to transmit it to the receiving equipment. Basically this function is performed by a pair of wires joining the two sets of equipment. In the industry this type of equipment, together with the poles and conduit to carry the wire, is identified as "Outside Plant". This is sometimes further classified as "Exchange Lines" for local service and "Toll Lines" for long distance service.

If there are more than two subscribers to the system, some procedure is necessary whereby the sender can select, or call, the receiver. If the number of subscribers is small and privacy is not important only one line could be used to connect all subscribers.

This function can be performed by a series of "rings" for each subscriber. When private communication is desired or the number of subscribers is too great for one line, it is necessary to have a selection mechanism.<sup>3</sup> In a telephone system this function is performed by "Central Office (or Exchange, or Switching) Equipment."

In addition to the basic types of telephone plants described above, a company requires two other classes of facilities. These are "Land and Buildings" to house the equipment and offices; and "General Equipment and Other" which includes trucks and cars, office equipment, etc.

The final item included in plant in service is "Telephone Plant Acquired and Sold" which represents unadjusted balances resulting from the purchase or disposal of buildings and equipment. Table II-1 below gives a breakdown of the value of the telephone plant in service for the Company as at December 31, 1964, and indicates the proportion each item is of the total.

### TABLE II - 1

The Bell Telephone Company of Canada Telephone Plant in Service December 31, 1964

(in thousands of dollars and per cent)

\$ 208,422	9.04%
796,084	34.53
468,764	20.34
777,752	33.74
53,795	2.33
351	.02
2,305,168	100.00%
	\$ 208,422 796,084 468,764 777,752 53,795 <u>351</u> 32,305,168

Source: The Bell Telephone Company of Canada

3. A very expensive alternative would be to have a separate set for each line.
### PRODUCTION VARIABLES

Although every telephone system is composed of the basic components noted above, the present state of the art is such that under different circumstances different pieces of equipment will be used to suit the varying needs.<sup>4</sup> However, before examining the variety of equipment available under each component heading, it would be useful to consider the importance of time in telephony. Time can effect the type of equipment used in two ways: the duration of the call and the time of placing the call. The longer a conversation lasts, the longer the equipment used in making the call is tied up. This basic fact can have important implications on the type of equipment put into service.

The time of placing the call can also have an important effect on the type of equipment used. Distinct patterns of telephone usage over time - during the day, week, month and year - can be found for different types of subscribers. Generally, telephone usage in business areas will be limited to business hours and will build up during the morning and afternoon with some slackening during the lunch period. Hourly calling patterns in residential areas will vary considerably depending on many characteristics of the area. The number of calls placed on various days of the week, various periods of the month, and a seasonal pattern during the year will also show a considerable amount of variation. In attempting to give service to subscribers, the telephone company will have to consider the number of calls placed during

4. We do not attempt to consider all of the production variables within a telephone system. Such a task would be beyond the scope of this thesis. Instead we shall examine some of the variables as generally found in the provision of basic telephone service.

its busiest, or peak load, periods. Thus peak load requirements must be considered in choosing the type of equipment to be installed.

Turning now to the various types of equipment, we shall first consider input-output sets. As has been previously indicated, voice is the most common type of input although it is now possible to relay inputs also from special typewriters, cards, punched (paper) tapes, and television cameras, as well as printed matter or photographs taken directly from a page and handwriting. Inputs from electrical computers are already in the form of electrical impulses so should not need special conversion. However, at the present time problems exist with this latter type of communication because the switching equipment generates "noise" which interferes with the high degree of precision required. In addition to the different types of machines required to handle the different types of inputs, there are differences in equipment designed to handle any one type of input resulting from style, speed, capabilities and auxiliary services provided.

Although the transmission of messages between telephone sets is basically provided by a pair of wires, many variations in this type of equipment also exist. The variables affecting the choice of equipment used are: distance, quality of transmission required, density of subscribers, calling pattern, and type of installation.

The distance between the two conversing parties will affect the amount of transmission lines used to carry the conversation. The conversation between two parties in a small community would not require the same amount of transmission facilities as a conversation from coast to coast. However, the conversation between next door neighbours may

require more equipment than between subscribers many blocks away from each other. Because of the necessity of central office (switching) equipment, each telephone in use must have a direct connection to its own central office. Therefore the distance a subscriber is from his central office has a direct bearing on the amount of outside equipment (lines) required to provide him with service. If a subscriber connected to one central office, it is not necessary for the second subscriber to be directly connected to the first central office. The connection will be made by using a system of "trunks"<sup>5</sup> connecting the two exchanges directly, or through other central offices.

Where the distance between the subscriber and the central office is too great, or the subscriber is mobile, radio may be used to provide the necessary connection. Radio is also frequently used to provide long distance trunking between exchanges.

The fidelity of transmission is governed by the type of wire and other equipment used to reduce noise, cross-talk and similar distrubances. Electrical impulses of the type used in telephones are subject to transmission loss depending on the type of equipment used and the distance traveled. The U.S. Army Signal Corps engineers have determined that the maximum loss should be at -30 decibels.<sup>6</sup> Telephone companies today attempt to provide better service by having a lower loss.

<sup>5.</sup> Trunking equipment consists of a number of lines or circuits connecting two points, each point servicing a larger number of subscribers than the number of circuits provided.

<sup>6.</sup> Lee, Frank: <u>ABC of The Telephone</u>, Private Publication, (1956), Vol. 3, p. 72.

Decibel loss can be reduced by the introduction into the circuit of loaded cable and repeaters. Cross-talk and other noise can be reduced by the proper installation and maintenance of wire.

The density of subscribers will affect the type of wire or cable provided. A subscriber requires the necessary circuit to the central office. Where appropriate, the wires connecting a number of subscribers may be bound together into cables for a considerable portion of the distance from the central office. Not only are there economies in the placing of a single cable in place of a number of individual wires but a further advantage from the use of cables lies in the fact that "phantom" circuits can be used. "Carrier" circuits can also be used to increase the number of circuits, although this technique is generally limited to long distance trunking. This involves, for transmission purposes only, equipment which increases the number of circuits in a cable by adding at the sending end and filtering out at the receiving end a carrier signal at a frequency high enough that no interference results with any other circuit. The introduction of one carrier wave can thus double the number of circuits provided by a given cable, and a second carrier wave would triple the number of circuits.

The calling pattern of subscribers will determine the trunking used to inter-connect central offices and line concentrators with central offices.

Trunking is used where a large number of subscriber lines are connected to a central office or line concentrator and only a limited number of circuits (trunks) are provided to join the numerous exchanges.

<sup>7.</sup> A "phantom" circuit is one which is induced on two wire circuits so that two wire pairs can be used to provide three talking circuits.

This is possible on the theory that not all subscribers will use the telephone at one time, nor will all actually using the telephone require connection with another exchange. Thus, a considerable reduction in the number of trunk circuits is possible depending on the calling habits of subscribers. If inadequate trunks are provided, subscribers may receive an "all trunks busy" (ATB) signal. Given an established calling pattern, it is possible to statistically determine the probability (P) of a subscriber receiving an ATB signal. When subscribers are likely to receive an ATB signal on an average of six out of one hundred attempts to use a trunk, this is expressed as P.O6; if this condition exists, an average of three out of one hundred cases, it is P.O3, etc. Under a given calling patern the more trunks provided the lower will be the probability of receiving the ATB signal. With a given number of trunks and an increase in the number of calls placed, the probability will be increased. It can therefore be seen that an existing calling pattern and changes in that pattern will affect the number of trunks put into use if the company wishes to maintain or improve the level of service.

Variations can also exist in the type of installation of the wire, cable and radio used for transmission purposes. Wire and cable can be carried either on poles or in underground conduit. The specific characteristics of the installation will depend on such factors as the size of cable or number of wires carried, weather and soil conditions, cost of right-of-way, local regulations, etc. The type of radio facilities used will depend on the type of service provided, i.e. whether it is for mobile telephone, for trunking, or for remote locations.

The type of switching or central office equipment employed will depend on the number of subscribers, the calling pattern and the speed of the service. These factors combine to determine whether this function will be performed manually or by machine and if the latter, the type of machine employed.

Manual switchboards were originally used for all types of calls and later restricted to mainly long distance operations. At the present time even this latter function is being replaced by the use of machine switching for long distance purposes.<sup>8</sup>

The number of subscribers in a given area will determine the size of the exchange used for switching purposes. The calling pattern, type of service and speed desired will determine the class of automatic equipment which is best suited to the particular needs. The principal classes of automatic switching equipment in use are step-by-step and crossbar, each class consisting of a number of different types.<sup>9</sup> Fully electronic equipment, although available, is not yet in use in <sup>10</sup> Canada.

8. The history of the functions of "operator" has now gone a full cycle. With the introduction of machine switching, "O" was dialed to obtain both local and long distance service. The increase in long distance calls made it necessary to split these function so that the local operator was reached by dialing "O" and the long distance operator was "llO". The introduction and use of Direct Distance Dialing (DDD) has now cut down the work load of long distance operators to the point where "O" is dialed for both local and long distance purposes.

9. For our purposes, the principal difference between these two is that step-by-step switching is electro-mechanical and when used, remains within the talking circuit. Cross-bar, on the other hand, being partly electronic, cuts itself out of the talking circuit when the connection is made and is thus available for other switching purposes.

10. The first fully electronic central office in Canada is now being installed at Montreal by the Company, initially to provide for the needs of EXPO '67.

An important characteristic of most of the components of telephone plant which is not unique to this industry but has important implications, is the fact that they are provided in lumps. For the telephone company this frequently means provision of a considerable quantity of idle facilities. The alternative would be a considerable amount of installation and rearrangement each time a new subscriber is added, which would be more costly than the carrying expenses of the excess capacity. Since the various components have different capacities this means that the average cost curve will not be smooth but will be multi-scalloped in shape.

It is also important to note that the components of telephone plant will have considerable variation in their useful life, the number of individual units required to give service and their value. This has important implications for the regulatory authorities when considering the problem of expenses incurred. The regulatory board must examine the allocation of expenditures between maintenance and repair expense and plant in service, and must further consider the appropriate determination of depreciation rates for the various components of plant in service. We shall return to this problem in Chapter IV where we examine the regulation of the Company by the Board.

#### CLASSIFICATIONS OF SERVICE

Differences in the type of technical equipment used by a telephone company to provide service may have little affect on an individual subscriber, except to the extent that it is inadequate or in

the auxilary services provided although they will make considerable cost differences. However, differences do exist in the classes of service offered to subscribers by telephone companies. Subscribers may have private (direct) lines to the central office or be on a party line. The class of the party line will depend on how many subscribers may be put on the line, not how many are actually on it. A subscriber may request, and only pay for, a two-party line and be the only party on the line, thus receiving all the benefits of a private line until another party is added. Subscribers may even have private lines connecting them directly with other subscribers, whether they are in the same area or are from coast to coast .

In the rate structure of the Company the factor of distance is partially recognized by dividing telephone service into local, extended area service (EAS), and long distance calling.

Local exchange service provides a customer with the ability to call any other subscriber within the local area at no extra charge. The larger the number of subscribers within the local area, the higher will be the basic charge. The basis of this is the argument that the telephone has greater value, the greater the number of subscribers one can potentially reach without extra charge. Within a local area service is traditionally divided into business and residence subscribers, with the former paying a higher rental rate. This is defended on the grounds that the telephone is more valuable to businessmen, and because they are likely to make a greater number of calls and these are during peak load periods.

A recognition of the number of business calls is provided by the message rate service in exchanges with more than 20,000 telephones.

The rate charged is between those for residential and (normal) business service and provides a limited number of calls at no extra charge. The number of free calls is increased as the rate is increased in the larger areas.

Extended area service has been progressively expanded by the Company since it was first introduced in 1951. This service enlarges the size of the local calling area of a city by providing toll free calls between it and neighbouring communities. Calls between neighbouring communities which are adjacent to each other will also be toll free. Subscribers in communities on the first fringe are added at no extra cost. Those in the second, third, etc., fringes are added at progressively increasing extra cost. That is a subscriber in a community on the second fringe will have rates higher than those within the first fringe and the metropolitan area, but lower than those in a third fringe community. This is in partial recognition of the extra distance from the metropolitan area. <sup>11</sup> However the higher rates are paid only by those in the fringe areas. Those in the metropolitan area are charged in accordance with the number of subscribers in that area only although they have free calling to all fringe areas.

Calls to a subscriber outside the free calling area involve an extra charge. The amount of the charge will depend on duration, time of making the call, distance, and type of service provided. Generally, the initial charge will pay for a call of limited duration, say three

<sup>11.</sup> This factor becomes more important as extended area service is introduced in rural areas. Subscribers in a large, compact and isolated community of a given size may have to pay the same rates as an equal number of subscribers located within a 15 mile radius from a smaller community. If subscribers in both areas have similar calling patterns, the cost of providing service in the latter area will be considerably greater due to the distance factor.

minutes, and an extra charge will be made for excess time. The problem created by peak loading is met by having a higher charge for daytime calls than for evening and night calls. The relatively recent (November, 1961) introduction of lower prices during the off peak night hours, after 9 p.m., created quite a change in the calling pattern. Some subscribers postponed calls until after 9 p.m. to take advantage of the lower price, and others increased the number of calls as a result of the price reduction. The end result was that instead of merely taking up the slack during an off peak period, a new peak load at approximately 9:05 p.m. was created. The greater the distance, the higher the charge.

The other distinction in the pricing of long distance service is whether the call is made station-to-station or person-to-person. The former service provides that, for pricing purposes, the timing of the call begins when the called telephone is answered. Person-to-person calling delays the start of the call until the stipulated person at the receiving end talks on the telephone. Exactly the same equipment may be used for both types although a person-to-person call requires the service of an operator whereas special equipment can be used to completely handle a station-to-station call including the preparation of a ticket indicating the amount to be billed. Person-to-person calls provide a superior service, generally add to the holding time of the call, and the company assumes a greater risk of an incomplete call. The charge to the customer is therefore higher for this type of service.

In closing this section it shoud be noted that the product of a telephone in a local exchange of 1,000 subscribers is different from the product of a telephone in a local exchange of 250,000 subscribers.

However at the present time it is not possible to quantify this difference in any useful manner.

ECONOMIC STUDIES OF THE TELEPHONE INDUSTRY

A review of the literature by this author during the course of preparation for this thesis has failed to produce any empirical studies related to the demand for telephone service.<sup>12</sup> Perhaps such studies have been limited by the inability to define the service provided as a basis for evaluation. By contrast, however, several cost studies for local exchange service have been published.<sup>13</sup>

All of these studies have been faced with the problem of defining output as referred to above. In each case output was defined as the number of telephones in service in each local exchange. The cost curves produced are the results of cross-sectional analysis. Briefly this involves determining the number of telephones in service in each local exchange and the total cost of providing this service is determined from (adjusted) accounting data. Dividing the number of telephones into the total costs would give the average cost per telephone for each local area. The results for each area can be plotted

- 12. At present an attempt is being made to study the demand and cost relationships for long distance telephone service within the Company.
- See: (A) Meyer, Charles W., The Cost Function for Local Telephone Service, Unpublished Ph. D. Thesis, The Johns Hopkins University, (1961); (B) Baltz, Richard B.: "Efficiency Incentives for Telephone Companies", Public Utilities Fortnightly, Vol. 72, No. 6, (September 12, 1963), pp. 19-27; (C) Rose, Joseph R., "Telephone Rates and Cost Behaviour", Land Economics, Vol. 26, (1950), pp. 249-57; (D) Simpson, Floyd R., "Cost Trends in the Telephone Industry", Journal of Land and Public Utilities, Vol. 21, (1945), pp. 289-294; (E) The American Telephone and Telegraph Company in Garfield, Paul J. and Lovejoy, Wallace F., Public Utility Economics, Prentice-H. Hall, Englewood Cliffs, (1964, p. 199, and (F) Barnes, David A. and Lovejoy, Wallace F., "Disequilibrium and Increasing Cost: A Study of Local Telephone Service", Land Economics vol. 41, (1965), pp. 31-40.

on graph paper and a line fitted. This type of analysis may produce results which would be comparable with the theoretical long-run cost curve. The theoretical curve should indicate the trend of costs of a firm as output is varied, at a given technology but with all factors of production varied, and should indicate the optimum size of operations. Cross-sectional analysis is an approach toward the long-run cost curve although the two concepts are not identical.

The results obtained from the cost studies indicate differences in detail but all tend to show a similar pattern. This is a "U" shape in the average cost per telephone in service as the number of telephones is increased. The general indication is a minimum average cost in the vicinity of about 5,000 telephones. The reason most frequently given for this shape is the cost of switching equipment. As the local exchange serves an increasing number of telephones there are increasing complexities in the exchange equipment and trunking requirements for inter-exchange connections. The small area serviced by one exchange experiences reducing average costs as the number of telephones is increased to the limit of the switching facilities provided by the one exchange. The introduction of a second exchange to service the same local area requires not only an addition to the central office equipment but also adequate trunking to handle the inter-exchange connections. The introduction of more exchanges will add further increases to the number of trunks required, at least one trunk to each of the previously existing offices. Thus, it is argued, the marginal cost of telephones in service will rise with additional telephones and will move above average cost.

14. Bonbright, James C, Principles of Public Utility Rates, Columbia University Press, New York, (1961), p. 16-17.

A second factor leading to increased costs per telephone has been noted by Professor Meyer.<sup>15</sup> This relates to the increasing average cost of outside equipment as the number of telephones in a local area is expanded. This rise in average investment is the combined effect of an increase in the average cost of cable and wire and a decrease in the average cost of pole lines and underground conduit.

The spreading out of subscribers and the increase in the number of inter-office trunks indicated by the rising wire milage are also reflected by the increase in investment in cable and aerial wire ... The decline (in the investment per subscriber line in pole lines and underground conduit) results from a more intensive use of the facilities ... Were it not for the spreading out of subscribers, decreasing unit cost in outside plant might prevail ... Since cable and plant account for most of the investment in outside plant (68 per cent in the area studied), the higher cost of these components appear to more than offset the economies in pole lines and conduit.

The results of cross-sectional analysis cost studies of the telephone industry are subject to many limitations. While this type of analysis may be useful in the study of an industry where the firms are free to choose the location of their plants and the markets they serve, such is not the case in the telephone, or any public utility industry. Although the concept of a public utility will be considered in the next chapter, it is sufficient for our present purposes to note that a public utility is generally required to give service within its market area. <sup>17,18</sup> For a telephone company each local calling area will have individual characteristics which will make it more or less ideally

 Meyer, Charles W: "Urban Growth Patterns and the Cost of Local Telephone Service", <u>38 Land Economics</u>, (1962), pp. 273-75.
 Ibid, p. 274.

<sup>17.</sup> See Chapter I, p. 5 above, fn. 17, for the legislation placing this requirement on the Company.

<sup>18.</sup> An individual company may transfer its "rights" to a market area to another company, but it would be very doubtful that public utility regulators would allow the complete withdrawal of service from a market area.

suited for service. Even localities with the same number of subscribers will have differences in the average length of subscriber lines, calling patterns, conditions for the construction of buildings, pole lines and conduits.

In addition to the above factors there are other practical matters affecting the average costs of local exchange service. Since a large amount of plant and equipment is required for each telephone in service, considerable careful planning should be made before any changes in central office and outside plant are instituted. Such planning must consider the future as well as the present needs of the area. Thus, two areas similar in all respects but growth patterns may be serviced by completely different equipment. Not only the growth pattern but telephone movement can have an important effect on the equipment used.

The cost studies referred to analyze the provision of local 20 exchange service only, although much of the equipment is used for both local and long distance purposes. The problem of allocating these joint costs adds considerably to the difficulties encountered in such cost studies.

19. At the end of 1964 the Company had some 4,3000,000 telephones in service but during the year ; almost 850,000 or 20% were disconnected.
20. In the United States, where these studies were made, virtually every state regulates intra-state telephone rates and the Federal Communications Commission (FCC) regulates inter-state rates. The industry is organized so that the bulk of the long distance traffic is handled by companies separate from the local (intra-state) companies. No one unit in the United States covers an area equal to Quebec and Ontario.
Another justification presented for this type of study is that the basic rate paid by subscribers generally provides an unlimited number of calls within the local calling area. Costs are thus expressed in the same terms as the basic source of revenue.

The fact remains that all cost studies examined have found that in general the average cost of a telephone in service increases as the size of the local exchange is expanded. However we must remember that the product differs with the size of the local calling area.

## IMPLICATIONS FOR REGULATION

It has been indicated that originally the pricing structure for local exchange area of the Company was based on value of service. However, we have mentioned that the present structure of local exchange rates is composed of, in part: (a) a fixed charge to residential subscribers based on the number of telephones in the local area, (b) a metered service for (small) businesses at a higher fixed charge than residential service, based on the number of subscribers, (c) a higher fixed charge for business which increases with the number of subscribers, and (d) extended area service at a fixed charge which increases as the distance from the metropolitan area is increased.

In our examination of telephone costs we have seen that costs are in part increased by (i) the number of subscribers in the area, (ii) the number of calls made, particularly during peak load hours, and (iii) the distance the call travels.

Meyer<sup>21</sup> has suggested that in the construction of a cost of service rate schedule the following factors should be considered: (1) costs to include the customer in the system, (2) costs of peak hour calling, (3) costs of a call regardless of its time, and (4) costs not allocated in a convenient manner.

21. Meyer, op. cit., pp. 187 - 194.

Does this not indicate that to some extent the cost of service principle has been introduced in the value of service rate structure?

If one were to prepare a cost of service rate structure using broad averages, is it not possible, or probable, that it would end up with the same basic characteristics as the present so called value of service rate structure? Does an increase in the average value of service, i.e. an increase in the average number of calls made, lead to an increase in the cost of service?

One of the difficulties mentioned by Meyer in the construction of a cost of service rate structure is the allocation of his fourth category of costs. One alternative suggested <sup>22</sup> is an arbitrary allocation to subscribers based on the value of service. A second suggestion is a subsidy from the government. <sup>23</sup> While a direct subsidy may not be feasible, it could take the form of a reduction in taxation. We shall return to this item in our consideration of the Income Tax Expense of the Company in Chapter IV.

22. Ibid, pp. 193-194.

23. <u>Ibid</u>, p. 194.

### SUMMARY

In this Chapter we have examined the specific function of the telephone industry and its utility to the consumer. We have noted that it is the utility of the telephone which tends to make it a "natural" monopoly.

We have also examined the basic components of telephone plant and some of the considerations taken into account in the provision of service in specific locations. We have noted that much of the equipment is provided in lumps which gives a multi-scalloped average cost curve. The problem facing regulators in the determination of maintenance and depreciation expenses has been indicated. The review of existing cost studies of the telephone industry has shown that there are rising average costs per telephone in service. Some of the difficulties in these analyses of costs have been indicated.

We have concluded the Chapter by questioning whether the rate structure is based on the value of service or the cost of service. We also briefly considered whether it is appropriate to impose taxation on a telephone company.

#### CHAPTER III

GOVERNMENT CONTROL OF BUSINESS BY PUBLIC UTILITY REGULATION THE LEGAL CONCEPT OF A PUBLIC UTILITY

Legal recognition of the concept of a special classification of some businesses as "public utilities" is comparatively new. However, government in various forms has a long history of regulation and control over business affairs. In the Middle Ages the Church, through its concepts of the just price and usuary, and the State, through the town fairs and recognition of guilds, had an early affect on the economic affairs of individuals. The law merchant, "a sort of business common law", existed but because it was developed in courts which did not maintain continuous records, has largely been lost. Under the law merchant, almost all business was subject to some regulation. Common law, developed from recorded court decisions, did develop a concept of a distinction between "common" or "public" occupations and "private" occupations. The interpretation of early American jurists of the distinction in common law between "public" and "private" business led them to the incorrect conclusion that a narrow application of regulation of business was appropriate. Carrying on the tradition of the common law only, which did divide businesses by their nature, the early American courts and legislators regulated the affairs of some businessmen. The development of commercial activity created new relationships which had not previously been dealt with in common law and thus required new methods of solution.

1. The material in this paragraph is drawn from Koontz, Harold D., <u>Government Control of Business</u>, Houghton Mifflin Company, Cambridge (1941), Chapter 1; and Troxel, Emery, <u>Economics of</u> <u>Public Utilities</u>, Rinehart and Company, Inc., New York (1947), <u>Chapter 1</u>. The legal concept of a public utility has been subjected to its most careful scrutiny in the United States.<sup>2</sup> In that country legislators are constrained by the provisions of the Constitution and its Amendments. The sections relevant to the regulation of business are contained in the Fifth and Fourteenth Amendments which say, in part, respectively:

"No person shall ... be deprived of life, liberty, or property, without due process of law, nor shall private property be taken for public use, without just compensation" and

"... nor shall any State deprive a person of life, liberty, or property without due process of law."

Since a "person" includes an incorporated company, and the rights of property include its usufruct, there is a considerable volume of legal decisions which attempt to define the application of "due process" and "just compensation" as applied to public utilities.

In contrast to the American circumstances the Canadian constitutional problem is not "what regulation can be upheld in the courts" but "what legislative body has power to regulate". Very briefly, the provisions of section 91 and 92 of the British North America Act the Federal government is given power over items of national importance and Provincial governments power over items of a local or private nature in the Province. An overriding clause of section 92, 10 (c) in the Act does allow the Parliament of Canada to declare any work "to be for the general advantage of Canada" and thus subject to its jurisdiction.<sup>3</sup> Thus as A.W. Currie has

<sup>2.</sup> See: Welch, Francis X, Cases and Text on Public Utility Regulation, Public Utilities Reports Inc., Washington (1961)for a review of some of the leading cases.

<sup>3.</sup> We have seen in Chapter I, p. 3, above when the Federal government declared the telephone to be "to the general advantage of Canada", although they have limited the exercise of their power to Wederally incorporated companies.

noted "in a federal state like Canada the question often arises as to whether the provincial or Dominion government has control but this situation must be distinguished from the American difficulty that <u>no</u> government may have jurisdiction".<sup>4</sup> He also mentions that "legislation bringing business under government control and the decisions of the commissions regarding rates are, within broad limits, accepted by the courts as valid. Thus the virtually continuous litigation over public utility rates in the United States has been absent in Canada."<sup>5</sup> In Canada the types of businesses subjected to regulation are similar to the later experience in the United States <sup>6</sup> when as we shall see shortly, the Supreme Court became more liberal in the application of public utility status.

The original concept of a public utility as developed in the United States was intended to curb the monopolistic power of business affected with a public interest.<sup>7</sup> The concept of public interest was developed in common law, but defects in the common law as they developed could be remedied by legislation adapted to the changes of time and circumstances.

The first state regulation of the telephone industry in the United States was established in Wisconsin in 1907, <sup>8</sup> a year after regulation was applied in Canada. In 1910 the Interstate Commerce Act gave the Interstate Commerce Commission responsibility over the rate structure for interstate (but not foreign) telephone calls.<sup>9</sup>

5. Ibid.

6. See Ibid for a discussion of the industries regulated by Federal and Provincial governments.

7. Munn v Illinois; 94 U.S. 113, (1877).

8. Garfield and Lovejoy, op. cit., p. 450.

9. Koontz, op. cit, p. 380.

Currie, A.W. "Rate Control on Canadian Public Utilities" Canadian Journal of Economics and Political Science, Vol. 12, (1946) p. 148, fn. 4., (emphasis supplied).

Public regulation was applied by the legislators to many other industries. However in 1923 Mr. Justice Taft indicated three classes of businesses said to be clothed with a public interest justifying some public regulation:

Those which are carried on under the authority of a public grant of privileges which either expressly or implicitly imposes the affirmative duty of rendering a public service demanded of any member of the public ...

Certain occupations, regarded as exceptional, the public interest attaching to which, recognized from earliest times, has survived the period of arbitrary laws by Parliament or colonial legislatures for regulating all trades and callings ... and

Businesses which, though not public at their inception may be fairly said to have risen to be such, and have become subject in consequence to some government regulation.<sup>10</sup>

The first two classes should present no problems as to the application of regulation. The problem is with the third class and under what circumstances a business becomes "public". Reviewing past cases the Court in 1923 was unable to specify the circumstances which elevated a business from private to "affected with the public interest."

In nearly all the businesses included under the third head above, the thing which gave the public interest was the indispensable nature of the service and the exhorbitant charges and arbitrary control to which the public might be subjected without regulation.<sup>11</sup>

The legal requirements at that time would thus appear to be the necessity of the product and the product is supplied under monopoly, or near monopoly conditions, whether or not the monopolist exercises his powers to control the market.

11. Ibid, Welch, op. cit., p. 31.

Wolff Packing Co. v Court of Industrial Relations, 262 U.S. 522, (1923).

During the next decade the Court rejected many attempts to add to the list of industries which had risen to the state of being public. <sup>12</sup> The economic chaos created by the Depression turned the legislators and the Courts to look for new methods of restoring some semblance of order to business affairs. Led by Mr. Justice Brandeis in his famous dissent in the New State Ice case in 1932<sup>13</sup> a new approach won the day two years later.

The Nebbia case in 1934 tested the right of the State of New York to apply regulation to the price of milk. In its decision the Court said:

If the law-making body within its sphere of government concludes that the conditions or practices in an industry make unrestricted competition an inadequate safeguard of the consumer's interests, produce waste harmful to the public, threaten ultimately to cut off the supply of a commodity needed by the public, or portend the destruction of the industry itself, appropriate statutes passed in an honest effort to correct the threatened consequences may not be set aside because the regulation adopted fixes prices reasonably deemed by the legislature to be fair to those engaged in the industry and to the consuming public.

The concept originally conceived to protect the consumer from the abuses of monopoly power has now been twisted to provide that type of power, "regulated" by a government board, to those unable to withstand the rigors of competition. The result permitted the application of regulation to many businesses where ten years earlier it would have been rejected.<sup>15</sup>

- 12. Tyson & Brothers, Inc. v Banton, 273 U.S. 718, (1927); Ribnik v McBride, 227 U.S. 350, (1928); Williams v Standard Oil Co., 278 U.S. 235, (1929).
- 13. New State Ice Co. v Liebman, 285 U.S. 262, (1932).
- 14. Nebbia v People of the State of New York, 291 U.S. 502, (1934).
- Compare Ribnik v McBride (1928) op. cit., rejecting the application of regulation to employment agencies and Olsen v Nebraska 313 U.S. 239, (1941), reversing the earlier ruling.

The legal concept in the United States of the circumstances allowing governmental regulation of prices is not capable of exact definition. It has been indicated that the legal concept is not static, but has changed over time. There should be little difficulty in applying the concept to those businesses which historically have been regulated, or to those which have been granted monopoly rights by the government. Since the Nebbia case, the extension of the concept to the third class of businesses mentioned by Mr. Justice Taft has been relaxed considerably.

### THE ECONOMIC CONCEPT OF A PUBLIC UTILITY

The economic concept of a public utility is no more explicit than the ill-defined legal concept. Although the economic concept is more restrictive, an analysis of the conditions leading to public utility status does not provide a sharp distinction between those industries which should, or should not, be regulated. In economics, the status of public utility is generally restricted to such industries as transportation, electricity, water, gas and telephone, although other industries have many similar characteristics.

A fundamental aspect of businesses subjected to regulation is the necessity of the good or service. In economic terms this can be measured by the elasticity of demand. This refers, under given demand conditions, to the change in the number of units demanded as a result of a price change. If as a result of a given change in price the quantity demanded responds in a greater or lesser proportion, demand is said to be elastic or inelastic. Under the given demand

conditions the amount of a necessity purchased by consumers should remain relatively constant irrespective of changes in the price of the service. Thus a test of necessity and hence a test of the appropriateness of public utility status is that demand for the service is inelastic as to price.

A second characteristic of public utilities is that the service is supplied, or tends to be supplied, under monopolistic conditions. This factor has led to the common reference to public utilities as being so-called "natural" monopolies. This condition results from their technical characteristics. Almost all utilities provide a service which is non-storable; to use it the consumer must have it available where and when it is desired. This requires an extensive distribution system, generally requiring a large investment in plant and equipment. These facilities will have to provide the service sporadically, although demand will be greatest at certain times. The plant will be used at capacity, or near capacity, during these periods of peak load only; the balance of the time a considerable portion will be idle. A utility firm therefore faces a large fixed cost and except for the period of the peak load, can supply the service for a very low marginal, as compared to average, cost. Under these conditions competition cannot survive.

We have already noted<sup>16</sup> that in the telephone industry it is demand which tends to produce the monopolistic conditions. The costs of providing a duplication of service are so great and the benefits received from a second telephone service are so small that competition could not exist.

16. See above Chapter II, p. 26,

# THE POLITICAL CONCEPT OF A PUBLIC UTILITY

The third concept of a public utility is the political one. Under this heading are a number of items which, although some may be important, cannot be subjected to as careful analysis as the legal or economic concepts. Emergency, national interest in the welfare of the industry and the conservation of natural resources are factors which, when properly applied, are valid reasons for some degree of governmental control of an industry. Political action has been used on occasion to "assist" an industry faced with "too active" competition, particularly if a large number of small producers are faced with a small number of buyers or a monopsony. The development of an industry in competition with an already regulated industry may also be required to submit to regulation, although the question may be whether regulation of any sort is applicable. No hard and fast rules could be drawn but if there is competition between the "industries," one of which is regulated, and there are a number of firms in each market area, it might be appropriate to remove at least some of the constraints of regulation applicable to the regulated industry.

To summarize, the following is a list of tests of public utility status: 18

	A Legar	_L.e	Devotion of Property to a Public Use					
		2.	The Historical Test					
		3.	The Franchise Test					
	B Economic	1.	Necessity, A Fundamental Test					
		2.	The Test of Monopoly					
	C Political	l.	Excessive Competition					
		2.	The Test of Emergency					
		3.	Competition with Regulated Industries					
		4.	The Test of Conservation of Resources					
		5.	The The National Interest in the Welfare					
			of the Industry					
	_	6.	The Test of Legislative Discretion					
17.	See Canada, Royal Commission on Transportation, Report, Ottawa,							
	(1961-62), (MacPherson Commission), Vol. II.ch. 3 which suggests							
	relaxation of regulation applied to railways due to competition							
	from the trucking industry.							

Clemens, Eli W., Economics and Public Utilities, Appleton-Century-Crofts, Inc., New York, (1950), p. 21 et. seq. 18.

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# THE GOALS OF REGULATION

In economic terms the goals of regulation are, or should be, to attempt to have the industry act towards the consumer in a way similar to the way it would act if competition within the industry actually existed. The principal concern of regulation should be to insure that the consumer receives adequate service at a reasonable price and thus remove the arbitrary and discriminatory actions, or potential actions of the monopolist. Further elaboration of this principle of "basic justice" indicates the problems facing the regulatory body. What is "reasonable service?" To what extent should new developments and innovations be allowed, or required, at the expense of already existing facilities? One writer, after studying the history of the regulated gas industry in Great Britain and the development of electricity, has concluded that "the (electrical) industry has expanded in spite of, and not because of, detailed government regulation." The regulators, in protecting the interests of the gas industry, stifled the growth of the newly developing electrical industry which offered competition to gas.

Most regulatory authorities attempt to regulate prices in order to protect the small consumer from "unjust discrimination." The fact that the heavy fixed costs are likely to produce decreasing average costs with increased output requires some arbitrary method of fixed cost allocation. Any demand during off-peak periods can be supplied at a very low marginal cost - but the problem is what proportion of fixed costs should be allocated to this demand in order to have an equitable price structure.

<sup>19.</sup> Jervis, F.R.J.: Price Control, Hutchinson's Scientific and Technical Publications, London, (1949), p. 50.

The pricing structure might be such that revenues should be adequate to cover all reasonable costs.<sup>20</sup> This again introduces many problems. The actual, and to some extent potential, costs incurred can be measured by conventional accounting procedures which exclude the returns to some investors as a cost. But these procedures do not provide any method of determining what the economic costs could, or should, be. Comparisons between individual firms can be facilitated through the implementation of a uniform system of accounts. However, since each firm is likely to be a monopolist in its own market area, pecularities of each area may make cost comparisons difficult. Inefficiencies may be difficult to detect and if allowed to remain undetected, their cost will be included in "reasonable costs." Another complication is the quantification of the economic, but not accounting, cost of a reasonable return for investors.

#### RETURNS TO INVESTORS

The finances of any business activity are derived from three major classifications:

- Funds obtained at no (direct) cost to the borrower, generally, but not necessarily, outstanding only for a very short period of time;
- Funds obtained under a contractual obligation to pay a specified rate of return; and
- 3. Funds obtained, generally for the life of the firm, with no stipulated rate of return, to be paid arbitrarily out of the residual "profits" after recognizing the rights of all others.
- 20. Although this is not economically sound, it is the type of price regulation that has been traditionally applied in the public utilities field.

Basically, these funds are provided by trade creditors, bondholders, and shareholders although some items such as convertible bonds and preferred shares cloud the issue.

The classification creating the greatest difficulty is the third one. The first two groups are contractually committed to a specific rate of return, nil for class one and the contracted rate of interest for class two. The motives of the first class are likely to be the obtaining of the sale of their products to the firm and, although the time period is short, they run the risk of bankruptcy between the time of rendering the good or service and the date of payment. The motive of the second class is a continuing, generally stable, stream of money income with repayment of the loan at maturity. Covering a longer time period than the first class, the lender generally requires certain stipulations and guarantees of performance as security against the risks involved.

The third class, the shareholder, has no guarantees and bears the greatest risk. The motives are much more difficult to evaluate but the monetary motives are likely to include some amount of recurring payment and some amount of increase in value of the original investment. Because their rights are the rights of remaindermen and can only be determined in the present and because of the vagarities of business conditions, their decisions can only be based on expectations of the future. But the future is full of uncertainties. It is possible that shareholders' expectations may prove to be greatlyexceeded or grossly exaggerated.

Turning to the field of public utilities, it should be necessary to establish a pricing structure which will not provide for the exploitation of the consumer nor the exploitation of the investor, Excessive revenues result from too high a price for the service and therefore exploit the consumer; too low a price provides inadequate revenues to provide for the investor. The problem is to provide adequate revenues in the future such that all reasonable (accounting) costs are met and the returns to investors do not provide for either type of exploitation and are thus reasonable. It is therefore necessary for the regulatory body to determine some method of evaluating the appropriateness of the returns to be allowed to investors.

# THE RATE BASE

The first step in this process is to choose an appropriate base against which to compare the operating results. Although many bases could be used for this purpose, the principal concern should be that the one used is related to the amount invested in the company, or the value of the assets. The base generally used is some item, or combination of items shown on the balance sheet.

If the equity side of the balance sheet is used as the base, the regulators are in effect "looking through" the company to the returns of investors. Since the returns to bondholders are fixed, the principal concern is to determine an appropriate rate for shareholders. The most restrictive regulation to employ would be to limit earnings to a fixed dividend.<sup>21</sup> The utility would be allowed to maintain a "dividend

21. For variations of this see Becker, Arthur Peter, "Fixed Dividends for All Public Utility Stock", Journal of Land and Public Utility Economics, Vol. 21 (1945), pp. 243-249; and Bauer John: Transforming Public Utility Regulation, Harper & Brothers, New York (1950). This type of regulation, however, has not been put into practice.

equalization reserve" to provide protection of the dividend payment if earnings are inadequate. Such regulation would be very difficult to apply. Although managerial incentives will be more fully discussed below, this type of regulation provides the least incentive for efficient operations. In addition, as various factors bearing on costs and revenues change over time,<sup>22</sup> it is likely to produce the most frequent revision of prices, and thus an expensive regulatory process. The amount of internally generated funds would be virtually limited to the accumulated depreciation. Under conditions of a stable or declining price level, no expansion of the utilities activities, or little or no obsolescence, there would seldom be a necessity for new funds. To the extent that additional funds are required, they

22. An indication of the considerable fluctuation of Operating Revenue and Net Income as reported by the three provincial government-owned telephone systems in Canada is given in the following table:

Manito	ba		Saskatcher	wan	Alberta	
Year	Operating Revenue	g Net Income	Operating Revenue	Net Income	Operating Revenue	Net Income
1963 1962 1961 1960 1959	(000) 29,076 27,528 25,237 23,281 21,291	(31,330) 814,720 559,393 699,557 670,926	(000) 25,975 23,683 24,432 20,285 18,923	4,158,271 3,670,972 3,253,555 1,955,639 1,614,056	(000) 41,039 36,989 32,960 29,545 26,243	1,214,713 2,220,284 3,312,367 2,898,900 2,769,735

() denotes Loss

Source: D B S, Telephone Statistics, Preliminary Report on Large Telephone Systems, for years indicated. would have to be obtained through the issue of new securities. Although it is speculation, it is unlikely that new share issues would be favourably received since one of the probable incentives for this type of investment, capital gain, has essentially been removed, but the risks remain. If the funds are raised by issuing bonds only, the risks of both shareholders and bondholders are increased with the likely effect of a higher debt cost.

A less restrictive method of regulation would be to allow the utility to earn a fixed amount per share in excess of the dividend requirement.<sup>23</sup> This procedure then allows for some addition to retained earnings and thus alleviates some of the risks. However, it will be necessary for the regulating body to determine a minimum debt ratio. Although debt financing would be cheaper than equity financing, the attraction of the cost-free retained earnings may lead the company to rely too heavily on the issue of shares as a source of funds. The appropriate debt ratio is difficult to determine and would change over time as a result of market, and other conditions.

The requirement for a stipulated debt ratio would be eliminated if the allowable earnings of the company were regulated to a fixed percentage of capital, both debt and equity.<sup>24</sup> Under this type of regulation there would be an incentive for management to optimize debt financing since the benefits would accrue to shareholders and thus increase their returns. Efficiency and cost reduction would be encouraged, at least until the maximum earnings are attained.

<sup>23.</sup> As will be more fully discussed in Chapter IV, this is the type of regulation presently utilized by the Board in its evaluation of the Company.

<sup>24.</sup> This is the type of regulation now being sought by the Bell Telephone Company. See its "Submission to the Board of Transport Commissioners" (November 28, 1964.)

Discussion of the problem of retaining these incentives will be deferred until we have concluded our discussion of earnings bases and rates.

In the United States the regulation of public utility earnings has used assets as the rate base. In the early days of regulation, i.e. immediately after the Munn Case, the legislators were free to determine the reasonableness of rates. In 1898 this legislative phase passed away<sup>25</sup> with the ruling of the Supreme Court in the Smyth v Ames Case. The Court held that the reasonableness of rates must be subjected to judicial review. As to what was reasonable, the Court held:

" ... that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount or market value of its bonds and stocks, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.  $^{\prime\prime 2}$ 

 Anderson, William H., "The Supreme Court and Recent Public Utility Valuation Theory", Land Economics, Vol. 21, (1945), pp. 12-22. See also Welch, Francis X., "Impact of the Hope Natural Gas Decision on Commission Regulation"; Public Utilities Fortnightly, Vol. 33, No. 3, (Feb. 3, 1944), pp. 139-151.
 Smyth v Ames, 169 U.S. 466, (1898).
 Ibid, p. 546-47.

During the period of "fair value" regulation, reproduction 28 cost was considered to be the most important basis of valuation. The importance of reproduction cost, and the process of judicial review, has been somewhat reduced<sup>29</sup> by the decision rendered in the Hope Natural Gas Case.<sup>30</sup> In this case the Court held that it was the "end results" not the theory, but the impact - which governed whether rates were reasonable or not. However, in evaluating the end results, the Court must be shown the formula used by the regulatory commission. The commission cannot merely provide for an "equitable" profit in absolute terms, it must be related to some base.<sup>31</sup>

The determination of an appropriate asset valuation to be used as a base for rate regulation presents numerous problems. The accounting concept of historical cost, or the value given in exchange could be used as a starting point but difficulties were encountered in the early days of regulation. When such a value is applied, it is assumed that value has been determined on the basis of an arms-length agreement and has been properly recorded. However, it was not uncommon to find circumstances where assets or services were exchanged between parties not at arms-length, or the recorded values were overstated.

- 28. See Welch "Impact of the Hope Natural Gas Decision on Commission Regulation" Op. Cit., p. 141-142 for citations from eleven major rate cases indicating "the crescendo and dominuendo of the court's favouritism for the reproduction cost theory."
- But only in those jurisdictions which have not required "fair value" in their regulation. Welch, <u>op. cit.</u>, p. 149 lists nine states and the District of Columbia as still adhering to "fair value."
   Federal Power Commission v Hope Natural Gas Co., 320 U.S. 591, (1944).
- 31. "The rate-making process can now consist fundamentally of a determination of the reasonable cost of the service involved and of a reasonable profit for the utility whose rates are fixed." Ferguson, H. I.: Why is a Rate Base? Public Utilities Fortnightly, Vol. 30, (June 19, 1947), p. 817. See Commonwealth Telephone & Wisconsin Public Service Commission, 71 PUR (NS) 65, (1947) where this approach was attempted and upset by the Court.

Difficulties in application were also encountered due to the lack of any uniform system of accounts. The latter difficulty can be largely eliminated with the adoption by the regulatory body of a uniform system, as most have done.<sup>32</sup> The former situation has been provided for in such systems but differences exist as to the appropriate handling of the resulting balances.<sup>33</sup>

Once a basis of recording the asset has been agreed upon, there are further problems in determining its subsequent value. Due to a multitude of factors, such as new technology, changing market conditions, imprudent policy, etc., the original asset may no longer be used or useful. Should its value be included in the base? If the answer is no, it could be possible that the retirement of plant due to obsolescence may be retarded and the consumer is not provided with up-to-date facilites or service. If the answer is yes, the higher amount of return available to the company may result in unnecessary plant, with the consumer being required to pay an unnecessarily high rate. The two results mentioned will merely pass the disadvantage along to the consumer, and the investors are fully protected. An alternative would require some evaluation as to what losses should be borne by consumers and what losses should be borne by investors. This procedure would create the difficulty of deciding how to deal with these unusual items. In actual practice, some regulatory bodies have provided that the unabsorbed costs of obsolete equipment are removed from the rate base but these costs may be included in allowable expenses.<sup>34</sup>

 Thus the Federal Communications System has adopted a uniform system for railways and telephone companies, and similar systems have been accepted by the Board of Transport Commissioners.
 Paton, W.A., "Accounting Policies of the Federal Power Commission," Journal of Accountancy, Vol. 77, (June 1944), pp. 432-450.
 Bonbright, James C., Op. Cit., pp. 213-214.

Accepting that the cost of all plant included in the base for rate purposes is used and useful, there is the problem of determining the appropriate value to use over time. Various factors will affect asset values, such as changing reproduction costs and the changing value of the dollar. One value, the earning power of the assets, would be inappropriate since the attempt is to determine a value upon which the earning power is to be based.

Reproduction costs may be estimated by an appraisal based on the costs today of installing the equipment actually in service, or by determining the costs of providing service today if the company were to start fresh. Such appraisals are essentially matters of opinion only and are subjected to wildly differing valuations. Due to these differences, it would then be necessary to determine which appraisal is the most appropriate. A further complication is the cost of appraisals. With a large value invested in fixed assets the cost may vary from onethird of one per cent to two per cent of the final valuation.

An alternative approach to an attempt to reflect current values of plant would be through the use of a price index. This would require the selection of an appropriate index depending on the purpose for allowing recognition of the changing price levels. If the intention is to maintain the "integrity of the assets" the index to be used should reflect their price change of the specific items. If the intention is to protect the values of the investors, then a general index, such as the consumers' price index, would appear to be most appropriate. In this latter case the index should be applied only to the shareholders' equity section.

35. Troxel, Emery, op. cit., p. 294.

There is of course the question as to whether any adjustment of the historical cost is necessary. Conventional financial accounting practices on this continent generally do not provide for such changes in value.<sup>36</sup> Non-utility companies do not have the same constraints on price changes, however, and to the extent that prices are set by competitive forces, some offset for changing values of plant may be reflected through changing levels of profit. In the field of public utilities the same result might be obtained by adjusting the allowable rate of return on the base valued at historic cost.

Another problem in the valuation of the assets for rate purposes is the treatment of depreciation. This subject is of importance both as to the amount to be allowed as an expense in any one year and as to the treatment of the accumulated balance, or "Reserve for Depreciation." The recognition of depreciation as an expense has been the subject of a long history<sup>37</sup> which will not be reviewed here. Discussions of regulatory control of the amount of depreciation expense will be deferred to the section dealing with expenses. The problem to be considered here is the calculation of the base for rate purposes and whether the base should, or should not, be reduced by the accumulated depreciation. The argument has been put forward that if it is deducted, the company will be entitled to earn the allowable rate on a diminishing base and would have to be constantly reducing rates charged to customers.<sup>38</sup> However, to the extent that depreciation has been charged as an allowable expense and it represents

<sup>36.</sup> Appraisals are quite common for take-over or quasi-reorganization purposes. See also the financial statements of Imperial Tobacco from 1961, which are probably the only statements which reflect the application of price indices published in Canada.

<sup>37.</sup> See May, George O., Financial Accounting, The Macmillan Company, New York, (1943), especially Chapters VII and VIII.

<sup>38.</sup> See Paton, op. cit., p. 458 for a more detailed exposition of this argument. Although he presents this argument, he does not concur with it.
funds collected from customers to provide for the recovery of the asset value, the company has funds available for reinvestment in plant and thus the value for rate base purposes could be maintained.

We have seen that each method of determining an appropriate base creates certain problems. We shall now consider some of the implications each method has on regulation.

Regulation on the basis of some combination of equities implies that all operations of the company are regulated. To determine the rate of return to investors, all revenues and expenses are included in arriving at net income. This means that all activities of the company which affect revenues and expenses should be examined by the regulatory board. If a company were to accumulate an excess amount of working capital, or expand plant beyond that amount necessary for the provision of reasonable service, the investors are entitled to receive their "fair return." If some of the funds are invested in the equities of other companies, the regulators should ascertain whether the return on these investments is at least as high as the "fair return" of the regulated company. If the regulated company is allowed to engage in activities which are beyond the scope of the regulators, they should be very careful to investigate and ensure that an appropriate return is received.

If the retained earnings are to be included in the base, the regulators must see that proper procedures are followed in the write-off of extraordinary losses. Otherwise, the recording of such occurrences may be deferred as long as possible in order to maintain the highest possible retained earnings, and thus the highest earnings base.

<sup>39.</sup> An examination of the Annual Reports of the Company discloses that the only years when depreciation expense has exceeded the additions to plant were 1943 and 1944. At that time restrictions imposed by the War prevented expansion of service.

The regulation of the earnings of a public utility by means of a "fair return" on assets introduces the numerous problems of the appropriate basis of valuation as discussed above. Under these circumstances, however, it is possible for the authorities to exclude those assets which are used to provide non-regulated services, together with their related income, from the determination of the fair return.

On balance it would appear that some form of return on equities is easier to apply than a return based on assets.

"It is interesting to note that the United States Civil Aeronautics Board, profiting by previous experience, has tried to escape the entanglements of valuation of physical property. In exercising its rate-making functions the Board has never and does not now measure the reasonableness of the rate in terms of a fair return upon the so-called fair value of the property used and useful in the public service ... We believe that experience has proved that (reproduction cost less depreciation) method to be administratively and economically unsound: its application to public regulated enterprise during the past four decades has placed upon State and Federal regulatory agencies a burdensome, complex, expensive and futile task ... We believe ... that the rate of return should be predicated upon the funds which have been actually and . legitimately invested in the transportation enterprise ... We accordingly regard reproduction cost as irrelevant and immaterial to a fair and reasonable rate and evidence of this type will not be admitted to the record in rate proceedings ... " American Air, Mail Rates, 3 C.A.B. (1942), 788-9.

It is not possible to generalize a philosophy of rate base determination in Canada. Without the degree of judicial review found in the United States, legislators and to some extent regulatory boards, are free to determine the method which best suits the particular case.

40. A. W. Currie, op. cit., p. 148-9, fn. 6.

41. See above, Chapter I, p. 22.

## THE RATE OF RETURN

Once the appropriate base for rate purposes has been determined, it is then necessary to ascertain an appropriate rate to use. The difficulties encountered in determining the rate base are minimal in comparison with those of the rate. It is virtually impossible to obtain objective criteria against which to evaluate the rate of return or yield. In the ideal world of perfect certainty this should be the market rate of interest. With the uncertain conditions of the real world, the evaluation of the future is largely determined by subjective factors. Examination of empirical data has not as yet completely explained investors' reactions to such factors as debt ratio, earnings retention vs dividend payout, income taxes or the measurement of risk. While it is possible to ascertain the present (cash) cost of capital, considerable difficulty is encountered in attempting to evaluate it as an appropriate rate of return. Part of the problem is to determine the amount of earnings in excess of dividends which is necessary to maintain a reasonable cost of capital. Some provision must be made to provide for the contingencies inherent in any commercial endeavour.

The return to shareholders is the item creating the most difficulty when attempting to establish a "fair return" on the assets employed. The returns to bondholders are contractually established when the bonds are issued and will be determined by market factors and the financial condition of the utility at that time. The returns to shareholders, are not fixed, except for prior rights of preferred shareholders, nor has any regulatory body seen fit to guarantee these returns.

42. See Friend, Irwin and Puckett, Marshall: "Dividends and Stock Prices", American Economic Review, Vol. 34, (1964), pp. 656-682.

 43. See: Thatcher, Lionel W., "Cost-of-Capital Techniques Employed in Determining the Rate of Return for Public Utilities"; Land Economics, Vol. 30 (1954), pp. 85-111.

68

Several criteria have been suggested to evaluate the reasonableness of the rate of return to shareholders. These include: (1) the 44 comparable risk, (2) credit maintenance, and (3) attraction of capital. The measurement of comparable risk would be indeed very difficult. Each industry will have different degrees of risk due to the nature of their product. By their nature, public utilities are, or should be, necessities and are therefore less risky than most other types of business enterprise. Also each individual company will have individual risk factors which will differentiate it from the rest of the industry.

The ability of a utility to attract capital funds at reasonable cost would appear to be the most valid criteria since it indicates the evaluation of risk and credit maintenance made by the investors. If the utility is unable to obtain funds at reasonable cost, future expansion will either be curtailed or be provided under conditions of excessive cost. At the same time legitimate rights of owners of existing securities should be protected. If the utility is able to earn more than a "reasonable" rate of return, the shareholders are unnecessarily rewarded at the expense of consumers. If the allowed return is less than "reasonable", investors (bondholders and shareholders) will be faced with greater risks and future borrowing will cost more than would be necessary.

Attempts to quantify a reasonable return are at best subjective evaluations. It is generally agreed by expert witnesses that some return in excess of the cash cost of capital is necessary. The item in dispute is how much excess is reasonable. One approach is to assume that the market value of shares should not be allowed to fall below book value.

44. Morrissey, Fred P.; "A Reconsideration of the Cost of Capital and a Reasonable Rate of Return," Land Economics Vol. 31, (1955), p. 229.

More specifically, it has been suggested that "earnings should be sufficiently high that additional stock can be sold at all times at no less than book value."<sup>45</sup> Others believe that provision must be made for the effects of inflation when providing for a rate of return. "In order to prevent gradual expropriation of utility property in the event of inflation, the rate of return should contain an inflation adjustment which is applied only to the common stock equity. Such an adjustment 46 is not necessary to attract new capital but it is fair and equitable." Differences of this nature, and other factors, result in imprecise recommendations to regulators commissions as to a reasonable cost of 47 capital.

Another factor of considerable importance when considering a rate of return is the effect it has on managerial efficiency. In nonregulated industries competitive forces impel individual companies to reduce costs in order to maximize profits or even to survive if active rivalry for markets is present. Regulated public utilities have far less, if any, pressure exerted to reduce costs or improve efficiency. This does not necessarily mean that there are no incentives for utilities to reduce cost. The existence of a number of firms in the same industry which are regulated by the same authority may develop a degree of greater expertise by the regulators, and lead to some degree of "rivalry" between

Kosh, David A.; "Recent Trends in Cost of Capital," Public Utilities 45. Fortnightly, Vol. 72, (Sept. 26, 1963), p. 24. Morton, Walter A.; "Rate of Return and Value of Money in Public

46. Utilities," Land Economics, Vol. 28, (1952) p. 91.

- Morrissey, op. cit. especially pp. 234-239. 47.
- 48. "The 'cost plus' type of deal the utilities now have has not much resemblance to the profit and loss system that keeps other industries on their toes." Untereiner, Ray E., "The Public Interest in Public Utility Regulation;" Public Utilities Fortnightly, Vol. 72, (October 10, 1963) p. 71.

the firms. 49 The "regulatory lag" also, particularly during periods of rising costs, may require some element of concern for efficiency by management. This is not to suggest, however, that regulation is able to replace competition.

## CRITICISMS OF THE REGULATORY PROCESS

Any system which arbitrarily controls an important segment of business activity is bound to receive criticism. On the basis of "damned if you do, damned if you don't," commissions have been attacked for doing too much or too little in their attempts to provide effective regulation.

It has been suggested that there are at least two areas where the regulatory commissions need more specific information if effective control is to be maintained. Further study is needed in the areas of demand behaviour and supervision and regulation of expenditures. 51 It has not been uncommon in the past for regulators to fail to study 52 adequately the reasons for company requests.

- Hankin, Gregory; "The Effect of the Hope Natural Gas Case on the 51. Future of Rate Regulation;" Public Utilities Fortnightly, Vol. 33, (Feb. 3, 1944), p. 138.
- . 52. See Knappen, Laurence S.; "Wage Rate Increases Versus Telephone Rate Increases," Land Economics, Vol. 37, (1961), pp. 59-67 where it is argued that the company's claim for higher rates caused by higher wages is not justified. The average wages per telephone declined due to a lower number of employees and an increase in the number of telephones.

See also Ashley, John W.; "A Suggestion for Improving Public Utility Regulation;" Land Economics, Vol. 36, (1960), pp. 158-163, where it is argued that in California ("a vigorous and effective Commission") a company was allowed the construction of an uneconomical gas pipe line due to reliance on the applican's evidence only.

See also below p.84, where the Board apparently allowed the Company to charge depreciation on expenditures originally written off as expenses but subsequently transferred to fixed assets.

<sup>49.</sup> 

Baltz, op. cit., p. 26 Troxel, Emery; "Demand Elasticity and Control of Public Utility 50. Earnings;" American Economic Review, Vol. 38, (1948), p. 382.

It has also been suggested that procedures should be instituted to allow a reward for efficient management or a penalty for inefficient management by providing a higher or lower rate of return. However, as presently constituted, commissions may not have the power to make such adjustments to the rate of return. Such adjustments were utilized in the British Sliding Scale of dividends.<sup>54</sup> Under such a policy dividends were allowed to be increased only when consumer prices were reduced. Although suitable under conditions of stable prices, it proved to be difficult to continue due to rising prices.

The whole process of regulation has been attacked by Horace M. Gray.<sup>55</sup> It is his belief that the continuation of regulation has merely reinforced the monopoly powers of industries subjected to such control. In his opinion, regulation has failed to achieve the justification for its existence as a reasonable substitute for competition. In the place of regulation he advocates the use of "socially superior institutions" presumably government ownership and competition.

Government ownership may solve some of the problems - but not all. The quandary of an appropriate pricing schedule still exists. Typically government agencies carrying out activities in the area of public utilities will use "business principles" when establishing prices rather than a "social theory of price fixing".<sup>56</sup> The British Post Office "look(ed) for a return on net assets of at least 8 per cent"<sup>57</sup> and the

Jervis; op. cit., p. 47. Gray, Horace M.; "The Passing of the Public Utility Concept," 55. Journal of Land and Public Utility Economics, Vol. 26, (1940) pp. 8-20. Reprinted in American Economic Association, Readings in the Social Control of Industry, Blakiston, Philadelphia (1942) pp. 280-303.

See Bonbright; op. cit., p. 263, footnote 20.

<sup>53.</sup> 54.

<sup>56.</sup> 

Bonbright; op. cit., p. 25, especially footnote 24. British Post Office, Report and Accounts 1961-62, London, p.8. 57.

provision for depreciation is "on the basis of historical cost supplemented by the estimated additional depreciation necessary to bring the total depreciation into line with the current value of the assets."<sup>58</sup>

59

Not all of the comments have been adverse. Mistakes have been made and undoubtedly will continue to be made, but in the process the public interest receives greater protection than it would without regulation. The continuation of this process will require changes over time. As one commentator has noted:

Regulation, like the Constitution under which it functions, is a living thing. It cannot be locked off into any permanent formula. It must change as the economic system in which it operates changes. The good, sound, practical regulation of one decade may not necessarily be the good, sound, practical regulation of another, and the United States Supreme Court has always wisely insisted upon preserving this elasticity.

58. Ibid, p. 62.

- 59. See: Phillips, Charles F. Jr.; <u>The Economics of Regulation</u>. Richard D. Irwin, Inc., Homewood (1965) pp. 740-744.
- 60. Welch, Francis X., "The Effectiveness of Commission Regulation of Public Utility Enterprise," 49 The Georgetown Law Journal 639, 672 (1961) as quoted in Phillips, Op. cit., p. 711.

CHAPTER IV

# REGULATION OF THE COMPANY BY THE BOARD OF TRANSPORT COMMISSIONERS FOR CANADA

Our review of the regulation of the Company by the Board of Transport Commissioners will begin with a review of the Board's analysis of expenditure items. The main items of expenditure considered in the judgments are related to expenses but some concern has been expressed on capital expenditures and the allocation of expenditures between capital (fixed asset) and revenue (expense). We shall then examine the Board's determination of allowable earnings, structure of rates and terminate this Chapter with "unregulated" revenues.

## EXPENDITURES

The principal expenditures of a telephone company are related to employees' compensation, materials and supplies including maintenance of plant and acquisition of new property and equipment. Other items of importance in the regulation of the expenses of the Company have been depreciation, the service agreement with the A.T. & T., and income tax.

Table IV-1 indicates the amounts of some of the abovementioned expenses in five-year intervals since 1954. Indices comparing the amount expended in 1954 and 1964 have been prepared for all items. Expenses are shown as a percentage of total operating expenses.

## TABLE IV-1

## THE BELL TELEPHONE COMPANY OF CANADA

## Certain Expenses in Five-year Intervals from 1954-1964 (Percentages indicate the proportion these expenses are of Total Operating Expenses)

	(000)	1954 %	(000)	1959 %	(000)	1964 %	Index of Change in Expenses from 1954-1964
Total Payroll (Note 1)	\$103,383	67.3	\$155 <b>,</b> 156	60.6	\$187,081	54.5	1.810
Maintenance (Note 2)	47,657	31.0	76,211	29.7	99,128	28.9	2.080
Depreciation	28,087	18.3	64,874	25.3	106,224	30.9	3.782
Total Operating Expenses 153,722			256,232		343,366		2.234

Notes:

t

1) Total payroll includes wages and salaries of all full-time employees. Not included are payments to solicitors and legal advisors, or directors. Nor does it include pension costs and similar benefits.

2) Maintenance expense includes payroll of maintenance employees.

Source: Bell Telephone Company of Canada, Financial Statements.

From this Table it can be seen that total payroll has decreased from 67.3 per cent of total operating expenses in 1954 to 54.5 per cent in 1964, although it has almost doubled in amount during this period. Maintenance expense, which includes payroll of maintenance and inspection employees, has more than doubled during the period but has decreased from 31.0 per cent of operating expense in 1954 to 28.9 per cent in 1964. The changes in depreciation expense indicate the tremendous construction program of the company and the substitution of capital for labour. During the period depreciation has increased from 18.3 per cent to 30.9 per cent of operating expenses, and in 1964 was almost four times the 1954 amount.

Employee Expenses

The items under employee expenses which have received consideration from the Board are wages and pensions. In addition, the Board has reviewed the employees' stock purchase plan.

In the 1919 and 1921 applications, wage increases were cited by the Company as an important part of the increased operating l costs. After review by the Board, the wage rates were accepted. An important item in the 1919 case was the handling of payments to employees who had gone into the services in World War I and employees

1. The Board of Railway (Transport) Commissioners for Canada. "'Re'Bell Telephone Company's application for Increase in Rates," <u>9 Judgments</u> Orders, Regulations and Rulings (hereinafter cited as J.O.R.R.)(1919), p. 63,(hereinafter referred to as the 1919 case), p. 67; <u>Op. cit.</u>, "Application of the Bell Telephone Company of Canada for an Order of the Board authorizing an increase in Telephone Rates," 11 J.O.R.R., 35 (1921),(hereinafter cited as the 1921 case), p. 36.

unable to work due to an influenza epidemic.

The Respondents argued that these items should be charged to reserves rather than to expense. The Board, after consulting with the Interstate Commerce Commission in the United States, ruled that such expenditures should be charged as if the employees were on duty.

2

The 1922 rate case also makes reference to employees, although on this occasion it was not wages but alleged employment inefficiencies that were considered. Included in the evidence was a letter received by the Company from an investment syndicate which stated in part "... a satisfactory sale of your common stock could not be accomplished, unless your directors can assure us that such operating economies can be effected ... " Company officials gave evidence that plans for the reduction of staff were instituted in July 1921, the same month that the application was filed. The majority of the Board concluded that the existing rates were adequate, if proper consideration were given to the resulting decrease in expenses resulting from lower payroll costs. The economies in staff were apparently effective as the 1922 operations showed a \$476,000 addition to surplus as compared with the \$776,000 reduction in surplus experienced in 1921.

2. <u>1919 Op. cit.</u>, p. 70.

3. Op. cit., "Application of the Bell Telephone Company of Canada for an increase in Telephone Tolls," 11 J.O.R.R. 440 (1922), (hereinafter cited as the 1922 case), pp. 442-445.

4. Ibid. p. 442.

5. Ibid pp. 450-459.

6. The Bell Telephone Company of Canada, Annual Reports, 1921 and 1922.

In the 1950 case the wage rates paid by the Company were 7 subjected to careful scrutiny. Since the end of the Second World War, the Company has been compiling an annual survey of wages paid in the Provinces of Quebec and Ontario. These surveys are used as a basis for bargaining and the establishment of a zoning system of wage schedules. On the basis of these studies the Board could not find any evidence of "casualness or improvidence in the establishing 8 of wage levels."

Wages were again mentioned in the two judgments issued 9 in 1958. In the applications, the Company had made provision for expected future increases in wages. The Board on both occasions did not consider it proper to allow for increases which have not been requested or offered.

In addition to wages, other employee benefits have come under the scrutiny of the Board. The pension plan came under 10 careful review in the 1950 hearings and again in 1958. This plan, which includes disability and death benefits, is a noncontributory scheme - the Company itself pays the full costs. Instituted in 1917 and established as a separate trust fund in 1928, it was put on an actuarial basis in 1944 in order to comply with

 Op.cit., "In the Matter of the application of The Bell Telephone Company of Canada, dated August 16, 1957", Judgment and Order, Ottawa, (1958), pp.51 (hereinafter cited as the 1958 (1) case, p.26; Op.cit."In the matter of the application of The Bell Telephone Company of Canada, dated June 25, 1958", Judgment and Order, Ottawa, (1958), pp.37 (hereinafter cited as the 1958 (2) case), p.17.

<sup>7.</sup> Op. cit, "Re The Bell Telephone Company of Canada", Judgment and Order, Ottawa, (November 15, 1950), pp.56 (hereinafter cited as the 1950 case), pp.26-27.

<sup>8.</sup> Ibid p.27.

newly enacted provisions of the Income War Tax Act. The transfer to an actuarial basis required a further payment of almost \$19 millions which the company liquidated in 22 annual instalments of \$1,248,300 covering principal and interest.

Respondents have criticized the pension plan on the basis that savings could be effected if it were made a contributory plan and that the annual accruals to put the fund on an actuarial ll basis are excessive. The Board has not accepted either claim and l2 has found it to be a very "satisfactory scheme."

Another employee benefit which has received some criticism 13 from respondents is the employees' stock purchase plan. Under this plan, employees after six months service may purchase through payroll deductions, shares of the Company at a price equal to \$5.00 less than the average market price during the month of completion of payments, 14 with a minimum price of \$25.00 and a maximum price of \$36.00. No action was taken by the Board on this complaint. Presumably, since the Board has had to approve the conditions of stock issues since 1929, this plan has received the necessary approval.

11. 1950 Op. Cit., p.22.

12. Ibid, p.23; reaffirmed in 1958 (1) op. cit., p. 23.

13. <u>1958 (2)</u> Op. cit., p.10.

14. This price was in effect from June 1, 1961 to March 31, 1965. During this same period of time stock offerings to shareholders were made at \$39.00 per share in 1962 and \$38.00 per share in 1964. Effective from April 1, 1965 the maximum price was raised to \$42.00. See: Op.cit., "In the manner of the application of the Bell Telephone Company of Canada re its Employees' Stock" plan, Order No. 117067, (March 24, 1965), 55 J.O.R.R. 77.

## Materials and Supplies

The cost of materials and supplies, including maintenance expense, have frequently been cited by the Company as part of the 15 increased costs necessitating an increase in telephone tolls. Part of the increase in maintenance expense is due to advances in wage rates which have been discussed above.

A problem in the determination of maintenance expense is the distinction as to what should be charged as an expense in the year incurred and what should be charged to capital, i.e. recorded as a fixed asset. The Board has never prescribed the accounting practices 16 17 of the Company. The Company follows the policy, which is common in the industry, of distinguishing expense and asset values on 18 the basis of units of property. If an item replaced is a unit of

15. <u>1919 Op. cit</u>, p. 67; <u>1921 Op.cit.</u>, p. 231; <u>1950 Op.cit.</u>, p.5.

16. <u>1950 Op. cit.</u>, p. 32

17. 1950 Op. cit., p. 16.

18. For a definition of "units of property", the following is taken from the Company's General Circular 301.2, (April, 1964), p.1.

## Retirement Units

2.02 In order to ensure uniformity of accounting and, at the same time, to simplify the classification of costs, the plant and equipment of the Company have been segregated into "Retirement Units" and "Minor Items" (For station apparatus, the term "Major Item" is used in lieu of "Retirement Unit"). "Retirement Units" are the major items of material within

(footnote continued)

property, the cost of the original unit is removed from plant and the cost of the new item is added to plant. When the item replaced is less than a unit of property, it is charged to expense. Although certain inconsistencies have been pointed out in the application of this procedure, the Board concluded that on the basis of the evidence pre-19 sented, the costs of maintenance expense are reasonable.

18. (Continued)

each class of plant which are readily distinguishable, such as a pole, two spans of cable, a telephone set, a switchboard, a motor vehicle. A "Minor Item" is any item or group of items less than a retirement unit, e.g., all exempt material items, strand, a guy, a length of cable or wire less than a retirement unit, a transmitter, jacks and plugs, tires. There are no retirement units for land or station connections.

2.03 The costs of replacing retirement units (with or without the associated minor items) are classified as Construction and Retirement. The costs of replacing minor items are classified as Construction and Retirement when replaced at the same time as the retirement unit with which they are associated and as Maintenance when replaced at any other time. This distinction will be seen in the following paragraphs giving general definitions of Construction, Retirement and Maintenance. These definitions apply to all classes of plant.

The Circular continues for many pages giving explicit instructions on numerous items. Although it is hard to generalize, a unit of property ("Retirement Unit") is something which is added to the system as a complete unit, a "Minor Item" is less than a unit of property and is attached to a unit of property. This allocation is a very complicated procedure because units of property will include items which have considerable differences in their values and useful lives.

19. <u>1950 Op. cit.</u>, p. 16.

The prices of materials and supplies also involve the relationship between the Company and Northern Electric Company. The "fairness" of prices for materials and equipment charged by Northern 20 to the Company have received frequent scrutiny by the Board.

The Company has a "supply contract" with its subsidiary, Northern Electric Company. Various terms of the agreement have been stipulated in the cases to which reference has been previously made. Briefly, the agreement provides that Northern will supply the Company with its products and perform other services such as classifying, storing and repairing returned material. Northern charges the Company the prices granted to the most favoured customers for manufactured goods, irrespective of the quantity purchased. In addition, Northern acts as purchasing agent for the Company for other materials purchased, for which the Company pays cost plus a fee for purchasing, 21 Sales to the Company generally account for more storing, etc. than 50% of the total sales of Northern. The Board has been presented with evidence indicating that the Company does in fact purchase from Northern at prices lower than those offered to the general public 22 and has accepted these prices as reasonable.

- 20. <u>1921 Op. cit.pp.46-48; Op. cit.</u>, "In the matter of the Application of The Bell Telephone Company of Canada for approval of the revised rates and charges for local exchange services", 16 J.O.R.R. 229 (1927), (hereinafter cited as the 1927 case), pp.249-251; <u>1950 Op.cit.</u>, pp. 18-21; <u>1958 (1) Op. cit.</u>, p. 22.
- 21. In 1949 this fee was 10% of the cost to Northern. See 1950 Op.cit., p.20.

22. <u>1921 Op. cit., p. 48; 1927 Op. cit., p. 250; 1950 Op.cit., p. 21.</u> (However it should be noted that the "Exhibit covered ten different items of equipment and apparatus" (Emphasis added); <u>1958 (1) Op.cit.</u>, p. 22.

The circumstances of a public utility owning a subsidiary company which is not regulated and is a major supplier, creates 23 serious problems to the regulatory authority. The Board is undoubtedly quite correct in its persistent opinion that, under exist-24 ing legislation, it has no power to review the affairs of Northern. Although the Board has satisfied itself that the prices paid by the Company to Northern are as low or lower than the going prices, effective regulation in such circumstances should require an investigation of these going prices. There can be little doubt that Northern is the major supplier of telephone equipment in Canada. Its policies are subject to the directors of the Company. Although all its profits accrue to the Company, they are included in its revenue and thus reduce telephone rates only to the extent that dividends are paid.

Property and Equipment

Reference has already been made to the problem of expenditure allocation and the cost of equipment purchased from Northern. Of concern under this heading is the treatment provided to certain costs incurred during construction.

In the 1950 and 1952 hearings, objection was taken to certain accounting procedures followed by the Company in the allocation of the 26 costs of employee benefits. The Company had followed the practice of charging all employee benefits as an operating expense in the year

- 23. This problem could be far more serious if the public utility company and its supplier were both subsidiaries of a non-regulated holding company.
- 24. <u>1921</u> Op. cit., p.47; <u>1927</u> Op. cit., p.249; <u>1950</u> Op.cit., p.19; <u>1958</u> (1) Op. cit., p.22.
- 25. It is virtually the sole supplier of the Company, and a major supplier of most other telephone systems in Canada.
- 26. <u>1950 Op. cit., pp.32-34; Op. cit.</u>," In the matter of the

( Protonte continued)

incurred, irrespective of the fact that a portion of the payroll costs, upon which the benefits were based, was charged to construction. In its 1950 judgment, the Board agreed with the objection and, in an (unpublished) analysis, Assistant Chief Commissioner Wardrope disallowed \$500,000 as an operating expense. This same matter was considered in the 1952 decision and the Assistant Chief Commissioner again disallowed the item 28,29 as an expense, in an amount approximating \$750,000. In so doing, however, the Board would appear to have made a serious error. The following quotation indicates the reasoning of the Board in its calcu-30 lations.

It would, however, be necessary to allow as a deduction from (the amount to be capitalized) the depreciation for one year on the accumulation of previous years amounts which have been charged to expense less the amount of such accumulation included in the telephone plant during the previous years.<sup>31</sup>

26.(Continued) application of the Bell Telephone Company of Canada dated August 31, 1951 "<u>Judgment and Order</u>, Ottawa, (February 21, 1952), pp. 15, (hereinafter referred to as the 1952 case)pp.3-4.

27. <u>1950 Op. cit., p.</u> 34.

- 28. <u>1952</u> Op. cit., p. 4
- 29. Subsequent to January 1, 1952 the Company altered its accounting policy to charge the appropriate proportion of pension costs to construction. In that year the amount involved was \$1,098,646. See the Auditor's Report to the Shareholders of the Bell Telephone Company of Canada, Financial Statements, 1952.
- 30. Although no indication of the calculation is given in the 1950 judgment, the fact that both judgments were written by the Acting Chief Commissioner indicates that probably similar reasoning was used.
  31. 1952 Op. cit., p. 4, (Emphasis added).

By so doing, the Board has allowed earlier amounts to be charged twice as an expense, once in the year they were incurred, and again in later years through depreciation. While it is true that the amounts actually charged to construction will add to depreciation expense, it seems inappropriate that customers should be 32required to pay twice for the same expenditure.

## Depreciation

In view of the large investment in plant and equipment required to provide telephone service, the Board has spent a considerable amount of time, particularly in its early decisions, dealing with 33 the problem of depreciation.

The only asset valuation base that has been accepted by the Board is historical cost. Attempts have been made to allow the Company to earn a "fair return" on the reproduction cost of its assets, but this 34 argument was not pressed nor did the Board assent to it. Implied in such a basis of regulation would have been the allowance of depreciation accruals based on reproduction cost.

The method of cost allocation to be used was stipulated in 35 the first general rate judgment of the Board. In that hearing considerable evidence was presented as to alternative methods of

<sup>32.</sup> Compare this decision of the Board with that of the U.S. Supreme Court in the Hope Natural Gas Case <u>Op. cit</u>. The Court refused to allow as a legitimate item of capital cost outlays previously charged to operating expense.
33. Of the 24 pages of text in the majority decision in 1927, 14 pages (pp.231-244) are devoted to the problem of depreciation.

<sup>34.</sup> City of Montreal v Bell Telephone Company Canadian Railway Cases (1912), Vol.15, p. 118, (hereinafter referred to as the 1912 case) p.125.
35. 1919 Op. cit., p. 80.

determining the depreciation formula. The Board decided that the so-called straight-line method should be used. Under this procedure the cost to the Company, i.e. historical cost less net salvage value, should be allocated over the estimated useful life of the asset in equal annual instalments.

Considerable difficulty was experienced during the early years of the Company in determining the estimated life of telephone plant. This difficulty was encountered due to a number of factors including the changing conditions of the art, incomplete detail on assets owned, and perhaps most important, insufficient experience to determine reliable estimates of useful life. In the 1919 and 1920 cases the Company relied upon the life tables of the A.T. & T. 36The Board implied in 1919 and later emphasized in 1921 the importance of the actual experience of the Company to furnish the necessary information upon which an appropriate depreciation ratio could be calculated.

The Company's calculation of an appropriate depreciation ratio was first made in 1925 but did not come under review until the 38 1927 case. In that case a considerable volume of expert evidence was presented in support of, and in opposition to, the Company's rate. The only change made by the Board was a reduction in the rate to be used 39 for automatic switching equipment. The Company had proposed to increase the rate for manual switchboard equipment as a result of the

36. <u>Ibid</u>, p. 83. 37. <u>1921 Op. cit.</u>, p. 35. 38. <u>1927 Op. cit.</u>, pp.231-244. 39. <u>Ibid</u>, p. 240.

introduction of automatic equipment. It also proposed that the higher rate should be applied to both items. The Board accepted the higher rate for manual equipment as a result of its obsolescence. However, this shorter life was not applicable to the newly introduced automatic equipment. In addition, the rate of depreciation calculated by the 40 Company for other items was also disputed. The Board recognized that all depreciation calculations are based on numerous estimates and concluded that the estimates of the Company on these technical 41 matters were acceptable. In any case, the Board, in accepting a specific figure, was not establishing rates which could not be altered.

Respondents experts had also claimed that the depreciation rate for buildings should be reduced to offset the appreciation of land values. The Board rejected this claim and went on to say "no doubt an increase in value of land will find its way into the 42 accounts." When such appreciation should be recorded and what procedure would be used to offset it are two problems that the Board has never considered.

The rate case of 1950 again included a close review of the 43 Company's depreciation policy. In its evidence the Company showed 44 it employs six methods of calculating depreciation. The application of each method to particular components of plant is dependent on the character of the item and the amount of detailed information the

40. See <u>Ibid</u>, p. 238 for a table of these differences.
41. <u>Ibid</u>, p. 242.
42. <u>Ibid</u>, p. 239.
43. <u>1950 Op. cit.</u>, pp.9-15.
44. <u>Ibid</u>, p. 11.

Company maintains. The methods vary from the life span of major single units of property, to various mathematical calculations based on mortality experience, and finally to estimates when adequate details are not maintained or insufficient experience has been obtained.

Objection was taken to the Company's procedures on the basis that it failed to provide in its calculations for excessive accruals 45 in the past. The Company does not know the amounts of accruals applicable to component plant accounts in the total accumulated depreciation. As a result, when the depreciation rate was lowered, as had been the experience, no adjustment to the new rate was made for excessive depreciation which was taken in the past. Such practices would result in the Company recovering more than the net cost of the asset through depreciation expense. Evidence was also presented contesting the Company's methods of determining estimated lives in view of the elements of judgment used. The Company calculated the experienced lives of assets by employing various types of mathematical calculations. Having thus calculated the average life, it used, in at least some cases, estimated lives shorter than those indicated. The results of alternative methods of calculation of the useful life of assets were presented which indicated that considerable differences could result in the average life of a component of plant dependent on the method of calculation used and the time period included in the study.

After reviewing all the evidence the Board seems to conclude

45. <u>Ibid</u>, p. 12. 46. <u>Ibid</u>, p. 13.

that the best judge of the circumstances is the Company itself. It concludes that "the rates as proposed by the Company may reasonably 47 be accepted for the purpose of this determination."

Service Agreement With A.T. & T.

The corporate relationship between the Company and the A.T. & T. has already been reviewed. In addition to this relationship there have been agreements whereby the Company is able to secure the right to use patents developed by the A.T. & T. relating to telephones, and assistance and advice on technical, administrative and other specialized matters. Prior to 1923 much information was exchanged but the Company had no right to receive it, nor was any payment made. By an agreement dated May 16, 1923, A.T. & T. agreed to continue its research program and make the results available to the Company. In addition, advice and assistance on other matters was included. In return, the Company agreed to pay A.T. & T. a specified portion of its gross telephone revenues. Since January 1, 1929, this payment has been established at one per cent of the annual gross revenue. In the 1927 case the Board spelled out in considerable detail the terms of the agreement as it was then in force.

Opposition was expressed in the hearings for the 1927 case to the allowance of these expenditures for rate-making purposes

47. <u>Ibid</u>, p. 15. 48. <u>1927 Op. cit.</u>, pp.245-247. and that the amounts were excessive. The Board noted that the United 49 States Supreme Court had allowed similar payments. The Board also noted that associated companies in the United States paid A.T. & T. at the rate of four per cent of their revenues. The Company estimated" ... that the amount it pays on the basis of 400,000 stations is about 2 per cent."

On the basis of the evidence the Board could find no "proof of abuse of discretion or improvidence in bargaining ... The function 51 of the Board is one of corrective regulation not business management"

In 1950 the service agreement again came under the scrutiny 52 of the Board. It noted the extreme difficulty of attempting to establish a value for the numerous and varied services provided to the Company in accordance with the terms of the agreement. But it accepted that the Company does receive a value. The process is, however, a two-way street with the A.T. & T. adopting certain procedures developed 54 Noting that it is quite common to have payments for by the Company.

Ibid, p. 248. 49.

- Ibid, The relevance of this estimation is not entirely clear. 50. At the end of 1926 the Company had some 630,000 stations in service and a gross telephone revenue of \$28,461,000. On the basis of my calculations the amount paid under the service agreement should have been about \$420,000. or 12 per cent.
- Ibid, pp. 248-249 51.
- 52. 1950 Op. cit., pp. 17-18.

53. 54. Ibid,p. 18.

Currie, Archibald W., "Telephone Rates in Canada", in Clarke, Robert M. (ed.), Canadian Issues: Essays in Honour of Henry F. Angus., University of Toronto Press, (1961), p. 246.

such services based on a proportion of revenue, and having no alternative method of determining an appropriate value, the Board could not find sufficient justification for the disallowance of these payments for <sup>55</sup> rate-making purposes. In so doing, it reaffirmed its decision taken in 1927.

#### Income Tax

The subject of income tax has presented the Board with two problems: the first dealing with the allowance, or disallowance of the expenditure as a deduction for rate purposes, and the second dealing with the appropriate treatment of the so-called "deferred income tax."

Income tax was first collected by the Dominion of Canada under the provision of the Income War Tax Act of 1917. At that time the opinion was generally held that this tax was only temporary in nature and it was a tax against shareholders. Accordingly in 1919 the Board was not prepared to allow such payments as deductions for 56 rate purposes. This position was upheld by the Board in the 1921 57 case. In 1927, in accordance with certain amendments to the Act and a communication from the Commissioner of Taxation, the Board agreed 58 that the tax should be considered as an expense.

The second item "deferred income tax" relates to certain amendments to the Income Tax Act which were passed in 1949 and 1954.

Prior to 1949 the allowable deduction for depreciation for income tax purposes was subject to the discretion of the Minister of

55.	1950 Op.	cit.,	p.	18.
56.	1919 Op.	cit.,	p.	70.
57.	1921 Op.	cit.,	p.	43.
58.	1927 Op.	cit.,	p.	251.

National Revenue. In general this amounted to allowing as "depreciation for taxation purposes" the same amount recorded as "accounting depreciation," which was generally calculated on a straight-line basis. In 1949 the Act was amended to allow, in lieu of depreciation for income tax purposes, capital cost allowance computed on a declining balance method at specified rates which were generally twice the straight-line rate, provided these amounts were recorded in the books 60 when calculating (accounting) income. Many objections were made to the requirement that, if claimed for tax purposes, the capital cost allowance must be recorded in the books. This requirement led to considerable misstatement in the determination of periodic income. Companies using the new capital cost allowance for tax, and thus accounting, purposes would initially report a lower "income" and thus pay lower taxes. Some firms followed the requirements in order to take advantage of the lower income tax in early years while others were unwilling, or, in the case of public utilities, unable to meet the legal requirements because of the resulting misstatement in income.

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The legislation was amended for 1954 and subsequent years by the removal of the requirement that depreciation and capital cost allow-61 ance must be the same amount. This meant that companies could report the appropriate depreciation for the purpose of determining income and

- 59. See: Morawetz, Carl M. and Heyding, Lawrence F., <u>Burroughs</u><sup>1</sup>
   <u>Income Tax Service (Canada</u>), Burroughs and Company, Toronto (1956), Vol. 1, p.D-40, for a history of "Managerial Descretion."
   60. See. Ibid.pp C-3 to C-102r. for a full discussion of "Capital Cost
- 60. See, Ibid, pp C-3 to C-102r, for a full discussion of "Capital Cost Allowance"
- 61. Hereinafter "depreciation" will be used only in the sense in which it is used in accounting, "capital cost allowance" will be used to denote the maximum allowable deduction for income tax purposes.

take advantage of "tax savings" by using capital cost allowance in their determination of taxable income. The adoption of this practice led to a new problem in the determination of income. What amount should be shown as the income tax expense for the year - only the amount actually paid or the amount which would be paid on the basis of the reported "income" using depreciation expense. The recommendations of profession-62 al accounting bodies in Canada and the United States are that in the determination of income the deduction for income tax for the period should include both the amount of tax paid and the amount of any "tax savings". These "tax savings" should carried to the equity side of the balance sheet as "Deferred Tax Credits". In spite of these pronouncements, considerable disagreement exists within the accounting profes-65 sion as to the appropriate treatment of these items.

The differences arise from the assumptions used in the analysis. If a single asset is considered in isolation over its useful life the income and tax effects will balance out - but there will be differences in the intra-life allocations. Tax reductions will result in the early

<sup>62.</sup> The Committee on Accounting and Auditing Research, Bulletin 10, Canadian Institute of Chartered Accountants, Toronto, (1954).

<sup>63.</sup> Committee on Accounting Procedure, <u>Accounting Research Bulletin No.</u> 43, and No. 44 (revised). American Institute of Accountants, New York, (1953 and 1955).

<sup>64.</sup> U.S. Income Tax 'aw does not use Capital Cost Allowance but adopts accelerated depreciation which produces similar results.

<sup>65.</sup> See Arthur Anderson & Co., Cases in Accounting Practice, Volumes 5 and 6; "SEC Administrative Policy Re: Balance Sheet Treatment of Deferred Income Tax Credits", Chicago, (1961), especially Vol.5, pp.8-13, for a summary of the various arguments presented to the Securities and Exchange Commission (U.S.) when it studied this problem.

years when the capital cost allowance exceeds the depreciation expense, but in later years the charge for depreciation will be greater than the amount of capital cost allowance. On this basis, the accumulated tax reductions will be paid out by higher income taxes in later years. If, however, one looks at the company as a whole rather than its individual assets, and assumes that the company will maintain the value invested in fixed assets, it can be shown that the annual depreciation charge will never be greater than capital cost allowance, although in the long run  $\frac{66}{100}$ 

66. Crowe, J.W., "A Look at Depreciation and Income Taxes", 69 Canadian Chartered Accountant (July 1956) pp.45-53. The following table is taken from his article p. 46.

#### Table 1

## COMPANY PROGRESSIVELY MAINTAINING ITSELF, BUT NOT EXPANDING

## (Assets \$10,000,000 and Reserve for Depreciation \$5,000,000 at 1st January 1954) (Amounts in Thousands)

	Gross Construction		Straight	Capital Cost	Reduction In Taxable Income	
Year	Expenditures	Retirements	Line Depreciation	Allowance	Annual	Cumulative
<u> </u>			. 10%	20%	- 1 '	
1	\$1,000	\$1,000	\$1,000	\$1,200	\$200	\$200
2	1,000	1,000	1,000	1,160	160	360
3	1,000	1,000	1,000	1,128	128	488
4	1,000	1,000	1,000	1,102	102	590
5	1,000	1,000	1,000	1,082	82	672
6	1,000	1,000	1,000	1,066	• <b>6</b> 6	738
7	1,000	1,000	1,000	1,052	52	790
8	1,000	1,000	1,000	1,042	42	832
9	1,000	1,000	1,000	1,034	34	866
10	1,000	1,000	1,000	1,027	27	893
11	1,000	1,000	1,000	1,021	21	914
12	1,000	1,000	1,000	1,017	17	931
13	1,000	1,000	1,000	1,014	14	945
14	1,000	1,000	1,000	1,011	11	956
15	1,000	1,000	1,000	1,009	9	965
Lon	g Run		1,000	1,000	nil	1,000

not be paid out, but will tend to become a constant amount. If the assumption is made that the company expands its investment in fixed assets, not only will the deferred income tax not be paid out, but it will continue to increase.

The Company did not use capital cost allowance during the period from 1949-1953. Instead, it continued to record depreciation in accordance with the procedures laid down by the judgments of the Board. In 1954 and the three succeeding years it took advantage of the new procedures with the result that by December 31, 1957, it had accumulated some \$48.2 millions in Deferred Income Tax. In its first judgment in 1958 the Board carefully examined the treatment of this 67item.

Counsel for the Municipalities contended that the deferred income tax should not be treated as an expense for rate-making purposes. Present indications, in his opinion, were such that the Company would not be required to draw down on the tax credits. To require subscribers to pay rates sufficient to provide for this accumulation was in fact requiring them to make forced contributions to capital. This was unnecessary and the subscribers, not the Company should receive the benefit.

The Board carefully reviewed all the evidence including the irregular pattern of decisions by other regulatory authorities in Canada and the United States. It held that the Company should be permitted to make provision for deferred taxes in arriving at its net income.

67. 1958 (1) Op.cit., pp. 19-22.

In so doing it noted that changes in income tax regulations or in other 68 relevant matters may require the Board to review its finding.

This decision was appealed to the Governor-in-Council. The result was that the Order of the Board was rescinded by an Order-in-Council and the Board was directed that "as a principle of rate-making policy, credits to tax equalization reserves shall not be regarded as necessary expenses or requirements in determining rates and charges."

Within two months of the Order-in-Council, the Company again 70 applied to the Board for a rate increase. The main aspect of this application was the decision of the Company to use the depreciation it recorded in its books as the amount of capital cost allowance claimed for income tax purposes.

The Company contended that three courses of action were open 71 to it: (1) continue to claim maximum capital cost allowance for tax purposes, and charge normal depreciation and income tax, net of 72 the tax reductions, as expenses for the period, or (2) claim maximum capital cost allowance for tax and accounting purposes, or (3) claim as capital cost allowance the amount recorded as depreciation expense.

<u>Ibid.</u>, p. 22
 Government of Canada, <u>Order-in-Council P.C.1958-602</u>, (April 29, 1958) reprinted in 48 J.O.R.R. 95.

- 70. 1958 (2) Op. cit., p. 2.
- 71. Ibid., p. 13.

72. This procedure is generally referred to as "flow through" accounting, i.e. the tax reductions flow through to Retained Earnings.

The first two alternatives were rejected by the Company on the basis that they led to improper income determination. The first would increase the reported profits in early periods but in future periods if depreciation ever exceeded maximum capital cost allowance future subscribers would have to pay for the benefits received by present subscribers. The second alternative would considerably increase "depreciation expense" and contravene the concept of straight-line depreciation as previously accepted by the Board. In its opinion, the only choice open to the Company was to use recorded depreciation as capital cost allowance.

The Board regarded the decision of the Company on this matter as basically a function of management which was open to the Board's 73 review. On the evidence, the Board could find no basis to interfere with the decision of management with the result that the application 74 was accepted.

A curious aspect of this case was the fact that neither the subscribers nor the Company received any cash benefits, but the Government did. The subscribers had to pay an estimated \$17. millions in higher rates to cover the increased costs which were the bases of the former application. The Company was permitted to earn the same level of profits as was previously granted.

In 1958 the Company had to pay income tax on the increase in revenue, which at 50 per cent would amount to about \$8.5 millions and pay the

73. <u>1958 (2)</u> Op. cit., p.15. 74. Ibid., p.16.

"tax savings" of about \$12.8 millions to the government. Thus the government received an estimated \$21.3 millions in additional tax revenues from the Company in 1958. The Company's funds were depleted by \$4.3 millions (new funds of \$17. millions less \$21.3 millions in taxes) and in addition it was unable to continue to take advantage of the interest free "tax savings" of \$12.8 millions. With the increasing expansion of the Company these amounts are bound to be higher in successive years. If the Company wished to merely maintain itself it had to finance \$4.3 millions by issuing bonds, or shares, or a combination of both. If, as happened, it expanded it would have to finance the formerly interest free tax savings. Since, as will be discussed below, the Companys' earnings are regulated to a specified amount per share, the "costs" of the new financing will result in lower earnings per share and higher rates in the future to compensate for the deficiency.

It should be noted here that the method of treating "deferred income tax" is not consistent as it is applied to the telephone indus-75 try throughout Canada.

The Federal government has recently announced that it intends

75. Among the major telephone systems the Company and British Columbia Telephone are regulated by the Board, the systems in the prairie provinces are government owned and not subject to Federal Income Tax, Northern Telephone Co. (Ontario) used deferred income tax for 1961 only, and Quebec Telephones, New Brunswick Telegraph & Telephone Company, Maritime Telegraph and Telephone Co. and Avalon all record deferred income tax. (See Financial Post Corporation Service for each company except Avalon. The information on Avalon was obtained from the Company).

to rebate to the provinces 95 per cent of the income tax paid by pri-76 vately owned hydro-power, natural gas and steam utilities. At least one province, Alberta, has signified that it intends to turn this over to the companies. This has led one company to indicate reductions of 10 to 15 per cent in rates effective from January 1, 1966. If the Governments, both Federal and Provincial, wish to reduce the telephone rates for subscribers, a similar rebate would be in order for telephone companies. Such action would also virtually eliminate the problem of the "deferred tax credit". We have indicated in Chapter II above that the elimination of taxation could be in order on theoretical grounds.

## ALLOWABLE EARNINGS

Under the heading of allowable earnings we shall consider three items which have received the attention of the Board; first, the base upon which the allowable earnings are to be based; second, the rate of return to be allowed on the base; and third, in view of the earnings per share base used, the ratio between debt and equity financing.

## Earnings Base

The first application presented by the Company to the Board

76. Montreal Gazette, July 23, 1965, p. 11. 77. <u>Ibid</u>.

was a request for higher rates to be paid by subscribers in Montreal. In part the application was based upon the Company's claim that the Montreal subscribers were not contributing a fair proportion to reserves and earnings. It was alleged that these subscribers should pay rates sufficient to provide a reasonable return based on the reproduction cost of the plant used. The Board found that the Company was in an admittedly satisfactory position financially on the basis of a reconstructed income statement which indicated a return of 8.28 per 79 cent on the book value of telephone plant. Having found this to be a reasonable return, the Board refused to permit an increase in rates.

The 1919 judgment permitted the Company to increase rates on a temporary basis only to provide for the emergency conditions created by increased material and labour costs. Consideration was given to the proper measure of return. The Board was impressed with evidence presented that the earnings should be based on the stocks and bonds issued. The opinion was also expressed that the Company should not be allowed to earn on the reserves accumulated out of 80 earnings. This test was accepted by the Board. The suggestion was made, however, by the Deputy Chief Commissioner, that a thorough revision of tariff was necessary "based on an up-to-date inventory

78. <u>1912 Op. cit.</u>, p. 118. 79. <u>Ibid</u>, p. 135. 80. <u>1919 Op. cit.</u>, p. 72. 78

and appraisal of its assets."

In its 1921 decision the Board found the emergency condi-82 tions were still present. The Company applied for the "historical" 83 dividend rate and a percentage for surplus. Although the Board cut the surplus percentage as well as that for depreciation, it accept-84 ed the method of determining allowable earnings.

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The Company argued in the 1927 case that it should be entitled to earn a "fair return" on the value of its property, although as the case developed it expressed satisfaction with earnings adequate 85 to continue the dividend payments at the historic rate.

In its application in 1957 the Company related its earnings 86 to the equity per share. In its judgment, however, the Board continued to determine allowable earnings on the older basis of an allowable 87 amount per share.

Rate of Return

The review by the Board of the rate of return has consisted of considering the rate of dividends paid and the additions to surplus. During the period of public hearings by the Board, the Company has essentially maintained a constant dividend rate of 8 per cent of the

81. Ibid., p. 97
82. 1921 Op. cit., p. 44.
83. Ibid., pp.38-39.
84. Ibid., p. 44.
85. 1927 Op. cit., p. 231
86. 1958 (1) Op. cit., p. 7.
87. Ibid, p. 26.
par value of the stock. This rate has been subjected to criticism, particularly when the market price of shares is considerably in excess of the par value. 89

and again in 1950 the Board was impressed with In 1927 the necessity of maintaining investor confidence in the Company to enable the favourable attraction of considerable amounts of new capital. A reduction in the dividend rate would have the short run effect of a lower earnings requirement, but in the long run, it may destroy investors' confidence and thus raise the cost of future issues. In any event, the Board has not required any reduction in the dividend rate, and it has given tacit consent to the increase to 8.8 per cent which became effective in December 1959.

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The Board has accepted without hesitation the principle that the earnings of the Company must be adequate to provide for additions to surplus in addition to the payment of dividends. But the amount of such additions has changed over time.

The first time this problem was examined by the Board 91 was in the 1921 judgment. The Company asked for a total of a 12 per cent return on the capital stock, 8 per cent for the dividend and

88.	1927 Op. cit., pp. 265-266; 1950 Op.cit., pp. 34-35.
89.	1927 Op. cit., p. 232.
90,	1950 Op. cit. p. 35.
91.	1921 Op. cit., pp 38-39. In the 1919 case the Board noted that "the
	Company has since October, 1918, been earning on its outstanding
	securities less than 4 per cent" but "there is an emergency situ-
	ation existing" and "the burden of the emergency should be divided

between the Bell Company and the public"(1919 Op. cit., p.96.)

88

4 per cent addition to surplus. In view of the emergency conditions which continued to exist, the Board considered a 10 per cent return 93 appropriate. By the time of the 1922 decision, the emergency no 94 10 nger existed and the Company requested the 10 per cent return. 96 This was accepted by the Board but no increase in rates was granted since the Board concluded that had certain operating economies "been earlier introduced,... the requirements would, substantially, have 97 been met." This rate wasagain re-affirmed in 1927.

In the application leading to the 1950 case the Company requested an increase in surplus of 50 cents per share or 2 per cent of the outstanding capital stock "to maintain the credit of the Company." <sup>99</sup> The maintenance of the 8 per cent dividend provoked consi-.100 101 but was not considered excessive. derable argument As to the extra 2 per cent for surplus, it was pointed out (a) that "the overall surplus from 1927 to 1949 amounted to less than 20 cents per share" and (b) that "the rates proposed (by the Company) would not provide 50 cents a share for individual years but would provide 43 cents in 1951 and 5 cents in 1952" The Board accepted the 43 cents as a fair return for 1951 noting that over the two years it would

92. 1921 <u>Op. cit., p. 38</u>. 93. Ibid., p. 50. 94. 1922 Op. cit., p. 444. Ibid., p. 442. 95. Ibid.,p. 447. 96. Ibid.p. 450. 97. 98. 1927 Op. cit., p. 252. 1950 Op. cit. p. 5. 99. 100. Ibid., pp34-35. 101. Ibid., p. 35. 102. Ibid., p. 36.

92

"appear to give the Company somewhat more than its long term average."

The addition to surplus of less than 43 cents per share for the years 1951 and 1952 apparently became 43 cents per year as a re-104 sult of the 1952 judgment. The Company had proposed 56 cents as the addition to surplus but the Board could find no justification for 105 the increase. This level was again accepted in 1958 although the 106 Company requested 65 cents.

An interesting question is whether the increase in the dividend rate announced in 1959 has any effect on the permissive earnings. Since the Board has frequently, but not consistently, referred to a 43 cent addition to surplus, what happens to the permissive level of earnings? Should it remain at \$2.43 (the"old" dividend of \$2.00 107 plus \$.43), increase to \$2.63, or some other figure? Undoubtedly the Board had become so concerned with the increase in earnings reported by the Company that it instituted its own inquiry.

Debt Ratio

With the establishment of a permissive level of earnings at a given amount or percentage per share, there is an incentive for a company to seek new funds through the issue of capital stock. The greater the amount of capital stock issued, the greater will be the amount of "cost free funds" accumulated in Retained Earnings. However, within certain limits bond financing is generally cheaper than equity financing. It is therefore important that an appropriate proportion of

107. The earnings per average share outstanding for 1964 as reported by the Company were \$2.71.

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<sup>103.</sup> Ibid. 104. 1952 Op. cit., p. 6.

<sup>105.</sup> Ibid.

<sup>106. &</sup>lt;u>1958 (1) Op. cit.</u>, p. 23.

the total equity be in the form of bonds if a company is to minimize its cost of capital.

This problem was first considered by the Board in 1950. A number of witnesses appeared on behalf of the Company supporting 109 its contention that a one-third debt ratio was appropriate. Respondents produced witnesses who argued it could be from 45 to 50 cent or 110 even as high as 60 per cent. The Board considered the question "largely academic" so considered it fair and reasonable to accept "the debt 111 ratio presently existing - namely, 40 per cent."

This ratio was used by the Board in the judgments in 1952 113 and January 1958. In the latter decision, the Board noted that the Company's plans would provide a debt ratio of somewhat less than the 114 stipulated 40 per cent. The Board adjusted the revenue deficiency of the Company to provide for the appropriate debt ratio. In so doing, the Board was not substituting its judgment for that of the Company's management as to what the appropriate capital structure should be from time to time. To the extent that the ratio was not maintained "it may be that the per share earnings of the Company will be less than the 115 level permitted."

RATE STRUCTURE

Once the Board has established the appropriateness of the

108. 1950 Op.cit., pp.30-32. 109. Ibid., p. 70. 110. Ibid., p.31. Ibid., p. 32. 111. 112. 1952 Op. cit., p. 5. (1) Op. cit., p. 19. 113. 1958 114. Ibid. 115. Ibid.

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108

expenditures and the returns to investors, it is then necessary to consider how the necessary total revenues are to be obtained from subscribers. When approving the rates to be paid by individual subscribers, the concern of the Board is that they should be as non-discriminatory as possible. Two possible approaches are available as bases for a rational pricing structure, the cost of the service or the value of the service.

At the time of the Select Committee on Telephone Systems it was the usual practice for the Company to fix annual rates for subscribers in each community or to have a contract with the local community covering the type of equipment then in use. In general rates were based on the size of the exchange, the larger the exchange, the higher the price. As time passed, new equipment became available but at a higher cost, and some exchanges grew out of proportion to others. No firm policy was established by the Company in its attempt to recover its increasing costs. In some cases nothing was done, in others it increased rates only to new subscribers and in still other, all rates were increased. The end result was an inconsistent pattern of rates when viewed from any angle.

The Company had proposed the introduction of rates based on 116 measured service in 1919. The Board rejected the proposal in the following words:

116. <u>1919 Op.cit.</u>, p. 78.

Where a regulative tribunal's jurisdiction comes, as it always has done, after the development of a rate situation, the function of that tribunal is to regulate, not initiate. If the law provided that a regulative tribunal should be an organization initiating rates, the situation would be different. So long as the existing law of Canada stands as it is, it seems to me that more important than the scientific basis is the question of how the rate works. 117

In a separate decision, the Deputy Chief Commissioner considered that "measured service should exist" and that "the Company's 118 tariffs are obsolete... and should be remodelled."

119 The Company again proposed measured service in 1921 and 120 also proposed a rearrangement of exchanges into groups. However, no evidence was introduced in explanation of the basis used in establishing the rearrangement. The Board was therefore unable to determine the reasonableness of the proposal, so it was not accepted.

In this case, the City of Montreal complained of discrimil21 nation in the rates charged as compared with the rates in Toronto. l22 This charge was admitted by the Company and it proposed to equalize the rate by increasing charges in Toronto. The Board, in keeping with its policy in railway cases of reducing rates for the one discriminated against, ordered that the Montreal rates be reduced.

The Company reintroduced the regrouping of exchanges in 1922. The Board again rejected the proposal on the basis that "the Company had 124 failed to show that the tariffs would be suitable, just, and reasonable."

117. Ibid., p. 79. 118. Ibid., p. 97. 1921 Op. cit., p. 48. 119. 120. Ibid., p. 49. 121. Ibid. 122. Ibid., p. 50. 123. 1922 Op.cit., p. 445. 124. Ibid.

In order to give a more specific basis for evaluation, the Board continued:

There seems to have been no effort in the making of them to adjust rates in any scientific way to the value of the telephone service to the subscriber, having regard to the population of the telephone area, the number of stations, or the cost of the service therein...

In defining what is just and reasonable, I would refer to the principles applicable to advances in rates, and the substance of which involves two propositions, viz:

1. Whether it is <u>reasonable</u>, having regard to cost and value of service; and as compared with rates on other commodities.

2. Whether it is reasonable in the absolute, regarded as a tax upon the people who ultimately pay transportation charges. (citations omitted)<sup>125</sup>

126

In its application dated January 25, 1926 the Company was finally able to propose a basis for grouping that was acceptable to the Board. In its evidence the Company established that "the various exchanges have been placed in groups according to the number of telephones in use, and while cost or investment has not been altogether ignored, it has not controlled the establishment of rates... The heavier burden falls upon the business service and this would seen proper, having regard to the use and value of the service."<sup>127</sup> Arguments were presented that rates should be based solely on the cost of service but the Board rejected this proposal.

The Board made minor revisions to the rate schedule as pro-128 posed by the Company. After having done this, it then compared these rates to those paid in other parts of Canada and found the rates to be "more reasonable in Ontario and Quebec... if we take into consideration

125. <u>Ibid.</u>, p. 446. 126. <u>1927 Op. cit.</u>, p. 230. 127. <u>Ibid.</u>, p. 252. 128. <u>Ibid.</u> 129 the services rendered."

However, no procedure was established to make allowance for the movement of an exchange from one group to another as the number of telephones in use changed over time. The Company had to apply to the This it did on 18 occasions but by Board to approve such changes. June 30, 1949, 227 exchanges had outgrown their 1927 grouping. The result was that when it applied for appropriate regrouping as a part of its application which led to the 1950 case, objections were made by 131 The Board accepted the regrouping and also prosome communities. posed that regular reports should be made indicating those exchanges which no longer fitted within their assigned group in order to facilitate 132 During the hearings it was brought out that the Company regrouping. does not attempt to determine the costs of individual exchanges except "in a broad way".

The most recent rate grouping results from a tariff schedule filed by the Company with the Board on June 21, 1964. Selected charges from this schedule are shown in Table IV - 2 below. In this schedule group 10 was vacated and Montreal and Toronto, with over 798,000 and 134 566,000 telephones. respectively, were moved to group 11. It is perhaps possible that group 10 will, in the near future, be for areas with from 250,001 to 500,000 telephones.

An examination of this Table indicates that, within any particular group the rates progress from a 2-party residential line, to an

129.	Ibid., pp.253-254.	
130.	1950 Op. cit., p. 39.	
131.	Ibid., p. 40.	
132.	Ibid., pp.40-41.	
133.	Tbid., p.38.	
134.	The Bell Telephone Company of Canada,	Company Telephones by Ex-
	changes, (December 31, 1964).	·····

# TABLE IV - 2

# THE BELL TELEPHONE COMPANY OF CANADA SELECTED RATES AS IN EFFECT AUGUST 16, 1965

GROUP	NO. of SUBSCRIBERS	RESI	RESIDENTIAL		BUSINESS		
NO.	in GROUP	2-Party Line	Individual Line	Metered Line	Individual Line		
2	l to 1,000	<b>\$2.</b> 85	\$3.45	n/a	\$5.60		
3	1,001 to 2,000	2.95	3.70	n/a	6.30		
4	2,001 to 5,000	3.05	3.90	n/a	7.05		
5	5,001 to 10,000	3.25	4.15	n/a	8.00		
6	10,001 to 20,000	3.45	4.40	n/a	9.10		
7	20,001 to 50,000	3.65	4.65	\$7.05	10.50		
8	50,001 to 100,000	3.85	4.95	7.55	12.05		
A8	50,001 to 100,000(E.A.	s.) 4.35	5.45	8.55	13.05		
.9	100,001 to 250,000	4.10	5.30	8.05	13.70		
<b>9</b> A	100,001 to 250,000(E.A.;	s.) 4.60	5.80	9.05	14.70		
10 <sup>#</sup>	over 250,000	4.40	5.75	8.80	16.00		
11	Montreal and Toronto	4.50	5.85	9.05	16.25		
11A	Montreal and Toronto (E.A.:	s.) 5.00	6.35	10.05	17.25		
118 <sup>#</sup>		4.65	6.05	9.45	16.65		
llC <sup>#</sup>		5.10	6.50	10.35	17.55		
ענו	Montreal and Toronto (E.A.;	s.) 5.55	6.95	11.25	18.45		
n/a - not available							

**x** - not presently in use

Source: The Bell Telephone Company of Canada.

individual residential line, to a metered business line (where available), and finally to an individual business line. As the number of telephones within a group enlarges, so do all charges. Extended area service, indicated by a letter suffix to a group, is more expensive than the basic group, and increases as one moves to the further fringes, i.e. moves from llA to llD.

But this schedule produces many questions. On what basis has it been determined that the rate charged for individual residential service in Montreal and Toronto (each with over 500,000 telephones) should be 1.41 times that charged in a community in group 5 (5,001 to 10,000 telephones)? Why is it that in Montreal and Toronto the charge for an individual business line is 2.77 times that charged for an individual residential line, whereas in group 5 this ratio is 1.93? Why does EAS cost a residential subscriber in group 8A 10.1 per cent more than in group 8, as compared with an 8.5 per cent increase in group 11A over group 11, or as compared with an 18.8 per cent increase in group 11D over group 11? Similar questions could be asked on other price differentials. What factors have led to these pricing differentials? Is it the value of the service, and if so, how has it been measured? The only answer one seems to be able to obtain is that such factors are determined "in a general way." But is it not possible to study either demand or cost or both to arrive at a more appropriate rate structure?

"UNREGULATED" REVENUES

The Board does not have regulatory power over all the services

provided by the Company. Although it is difficult to determine a dividing line between the regulated and non-regulated services, a general rule is that services connected to the switching facilies of the Company are those that are regulated. In evidence, it has been stated by a Company's employee that "the rate of profit on the Company's non-regu-136 lated business as a whole was greater than on its regulated business". But how was this determined? Since the Company does not use cost accounting, it is difficult to determine how this rate of return has been calculated. It would appear that no attempt has been made to ascertain the validity of this statement.

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Although the Board may not have jurisdiction over some of the Company's activities, the revenues from these activities are included in the total income of the Company in determining allowable earnings. The Board should further investigate these items to satisfy itself that these activities do in fact prove to be beneficial to the Company and to the subscribers.

In addition to these non-regulated services, the Company has a number of investments in companies which do not come under the jurisdiction of the Board. Some of these are wholly owned subsidiaries operating telephones within Ontario and Quebec. Presumably, their subscribers are paying rates commensurate with the normal rate structure of the Company. Other investments are in telephone operating companies which are not regulated by the Board but by Provincial Public Utilities Commissions. While the rates charged by these companies are of concern

135. <u>1958 (1)</u> Op. cit., p.23. 136. Ibid, p.24.

to the appropriate Provincial Commissions, the returns on these investments can have an effect on the Company's rates charged to its customers. The Board should investigate to determine whether the returns to the Company from these sources are in line with its allowable earnings. If they are lower, telephone subscribers in Ontario and Quebec are being called upon to subsidize these investments by paying rates which are higher than would otherwise be necessary.

In addition to its investments in other telephone operating companies, the Company now owns virtually all of the outstanding shares of Northern Electric. The fact that Northern passed its dividend in 137 1918 was considered in the 1919 judgment as a factor affecting the Company's revenues. This company is now a subsidiary and makes more than 50 per cent of its sales to its parent. The Company is not required to purchase from Northern, but it is the Company's purchasing 138 agent for non-Northern manufactured goods. In the past, the Board has limited its review to the prices paid by the Company and the rest of the trade, and has been satisfied that the Company receives the most favourable prices offered. Under other circumstances, this limited review might be appropriate but in the present case it is difficult to ascertain what forces determine Northern's prices.

In a recent article, Professor Fred M. Westfield has alleged that "a public utility may not fail to suffer a decline but actually experience an increase in profit if suppliers of capital goods collude

137. <u>1919 Op.cit.</u>, p.96 138. <u>1927. Op.cit., pp.249-250</u>

139 to raise their prices." The relationship between Northern and the Company does not require collusion between Northern and other suppliers.

The revenues of the Company do of course include dividends paid by Northern. In the period from 1961 to 1964 these dividends have 140 been increased from \$4.00 to \$5.65 per share. During this period Northern has paid out 59.2 per cent of its earnings in dividends (56.8 per cent in 1964). No information is available to determine whether this dividend income has in the past (and does now) represent a fair return on the amount invested. The question remains to what extent excessive earnings if any, are made by Northern and not refunded to the Company by way of dividends. These items have a direct affect on the results of the Board's decisions. This being the case, the Board should have the power to look into these items to ensure that subscribers are receiving the full benefits to which they are entitled.

139. Westfield, Fred M., "Regulation and Conspiracy", <u>American Economic Review</u>, Vol. 55, (June 1965), p. 441.
140. Northern Electric Company, Limited, <u>Annual Report</u>, 1964.

## CHAPTER V

## CONCLUSIONS

This thesis has examined the public utility regulatory process at two levels - the broad, general principles concerning governmental regulation of any public utility, and the specific regulation as it is applied to the Company. Our observations shall therefore be divided under two main headings in accordance with the two levels of the study.

#### THE ROLE OF REGULATION

For various reasons governments, consumers and industries may desire to have controls placed on certain segments of economic activity in order to achieve certain goals. Governments may choose to control industries in order to assure protection of the national defence, restrict exploitation of natural resources, provide necessary services, stimulate or retard the general level of business, etc. Consumers may desire protection against high prices, poor service or restricted output of essentials. Industries made up of a large number of suppliers may need protection against a monopsonist. The status of "public utility" is one of the many measures used to provide such control. The utilization of this procedure satisfies a general desire to have private ownership of productive resources and at the same time protection for consumers.

It is not possible to clearly define a dividing line between those industries which are suitable for public utility status and those which are not. In some cases it has been applied inappropriately; in other cases, though appropriate, it has not been applied. No one factor

or set of factors can be used to justify its application. It becomes a matter of degree. Ultimately the acceptance of its application is dependent on custom, the electorate and the courts.

In general, it is applied to achieve results similar to those of competitive markets where no competition exists. This is virtually an impossible task. Competitive markets are subject to a multitude of forces, some of which may not even now be fully understood. Under regulation an attempt is made to single out some of these forces and impose their power on the market. A part of the "invisible hand" of Adam Smith takes form in "administrative decree". The structure of costs and prices is carefully reviewed by a tribunal prior to the establishment of a new set of rates. But the process is not perfect. Difficulties exist in the areas of demand and cost analyses and in determining a reasonable return to investors.

As abstract or theoretical concepts, these problems are capable of fairly easy solution. But the everyday world with which regulators are concerned is not operated by concepts but by dollars and cents. In order to solve the problems they are faced with they need a wealth of information. Unfortunately some of this information is not available, or even if it is available, it is not used.

The area in the regulatory process that has probably received the greatest attention is the rate of return. In virtually every rate hearing, debate arises as to how much it should be and, not infrequently, how it should be calculated. In the United States this is complicated by

the apparent requirement that the regulators must look at the return on the assets used, not the returns on the amounts put into the firm by investors. Canadian regulators, at least as evidenced here, have on the other hand concerned themselves with the returns to investors and thus eliminated much of the problem of asset valuations.

There is a deficiency of knowledgeable studies into the areas of costs and prices. Some cost studies have been made within the institutional framework established by regulatory authorities. One of the needs is an examination which is freed from these constraints. It is quite possible that the results of such a study might reveal that some of the assumptions inherent in the present basis of pricing are inconsistent with goals that are being sought.

These criticisms do not invalidate the regulatory process. Imperfect as it may be, it still performs a very useful function. The removal of monopolistic control over the provision of "necessities of life" and its replacement by the review of a responsible body provides a protection of the consumers' interest. In those situations where regulation is appropriate and prices are intended to recover total cost, including a return on capital, it is useful to have a competent independent body review the price and cost structure at a public hearing.

#### THE REGULATION OF THE BELL TELEPHONE COMPANY

Turning now to the application of regulation as it affects some segments of the telephone industry, and the Company in particular, we will cover it under two headings - legislation and administration.

Under the legislative heading are included legislation of the Federal Government amending the Company's Charter and the Railway Act, and Orders-in-Council passed by the Cabinet. The administrative phase is carried out by the Board through its judgments and orders and its review of the periodic reports submitted and informal discussions with company management.

## The Legislative Phase

Legislation applied for by the Company to increase its authorized capital has frequently included results not originally sought. Although the charter could be changed by Parliament at any time, the review of the Company's activities in support of its application affords the opportunity for revision of items outside the powers of the Railway Act. These changes, and many of those in the Railway Act, have frequently resulted from opinions expressed by members of the Board.

One important area that requires greater clarification and amplification is the Board's limited power of review of only certain aspects of the Company's activities. Under present legislation, the Board includes the revenues provided from non-regulated sources in its calculation of permissive earnings, but is powerless to review in detail the activities providing these funds. Certain of these revenues are provided by services which may have some elements of competition, thus reducing the effectiveness of, and the need for, the Board to establish rates. The Board should nevertheless be empowered to examine these functions to satisfy itself and the public that the provision of such

services is in the best interests of telephone subscribers.

In addition to these non-regulated services, the Company has a number of investments which are beyond the Boards'power of review. Since the Company is allowed to earn a stipulated amount per share, the Board should be required to consider these investments and determine that they do provide an appropriate return. An alternative would be to require the Company to divest itself of these investments. However there is no assurance, particularly in the case of Northern, that such action would produce the desired result.

The Government of Canada has also influenced the regulatory process through its Order-in-Council issued April 29, 1958. Undoubtedly, the results obtained by the implementation of this Order-in-Council are considerably different from those that were sought. This Order-in-Council produced extra tax payments and thus higher rates in the future for the consumers of public utility services which are regulated by the Board. It is indeed unfortunate that the Federal Government passed the Order-in-Council in 1958 and it should be repealed. A preferable alternative, which would require the co-operation of the Provincial governments, would be to extend to the telephone industry the announced rebate of income taxes paid by some other public utility companies.

#### The Administrative Phase

The "day to day" administration of legislation regulating the Company is carried out by the Board. This is achieved through numerous reports filed by the Company, informal meetings with management, and, as

has been reviewed in the preceeding Chapter, formal hearings which result in the Board's Judgments and Orders. In this latter phase of regulation in particular, the Board has been very patient in listening to the arguments of the various witnesses.<sup>1</sup> The judgments of the Board have largely dealt with the rate structure, the costs incurred and returns to shareholders.

In very few matters has the Board allowed any experimentation. Instead it has tended to adopt the circumstances as they exist at the time a particular problem is considered. This is particularly true in its determination of allowable earnings. However if it has found that the Company has successfully carried on operations at a lower rate of return the Board has reduced the level permitted.

The Board's original dissatisfaction with the rate structure was noted in 1919. At that time it suggested that the rates should be based on a more scientific basis and indicated a number of items to be considered. The basis finally accepted in 1927 was a grouping in accordance with the number of telephones in the local exchange area or the "value of service." This principle has been continued by the Board since its adoption. But there is virtually no evidence to support this principle other than such statements as "a person whose telephone is connected with from 20,000 to 50,000 stations has a service more valuable than is provided by a telephone connected with half that number of stations."<sup>2</sup> No evidence exists in the judgments as to any "scientific" attempt to determine the appropriate price differential as between groups.

1. The 1950 hearings alone involved 50 days of hearings and some 6,500 pages of transcript. (1950 op. cit., p. 2.)

2. <u>Op. cit.</u>, 1927 at p. 253.

The regulation on the basis of value of service means that the Board is not particularly interested in the cost of service to individual subscribers. The Board has not requested, nor does the Company use, any attempt to determine the costs of any particular type of service. The Board has been very careful in reviewing the amounts and trends of various expenses actually incurred. On occasion, it has had to decide how particular items are to be handled. But, on the basis of its judgments, the Board has made no attempt to determine what the amounts of expenses should be. This it apparently leaves to "managerial discretion". But what assurance is there that this provides an efficient operation? What the Board needs is an alternative to managements' evaluation of its operations. Does the application of new equipment really add to efficiency, or does it merely add cost with little if any increase in the "value of service" to the individual consumer? This and other problems suggest that the Board should devote time to study why the costs are incurred in addition to how much was paid.

The allowable or permissive earnings accepted by the Board have always been based on the returns to shareholders, although in its early decisions the Board also looked at other methods of measurement. This has not only involved the problem of how much shareholders should receive, it has also involved a determination of the appropriate proportion of debt financing.

The 1919 judgment accepted the principle of 12 per cent return for shareholders as being reasonable but applied the lower rate of 10 per cent in view of the emergency conditions. This return was continued

until 1950 when the amount was again lowered from \$2.50 per share to \$2.43. The Company had not been earning the previously authorized rate but it was able to raise substantial amounts by means of stocks and bonds. The 1950 judgment found a debt ratio of 40 per cent, the amount then existing, as appropriate at that time and this ratio has been maintained. Presumably, since respondents wanted a higher ratio, if the Company had maintained a debt ratio in excess of 40 per cent at the time of any hearing, the Board would have found this higher ratio to be appropriate.

Since 1958 the Company has been reporting earnings and paying dividends in excess of the amounts accepted in the Board's last judgment. The Board is now faced with an entirely new problem. For the first time there is an excess rather than a deficiency of earnings in relation to the allowable earnings.

No judgment has been handed down as yet as a result of its recent hearings. If the Board follows the procedures it has used in the past, it is not unlikely that it will find that the present earnings are adequate. Any attempt to reduce the present levels is likely to have a serious effect in the marketability of the Company's securities and thus make it more expensive for the Company to raise funds in the future.

In addition, the Board has been asked to change the method of regulation from an earnings per share to a return on invested capital. Such a change would eliminate the necessity of the Board specifying an appropriate debt ratio. Instead, the Company would be free to adjust

the ratio as the market conditions permit.

Another topic brought out on the basis of our analysis is the price at which shares are issued under the Employees' Stock Plan. As originally instituted, the plan provided for the issue of stock at \$5.00 less than the average market price, with a minimum of the par value of \$25.00, and a maximum which was recently increased to \$42.00. In recent years this maximum has been the governing figure and it has been below the price of offerings to shareholders. The present maximum is less than 75% of the existing market price. It might be more appropriate to issue these shares at a specified percentage, say 80 per cent, of the market price with a minimum of \$25.00.

It is also to be hoped that in the future the Board will not allow for regulatory purposes the double charging to expense of the same expenditure. This apparently did happen in the Board's treatment of pension costs charged to construction in its 1950 and 1952 judgments.

It is difficult to generalize about the effect of regulation on the Company's rates. Only one application was flatly rejected and that one, in 1922, was on a split decision of 3 to 2. Three judgments, in 1919, 1921 and January, 1958, reduced the applications by about 50 per cent.<sup>3</sup> The other four major rate judgments, in 1927, 1950, 1952, and October, 1958, have resulted in the Company obtaining substantially the rates requested.

An area that is very difficult to assess is the effect of regulation on managerial policy. It has been seen that a variety of types of regulation are in practice, particularly in the United States.

<sup>3.</sup> The 1958 deficiency as found by the Board was actually 42.6 per cent of the amount included in the application (<u>1958 (1) op. cit.</u>, pp. 26-27.) This judgment undoubtedly did have an affect on the amount requested in the 1958 application.

It would be interesting to prepare a study of a regulated industry to ascertain whether differences in the provision of service, etc., result from different managerial policies, or from regulation. Such a study might be feasible by an examination of two companies in the Bell Telephone system under different regulatory procedures and two companies in the General Telephone system under the same regulatory procedures as the Bell companies. The Bell Telephone Company of Canada and The British Columbia Telephone Company could qualify as two of the companies selected. Whether American companies could be found within these two systems and both regulated by the same Commission, and whether such a study could be done, are problems for further development. Such a study would of course require the co-operation of the companies concerned.

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