ECONOMIC ASPECTS OF AGRICULTURAL PRODUCTIVITY AND THE SEIGNIORIAL LAND-HOLDING SYSTEM IN QUEBEC, 1780-1850: the testing of causal hypotheses

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Abstract

The standing interpretations of the significant causes of the falling productivity of the soil and, thereby, the decline of the economy of Lower Canada (Québec), in the first half of the nineteenth century, are examined in this thesis. The author then proposes an alternative causal explanation predicated upon different structural presuppositions. The arguments of Fernand Ouellet and Maurice Séguin are outlined, as they are the most basic of the standing interpretations. And an attempt is made to determine the causal and factual significance of their explication of events. Ouellet attributes the agricultural decline to the 'spiritual' attributes of the French-Canadian peasant. According to Ouellet, the norms and mores of the French-Canadian peasant were not conducive to the adoption of those available farming techniques, which could have prevented the fall of agricultural productivity. Séguin maintains that it was the inadequacy of markets which kept the French-Canadian peasants from adopting the more productive farming technology. Such markets were products of British colonial rule.

The causal hypothesis proposed by this author, is that the inadequacy of income under the control of the French-Canadian peasant prevented the adoption of the more productive farming technology. The deficiency of income was the product of the demands made upon the peasant under the seigniorial system of land tenure, which predominated in Lower Canada at that time. The standing interpretations are found wanting, both empirically and logically. The alternative hypothesis is found to be of greater causal significance in the context of falling per capita output in rural Lower Canada. It is found that prior to the early 1820's, the income was available to the peasantry for investment in themore productive agricultural technology.

But it took time for the peasantry to become convinced that their traditional methods of farming were no longer adequate. By the time the new technology would most probably have been adopted by the peasantry, the income to do so was no longer available. Much of the peasants' income was being transferred into the hands of the seignior and the Church. This income was not used to make productive investments on the farm. Detailed analysis of primary and secondary material is made by the author to substantiate the arguments forwarded.

Résumé

Cette thèse examinera les interprétations établies des causes principales de la décadence agricole, donc économique, qui s'est manifestée au Bas-Canada (Québec) pendant la première moitié du xix^{e} siècle. Les interprétations offertes sont essentiellement présentées par les travaux de Fernand Ouellet et Maurice Séguin. L'auteur propose comme alternative une explicat-cation causale fondée sur des présuppositions de structures différentes. Un essai est fait, afin de déterminer le degré de conséquence des arguments causales et factuels des informations présentées par Ouellet et Séguin.

M. Ouellet impute la décadence de l'agriculture aux attributs 'spirituels' retrouvés dans la condition paysanne du canadien-français. Selon M. Ouellet, les principes et moeurs du paysan ne se prêtaient pas à l'adoption des techniques agricoles disponibles qui aurait pu empêcher l'abaissement de la productivité agricole. De son coté, M. Séguin maintient que le paysan canadien-français ne pouvait pas adopter des procédés agricoles plus productives en raison de l'insuffisament des marchés, ces marchés ayant fait leur apparition pendant le régime colonial brit anique.

L'hypothèse causale proposée par l'auteur, postule que c'était l'insuffisance de revenu sous le contrôle du paysan canadien-français qui l'empêchait d'adopter les techniques agricoles plus productives. Ce défaut de revenu était le résultat des exigences imposées au paysan par le système seigneurial de possession des terres. Ce système prévalait au Bas-Canada pendant cette période. Dès lors, les interprétations reconnues laissent à désirer, non seulement empiriquement mais logiquement. L'hypothèse alternative possèdé plus de conséquence causale dans le contexte de la baisse du rendement per capita au Bas-Canada rurale. Nous avons remarqué qu'avant les années 1820, une partie des revenues agricoles était disponible pour des investissements technologiques productifs. Mais le paysan hésitait

néanmoins à refuser les techniques traditionnelles qui lui ont toujours suffit. Là où il vraisemblement serait pu vaincre ses craintes, le revenu n'était plus à sa disposition, il devait le partager avec le seigneur et l'église. Le travail de la terre était le lot du paysan, mais ces paiements ne revenaient pas comme investissements dans cette terre. Une analyse détailléedes sources primaires et secondaires est offerte comme appui pour les arguments présentés.

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CHAPTER ONE

Introduction

This essay is concerned with one of the more widely discussed topics in Canadian Economic History. We will attempt to determine the 'significant cause' of the decline of agricultural productivity, most clearly reflected in the falling productivity of the soil, in the Québec of the first half of the nineteenth century. In this period of agricultural decline, the agricultural sector composed the most important segment of the economy. [1]

Explanations of this agricultural decline have been forwarded by Fernand Ouellet and Maurice Séguin. Other arguments, for the most part, stem from or merely reiterate these two major explanations.

Fernand Ouellet and Jean Hamelin, in their joint essay "La Crise Agricole dans le Bas-Canada (1802-1837)", argue that it was the tardiness of the peasant in adopting proper farming techniques which resulted in the agricultural decline of the period. [2] Thus the typical peasant [3] did not utilize the most efficient and appropriate means to maintain the prosperity of the agricultural sector which characterized the 1890's. As a result productivity gradually fell in the agricultural sector.

In his Histoire Economique et Sociale du Québec, 1760-1850, published in 1971, Ouellet refers to evidence which suggests that in the ten years previous to 1846, poor harvests left the peasant with a much reduced financial base. Nevertheless, it is claimed, the typical peasant spent whatever surplus income available upon 'luxuries' as opposed to more intensive agricultural technology. Ouellet continues: [4]

> "Cette propension de l'habitant canadien-français aux dépenses somptuaires et aux investissements improductifs constituait toujours, en dépit des circonstances malheureuses qui l'accablaient, un

> trait de sa mentalité et un élément durable de sa culture. Ses revenus étaient en trop forte proportion affectés à la satisfaction de son besoin de prestige qui ne se concrétisait pas seulement dans sa pratique religeuse. Ce trait de mentalité continue à jouer même en période de crise au detriment de son progrès matériel."

Even in times of prosperity the French peasant did not invest in new agricultural technology.[5] Not even the sustained propaganda of the agricultural societies was able to convince the French peasant of changing their ways.[6] A change in the mentalité and overall cultural outlook of the French peasant, is what Ouellet claims, would have been the solution to the degeneration of agricultural production in Lower Canada.

Maurice Séguin quite explicitly attributes the cause of the agricultural decline in Lower Canada to British rule. He writes:[7]

> "L'occupation britannique a troublé la vie économique des canadiens parce que l'envahisseur a placé les vaincus dans une position telle qu'il leur fut impossible d'améliorer leurs méthodes de culture, parce qu'il a brimé leur expansion territoriale par sa mauvaise politique d'alienation des terres sans réussir (comme les Français d'ailleurs) à trouver pour cette colonie conquise un marché agricole important et régulier."

Séguin maintains that inadequate protection to Lower Canadian grain,[8] from American and Upper Canadian (now Ontario) exports,[9] further hampered the development of a market in Lower Canada. Since the market was limited, the typical peasant was acting appropriately in maintaining their traditional farming practices. The traditional farming practices were sufficient to realize the demands of the peasant family per se. Séguin stipulates:[10]

> "Des méthodes de culture primitives sont plus que suffisantes lorsque la famille paysanne n'a pratiquement qu'elle à nourir. N'avoir à rechercher qu'un minime surplus de production pour l'échange parce que les marchés

> ne sauraient en absorber d'avantage conduit nécessairement au moindre effort, aboutit à l'absence de progrès technique."

Essential to Séguin's argument is that more intensive agriculture would have necessarily increased total output to such an extent that an expanding market would have been required. Moreover, Séguin claims that the typical peasant had no incentive to adopt the more intensive technology in spite of the fact that the productivity of the soil was falling, since the peasant preferred to move on to more productive land. [11] But Séguin argues that by the early 1820's fertile land for settlement had become scarce. [12]

Since the peasant required an expanding market to adopt the more intensive farming practices, Séguin concludes that if Québec was to be brought out of agricultural problem such markets would have had to be developed. For Séguin there was no other way out of the problem.

One interpretation of the decline of agricultural productivity which has received little notice in the literature is the argument of the commissioners who were resposible for the production of the 1843 document, The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada. The commissioners concluded, after examining a plethora of evidence, that the seigniorial tenure was a basic cause of Lower Canada's agrarian problems through the economic burden it imposed upon the peasant farmer. [16]

Acting in the spirit of the commissioners' conclusions, we have constructed an explanatory hypothesis as to the cause of the agricultural decline in Lower Canada. The hypothesis reads:

> In the context of a falling per capita income, the 'significant' or fundamental cause of the falling productivity in Québec's agricultural sector in the first half of the nineteenth century is attributed to the increasing exactions demanded of and wrested from the typical peasant by the seigniors plus the tithe and other charges collected from the Catholic farming community by the Catholic Church.

If the adoption of more intensive agricultural technology required the application of an increased amount of capital and/or labour time; and if the economic burden of the seigniorial tenure deprived the typical peasant of the economic means required to adopt the more intensive technology; and if an expanding market was not required and/or existed, then our hypothesis would be proven correct. In this case the peasant farmer would have been incapable of renovating the state of agricultural production no matter if such a process was thought desirable by the peasant farmer or not.

In this essay we will examine the requirements for the adoption of a more intensive agriculture, and following from this, the agricultural practice required to prevent and reverse the declining productivity of the soil. We will examine the extent to which productivity fell from the 1780-1851 period and the implications this had for the economic surplus produced per typical family farm. Moreover, we will examine the extent to which the market was relevant to the adoption of a more intensive agriculture. Finally, we will try to determine the extent to which the seigniorial exactions and Church payments reduced the economic surplus of the peasant farmer.

If Ouellet is correct in attributing the cause of the agricultural decline to the 'mentalité' of the French peasantry a sufficient economic surplus must have been under the control of the peasants for them to invest in the appropriate agricultural technology. If Séguin is correct

in attributing the cause of the agricultural decline to the lack of markets for Lower Canadian agricultural produce, markets must have been both a prerequisite for the adoption of the more intensive agricultural technology and stagnant.

Only those factors which are relevant to the testing of the three causal explanations put forth above will be taken into consideration in this essay. Although our analysis will be conducted within the context of the institutional milieu of the period under study, we will not attempt to deal with those many socio-political developments which are not most directly related to our causal analysis of the falling productivity of the agricultural sector of Lower Canada, and in this sense, of the agricultural decline of Lower Canada.

FOOTNOTES

1. From the census material one may deduce that in 1851 at least more than fifty per cent of the population was directly engaged in agricultural production.

2. Ouellet, Fernand and Hamelin, J., "La Crise Agricole dans Bas-Canada, 1802". For a similiar position refer to: Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, pp. 253, 456, and 460.

3. Refer to chapters two and three for details on the concept of the 'typical peasant'.

4. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 456.

5. Ouellet, Fernand, and Hamelin, J., "Les Rendements Agricoles dans les Seigneuries et les Cantons du Québec: 1700-1850", p. 92.

6. Ouellet, Fernand, Le Bas-Canada, 1791-1840, p. 191. Refer also pp. 175 and 192.

7. Séguin, Maurice, La Nation "Canadienne" et l'Agriculture (1760-1850), p. 191. For a similiar statement see pp. 129 and 141.

8. Ibid., p. 109.

9. Ibid., p. 114.

10. Ibid., p. 136

11. Ibid., pp. 134 and 135.

12. Ibid., pp. 174 and 175.

13. Without making any reference to The Report of the commissioners, Pilon-Lê, in a 1980 article, has argued that the seignior appropriated the economic surplus of the peasant thus depriving the peasant of the means of investing in agriculture and thereby increasing the fertility of the soil. But, Pilon-Lê fails to provide documentation for the arguments she presents, nor does she deal with the arguments of Ouellet and Séguin, which if correct, would undermine the validity of her conclusions. Refer to"Le Régime Seigneurial au Québec: Contribution à une Analyse de la Transition au Capitalism", pp. 147, 149, and 161. Ouellet also argues that the seigniorial tenure imposed a heavy economic burden upon the censitaire. At one point he states: "Il est certain que, dans un contexte de recul de la production agricole et de déclin des prix, la fiscalité seigneuriale pèse toujours plus lourdement sur le petit producteur agricole." (Le Bas-Canada, 1791-1840), p. 195). But

Ouellet argues that one cannot consider the economic burden of the seigniorial tenure to have been oppressive enough to have deprived the censitaire of such a proportion of his/her income that none remained with which to invest in the renovation of agricultural production. On the other hand, Séguin dismisses the seigniorial tenure as being in any way causally related to the problems in agricultural production which developed in Lower Canada. He writes: "L'habitant n'est pas disposé à convertir la tenure de sa terre parce qu'il est attaché aux coutumes français mais aussi parce que les charges seigneuriales sont actuellement si légères que personne ne les considère comme un fardeau nécessitant la mutation de tenure." ("La Nation 'Canadienne' et l'Agriculture (1760-1850), p. 156).

CHAPTER TWO

Method [1]

The method used in this paper relies heavily upon the work of Max Weber, The Methodology of the Social Sciences. We will utilize and develop concepts introduced by Weber so as to test the validity of the causal explanations of the falling productivity of Lower Canada's agricultural sector put forth in the introduction of this essay.

We first proceeded to identify a problem to be invetigated: the decline in productivity in the agricultural sector in the Québec of the first half of the nineteenth century. We then introduced the 'typical' causal explanations for the decline in productivity. These explanations will be examined for their logical consistancy and empirical validity.

We must determine whether there exists a factual basis for the arguments presented. Apart from this, we must determine whether the explanation examined locates the factor(s) which is basic to the determination of the identified event (the agricultural decline). As Weber writes: [2]

> "In the event of the exclusion of that fact [the significant causal fact] from the complex of factors which are taken into account as co-determinants, or in the event of its modification in a certain direction, could the course of events, in accordance with genral empirical rules, have taken a direction in any way different in any features which would be decisive for our interest?"

We are then faced with the problem of determing what facts we will discuss. We must determine what events are important to an understanding of the causation of the agricultural decline. As Weber argues: "The possibility of selection from among the infinity of the determinants is conditioned, first, by the mode of our historical interest." [3]

It is obviously difficult to chose the events and facts to be included in ones analysis and thereby, which should be omitted. But ultimately the choice must be based upon a decision as to what is causally relevant and irrelevant to the generation of the decline in agricultural productivity. The assumption is implicit in this process of selection, that it is not necessary to reproduce the 'totality' of reality in a given period of time so as to understand the causes of a particular event. As Weber stresses: [4]

> "When it said that history seeks to understand the concrete reality of an "event" in its individuality causally, what is obviously not meant ...is that it is to "reproduce" and explain causally, the concrete reality of an event in the totality of its individual qualities. To do the latter would be not only actually impossible, it would also be a task which is meaningless in principle. Rather, history is exclusively concerned with the causal explanation of those "elements" and "aspects" of the events in question which are of "general significance" and hence of historical interest from general standpoints, exactly in the same way as the judge's deliberations take into account not the total individualized course of the events of the case but rather those components of the events which are pertinent for subsumption under legal norms. Quite apart from the infinity of "absolutely" trivial details, the judge is not at all interested in all those things which can be of interest for other natural scientific, historical and artistic points of view."

Nevertheless, it is important not to exclude, inadvertently or otherwise, facts or events which are somehow causally related to the problem being examined. For this reason, we include in our essay a discussion of the institutional factors which have a direct bearing upon our analysis. For this reason we exclude from our analysis, for example, any discussion of the development of a landless rural population. Although this was an important 'event', it was not a cause of the declining productivity of the soil, rather it was a consequence of the declining productivity of the soil. [5]

For the purpose of testing the hypotheses presented, it is advantageous to construct what Weber refers to as the ideal type. These are limiting cases constructed from assumptions from which one may deduce certain patterns of behaviour. For the purpose of this essay it becomes necessary to construct a model of an ideal type peasant family and then deduce how such an ideal typical family would react to certain stimuli. This then can be compared with the real evolution of events. In this fashion one may locate the necessary causes for the evolution of events.

We choose to construct an ideal typical peasant family, as it is the behaviour of the peasant family, in an economy dominated by the peasant family as a unit of production, that 'causes' most directly, the level of production to be what it is. How the peasant family is expected to react to the inadequacy of a market or the absence of an economic surplus is significant in the context of this essay.

We will construct our model of the ideal typical peasant family from our understanding of investigations which are relevant to the peasant family. Our model will assume that the typical peasant family is rational. This directly contravenes the basic causal presupposition of Ouellet and Hamelin. Thus our construction can assist us in understanding the extent to which their assumption of irrationality is a correct one. In other words, need one assume that the peasantry were irrational to explain the falling productivity of the soil? [7]

FOOTNOTES

1. Detailed discussion with Louise-Edmée Lamontagne of my ideas on methodology were essential to their development.

2. Weber, Max, The Methodology of the Social Sciences, p. 181.

3. Ibid., p. 169.

4. Ibid., pp. 169 and 170.

5. Ouellet finds that the rural proletariat composed 20 per cent of the heads of families in 1831 (Le Bas-Canada, 1791-1840, p. 227). He argues that the creation of landless peasants and emigration from the rural into urban regions were caused by the falling productivity of the soil, amongst other factors (Histoire Economique et Sociale du Québec, 1760-1850, pp. 348 and 470).

6. Weber, Max, The Methodology of the Social Sciences, pp. 97 and 102.

7. Ouellet and Hamelin assume that the peasants were irrational since they argue that the cultural mores of the peasantry (the mentalité) were the basic cause of the falling productivity of the soil. This assumes that the peasantry willingly permitted the basis of their economic existence to collapse. Thus, the peasantry acted without 'reason', unless we assume that it was a 'reasonable' action on the part of the peasantry to voluntary commit economic suicide. Refer to the following chapter for details.

CHAPTER THREE

The Peasant Family

The works of A.V. Chayanov, Witlod Kula and Rodney Hilton are of importance to this discussion.

We will not argue that the seigniorial land holding system, as it existed in Lower Canada had the characteristics of a 'pure' feudal type of land holding system. But although the peasantry of Lower Canada may have been 'free' in the sense of not being legally bound either to the land or the seignior, they were bound by various payments to the seignior and the Church (see the following chapter for a discussion of the development of the economic aspects of the seigniorial tenure in Lower Canada). Because of this and the fact that Lower Canada's agricultural production was characterized by the family farm, it is of importance to appreciate the actuality of the family farm when faced by varying degrees of demands upon its output by outside forces, such as the seignior and the Church. This would permit us to acquire an insight as to the possible effects of varying the quantities of economic surplus under the control of the peasant family upon the mode of production pursued, and thus upon productivity.

A peasant family free from any external demand upon its output is free to do what it wishes with it, given the constraints of the market. The peasant family could then invest as it wishes and produce the mix and quantum of output thought most appropriate given the constraints of the market.

The ideal peasant family farm may be situated in two 'extreme' social contexts: (i) The peasant family is free from the demands of external bodies. In essence, the peasant family has control over the process of production and the output produced. (ii) The output produced and the

output mix in the family farm are controlled by individual(s) external to it, such as the seignior, state and Church. The peasant family retains control over the work process. We situate the typical family farm of Lower Canada between these two extremes.

Rodney Hilton discusses what he has determined to be the characteristic features of the 'free' peasant: the type of peasant of the social context specified in category (i) above. This Hilton does in his Decline of Serfdom in Medieval England. He writes: [1]

> "The essence of free status and tenure was not freedom from the acquittance of rent in the form of labour service, though the labour discipline required for enforing unwillingly performed services must have made forced labour seem, for many a villein, a very important element in his servitude. In a peasant society the fundamental freedom, obviously enough, was the right of the peasant, if not to the full product of his labour, at any rate enough to sustain a traditional standard of living. But any medieval peasant knew, of course, that his surplus product was going to be taken away bit by bit by landowner, By Lord, by Church, and by State. Thus the further freedoms which were needed were those which would limit the demands of these outsiders, make them less burdensome in terms of the peasant's income."

In Lower Canada, the typical family farm was not free in the above sense (see the following chapter for details). In the course of this essay we will see what role the lack of freedom on the part of the typical peasant family of Lower Canada had upon the determination of agricultural productivity.

Can one typify the form of economic calculation used on the peasant family farm as similiar to that of the neo-classical firm? A rational firm is expected to evaluate all inputs that have a cost, inclusive of all labour costs, and to minimize total costs. Given the price level, the

representative firm is expected to maximize revenue such that any marginal increase in output would not result in a marginal cost in excess of the marginal revenue. In this fashion profits may be maximized. Theoretically, one may argue that equilibrium is reached for the firm when marginal cost equals marginal revenue.

By rational Kula means the adoption of the minimal means to achieve maximal ends, given the scope of knowledge that is within the sphere of cognition of those who are in the position to choose the means to realize that particular end. [2] In Weber's intellectual scheme, rationality is the utilization of adequate means to achieve given ends. The term adequate is bounded by the overall cultural milieu of a given era and society. [3]

Chayanov argues that the model of a neo-classical firm cannot be used to explain the behaviour of a typical farm. He argues that the peasant family can continuously operate at what the representative neo-classical firm would have evaluated as a loss. Chayanov also argues that the peasant family need not adopt the most productive techniques of production known, as opposed to what would be adopted in a neo-classical firm. This would be so as, in the family farm, Chayanov argues, the cost of labour power is evaluated differently than it would be in a neo-classical firm, and the objective of the peasant family is to maximize utility as opposed to the maximization of profits.

The concept of the family farm, and the causal relations contained therein, can be applied, according to Chayanov, in analysing the peasant family farm under any social context. [4] The family farm typifies the social structure wherein independent producers play an important role in the determination of "...the time and intensity of this work." [5]

Chayanov argues that his studies of the Russian economy, as well as

those of others, indicate that the peasant family characteristically utilizes a concept of equilibrium in operating the family farm. Equilibrium is suggested to be the point at which the drudgery of the marginal expenditure of labour equals the subjective evaluation of the marginal utility of the output produced. [6] This is opposed to the equilibrium of the representative neo-classical firm.

The peasant family is obliged to take into consideration as a cost only those inputs for which a payment must be made. Chayanov argues that gross income must cover those inputs which cannot be obtained without charge, and these, for the most part, have their prices determined externally to the family farm.

A significant input whose price is determined internally to the family farm is the price of labour power. The price of labour power, when determined internally to the family farm, may change independently of the 'laws' of supply and demand. It may be higher or lower depending upon the personal requirements of members of the peasant family. As such, a large proportion of the costs of production are indeterminate. The income required to cover the consumption needs of the peasant family may alter with the particular subjective evaluation of consumption requirements by the peasant family in any given point of time.

Whereas a traditional profit maximizing firm would go bankrupt if costs rise sufficiently, given the price level, the family farm could continue to operate if the peasant family would accept reductions in its consumption demands, or increase the intensity of labour to the extent that the increased costs would otherwise prevent the family farm from covering payable costs with the available gross income. [8] Given the sum

of revenue (total output evaluated in money terms) that the peasant family generates, output need not decline with a fall in the return to labour as long as the peasant family continues to view the marginal labour expenditure required to produce that sum of revenue as being equal to the marginal utility of that revenue.

Chayanov argues that, at a minimum, peasants attempt to maintain full employment of the family, and given that, to maximize gross income. [9] For these goals to be realized the peasant family would adopt any new techniques of production as long as they would not generate unemployment. Nor would a peasant family introduce crops, or a mix of crops which would be expected to result in unemployment. [10] The condition of maintaining full employment, Chayanov found, is prior to that of maximizing output per person. But an a priori condition for any family farm production is the maintenance of the fertility of the soil, otherwise the soil would be unable to produce the output requisite to maintain the personal demands of the peasant family. Moreover, if the fertility of the soil was not maintained, the cycle of production could not be renewed. [11]

Chayanov discusses the importance of external bodies which can appropriate the economic surplus produced by the peasant family. [12] But whatever the external constraints upon the economic surplus produced by the peasant family, Chayanov argues that the peasant family would orient production in the manner most appropriate to satisfy the personal demands of the peasant family.

Chayanov concludes from his analysis of the Russian peasantry, that the peasant family is typically rational in that it adopts what it regards to be the most appropriate means towards realizing its personal demands. Such rationality allows for the peasant family to sustain reductions in

personal consumption either to absorb incressing material costs, increasing external demands, or to increase capital investment. But the extent to which personal consumption may be reduced is a function of the extent to which the peasant family believes it can sustain a reduction; wishes to remain independent farmers, with respect to the increasing costs of production; can resist externally imposed 'taxes'; and the extent to which the peasant family perceives that the investment made will result in a higher standard of living or will prevent the standard of living from falling.

A typical peasant family is one which is characterized by patterns of behaviour found to typify real peasant families. What is fundamental to the typical peasant family, from Chayanov's point of view, is that it attempts to maximize its marginal utility: to obtain a balance between the drudgery of labour, on the margin, and the subjective worth of the marginal revenue which is function that labour. But in the process of maximizing utility the peasant family should not be expected to willingly exhaust the fertility of the soil, as this is the basis of the livelihood of the peasant family. One would expect that the degeneration of agricultural production, resulting from the exhaustion of the soil, in the context of family farm production, would be the result of the inadequacy of necessary technology; the lack of knowledge about such technology; or such external forces which prevent the peasant family from adopting the necessary changes in the process of work required to prevent the exhaustion of the soil, such as the taxing of the requisite economic surplus. The above is what can be expected from the assumption of rationality in the behavioural constraints of the ideal typical peasant family.

On the other hand, the typical peasant family whose behavioural

constraints were predicated upon the assumption of irrationality would obviously lead one to different inferences than those stated above. But these inferences would not conform with what has been found to be characteristic of the behaviour of peasants in control of their place of work: their farm.

Nevertheless, irrational behaviour is not an impossibility. The 'mentalité' of the Frecnh Peasant could have prevented the adoption of agricultural technology required to prevent the fertility of the soil from falling and/or reverse the fall. But our model of the typical peasant family makes clear that a peasant need not be irrational for the productivity of the soil to decline. If certain events effect the peasant family directly which prevent the rational peasant family from maximizing utility, then it is probable that one of the outcomes would be the fall in the productivity of the soil.

FOOTNOTES

1. Hilton, R.H., The Decline of Sefdom in Medieval England, p. 30.

2. Kula, Withold, An Economic Theory of the Feudal System: Towards a Model of the Polish Economy, 1500-1800, p. 168.

3. Weber, Max, The Methodology of the Social Sciences, pp. 21-26.

4. Chayanov, A.V., Peasant Farm Organization, p. 42.

5. Ibid., p. 42.

6. Ibid., pp. 6 and 81.

7. Ibid., pp. 86-88.

8. Ibid.

9. Ibid., p. 115.

10. Ibid., pp. 39-40.

11. Ibid., pp. 134 and 138.

12. Ibid., p. 21.

CHAPTER FOUR

The Seigniorial System of Land Tenure: The Evolution of Economic Constraints Upon Peasant Family Production in Québec

The typical peasant family of Lower Canada was situated within a specific institutional setting. Most relevant to the economics of agricultural production by a peasant family was the seigniorial system of land tenure which was established by the French authorities in the seventeenth century in their North American colony. We will attempt to establish what the seigniorial tenure was like as it evolved during the French Régime and how this effected the proportion income controlled by the typical peasant family and thus, the ability of the peasant family to invest in agricultural production. In this way we can better appreciate the economic position of the typical peasant family as we enter the period under study in this essay (1780 to 1850).

The area most pertinent to our analysis is encompassed within the St. Lawrence river basin. This is the area wherein the seigniorial system of land tenure prevailed. With the passage of the Constitutional Act in 1891, this area became embodied within the British colony of Lower Canada, presently, the Province of Québec. [1]

Under the British Régime the amount of land under the domain of the seigniorial tenure did not increase to any considerable extent. Only four concessions of seigniories were made under the British [2] as opposed to the 210 conceded by the French and still operative at the time of the conquest of New France by the British in 1860. [3] The area under the seigniorial tenure comprised 8,300,000 acres. [4] This land was the most fertile in Québec and the most accessible to river transportion, the

only reliable mode of transportation at the time.[5] The rest of the land consisted of the Canadian Shield to the North, most of which was, and remains, unsuitable for cultivation, and the Appalacian Highlands, south of the St. Lawrence river and to the east of Lake Champlain, which was more fertile than in the Shield but less fertile than the land in the St. Lawrence river valley. This area south of the St. Lawrence, was to become, during British rule, home for the 'Eastern Townships' where the freehold system of land tenure prevailed.

(i) Authorities and opinions

Most authorities have argued that, for the most part, prior to the conquest of New France by Britain, the censitaire (the peasant farmer of the seigniory, one who held his/her land en censive) was not adversely affected, from an economic perspective, by the seigniorial system of land tenure. However, after the Conquest, it is argued that the British authorities did not defend the censitaire from the encroachments of the seignior as they were defended under the French Régime by the intendant. This was the opinion reached in 1843 in The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada.

Contemporary expert opinion is in agreement with the conclusions presented in The Report. William Bennett Munro,[6] Victor Morin,[7] and Marcel Trudel[8] present arguments most in agreement with those in The Report. The arguments of R.C. Harris[9] and J.P. Wallot[10] are also consistent with those found in The Report, but they add to these an additional and important point. They both argue that the growing agricultural population in Québec in the second half of the eighteenth century seriously weakened the 'bargaining' position of the censitaire

in relation to the seignior. What both authors imply is that if the French authorities had continued to rule Québec they would have defended the censitaires from any attempt by the seignior to increase exactions from the censitaire. Harris and Wallot basically argue that since the French authorities defended the censitaire during the time when they ruled, there is no reason to believe that they would have done otherwise if they had continued to rule Québec.

Louise Dechêne challenges the above interpretations in her 1971 piece, "L'Evolution du Régime Seigneurial au Canada: le Cas de Montréal aux xvii^{e} et xviii^{e} Siècles." [11] Dechêne argues that the state never performed the role of gaurdian to the rights of the population in New France. [12] It was not the censitaire, but the seignior who was able to garner the sympathy and aid of the authorities during their conflicts with each other. [13] For this reason the seignior was able to appropriate most of the disposable savings of the censitaire during the French Régime. [14] Thus, the cens et rentes, if they appeared to constitute only a trivial sum, were in fact a heavy burden upon the censitaire. [15] For Dechêne, the economic difficulties faced by some of the seigniors prior to 1760 were a result of the scarcity of population and markets at the time. [16] However, the seignior faced no institutional barriers to their designs to maximize their economic exactions from the censitaire. Thus, for Dechêne, the conquest of New France did not mark the beginnings of a new institutional epoch, one which was more advantageous to the seignior. She argues: "...on ne peut douter que toutes les entorses au droit de propriété qui seront vigoureusement dénoncées au milieu du xix^{e} siècle furent, sinon partout renforcées, du moins mises en place sous le régime français." [17]

(ii) The concession of land: The French Régime

Basic to any system of land tenure is the granting of land. In New France, concessions of land to the settler primarily consisted of en censive or en roture concessions. These were virtually the same. They involved the same type of economic obligations of the peasant farmer (the censitaire or roturier) to the seignior. [18] The peasant obtained land from the seignior, who inturn was granted land en seigneurie by the Crown. [19]

The only 'significant' economic burden faced by the seignior was the payment of a quint, fixed by article xxv of the Custom of Paris at one-fifth of the mutation value of the seigniory. The quint was payable at any mutation of ownership of a seigniory other than by direct inheritance. Traditionally the Crown returned to the seignior one-third of the amount. On the whole, this was not a truly significant payment. [20]

Prior to 1711 the seignior faced no specific obligations to the Crown with respect to the granting of land. Post 1711 this changed somewhat, but not considerably. In 1711, The Arrêts of Marly were proclaimed.

The first explicit attempt by the French Crown to regulate the manner by which the seignior granted land was in March, 1663, when the King issued a royal arrêt ordering the reversion to the Crown of all uncleared lands within six months of its publication. [21] This arrêt was never enforced by the intendant of New France, Jean Talon. [22]

In May 1664, The Company of the West Indies was formed by Colbert. It could concede land, but only under the constraints of the Custom of Paris. [23] But the Custom of Paris imposed no constraints upon the manner by which the seignior granted land, nor did it oblige the seignior

to grant land at the request of the censitaire. [24] In 1666 the Crown invested itself with the authority to grant land (to the seignior) through its representatives in the colony.

When in 1672, the King ordered that of all uncleared land in the seigniories granted within the last ten years, half was to be reunited with the royal domain, the authorities in New France did nothing to enforce it. [25] In 1679 a royal order was issued calling for the annexation to the royal domain of one-twentieth of land granted and not yet cleared, every year, from 1680 onwards. This order was not enforced as well. [26] It is of interest to note that many members of the government in New France were seigniors. [27]

The government of New France was never recalled by the Crown for not enforcing royal orders. The Crown continued to approve seigniorial grants although the seigniors were not following the written directives of the Crown. R.C. Harris comments on this point: [28]

> "The curious feature of these royal edicts is that neither Duchesneau nor later intendants paid any attention to them. While several of Talon's smaller concessions were reunited to the royal domain when the seigneur returned to France, the large seigniories which had survived from propriety days remained unaltered. If an undeveloped portion of a seigneurie was ever withdrawn no record of the transfer remains even though as late as 1700 not more than four or five per cent of all of the seigneurial land granted in Canada had been cleared...Far from reducing the size of the seigneuries the governors and intendants were increasing it as seigneurs asked for, and usually received, augmentations to their original concessions ...After 1672 augmentations were almost as common as new concessions and were regularly sent to France to be ratified by the king."

Not only did the authorities not enforce any law which regulated the behaviour of the seignior with regard to the granting of land but, the seignior was being permitted to charge an entry fee (prix entrée) for wild

land.[29] The intendant of New France in 1707, Jacques Raudot, complained about the increasing exactions (les droits et rentes) made by the seignior upon the censitaire.[30] In fact, the Crown did nothing to appease these complaints.

The proclamation of the Arrêts of Marly on July 6, 1711 was supposedly a response by the Crown to Raudot. The first of the two arrêts dealt with the sub-granting of land by the seignior. Prior to the proclamation of the arrêts the seignior was under no obligation to sub-grant land to the censitaire. Up to 1711 not one seigniorial title-deed obliged the seignior to sub-grant land.[31] It was specified in the arrêt that if a habitant requested land from the seignior and the seignior refused to grant that land at a rental price only (à titre redevances), that is, without requesting any additional monetary payment (sans exiger d'eux aucune somme d'argent), the habitant could approach the governor, lieutenant-governor or intendant who were obliged, by order of the Crown, to grant the land requested at rate similiar to what prevailed in the seigniory wherein the grant was being made. Rental payments were to be made to the crown. After 1711 only four seigniorial title-deeds were issued which obliged the seignior to sub-grant land.[32] This arrêt also ordered that all seigniories where the domain was without settlers and not yet cleared within one year of the publication of the arrêt were to be reunited to the royal domain.[33]

The other of the Arrêts of Marly ordered that all land held by the censitaire which was not settled and cleared within one year of the publication of the arrêt was to be reunited to the seigniorial domain.[34]

The Arrêts of Marly did not control the rents charged by the seignior to the censitaire. It only attempted, at least on paper, to oblige the seignior to grant land at some rental price when a request for land was made.[35]

However, the authorities did little to enforce the arrêt which referred to the seignior.

According to the report on New France, prepared by Gedéon de Catalogne, and submitted to the authorities in France in 1712, many of the seigniories were still without settlers. But these lands were not reunited to the royal domain as they should have been according to the Arrêts of Marly. [36] All that the Crown did in response to the situation was to cease making grants of seigniories after 1714. In 1732 seigniorial grants were being made on a regular basis once more. This occurred in spite of the fact that the seigniorswere not acting in accord with the Arrêts of Marly. [37]

In 1721, royal instructions were issued ordering the enforcement of the Arrêts of Marly. Nothing came of these. In 1732 a royal arrêt, which has become known as the Arrêt of Versailles was issued. This arrêt re-itterated the Arrêts of Marly. It added that if, within two years of its publication, seigniorial land was not cleared and settled it would be reunited with the royal domain. The Arrêt of Versailles prohibited the selling of wild land (en bois débout) as well, at the risk of having the contract of sale annulled. [38] This arrêt was not enforced. Prior 1741 only one unsettled seigniory was reunited with the royal domain. [39] In 1741, under pressure from the Crown, the colonial authorities reunited to the royal domain twenty seigniories where there was little or no settlement. These seigniories were located in the Lake Champlain, Richelieu River area, which at that time, was at the fringe of settlement. [40] This act was to no effect since most of the seigniors who lost land were granted other seigniories a few years later. [41]

In fact, from 1730 to 1760 some fifty seigniorial concessions were

made. And these grants were amongst the largest ever made in the colony. The standard grant was forty square miles. [42] In the last twenty years of French rule little more effort was sacrificed to the enforcement of royal arrêts and ordinances. [43] Nevertheless, although the seignior was capable of keeping his/her concession(s) without having that land settled and cleared, the censitaire was not in such a favourable position with the colonial authorities to get away with breaking the law. As a result of not complying with the Arrêt of Marly specifying that the censitaire must clear and settle the land granted, 400 farms belonging to censitaires were reunited with the seigniorial domain by 1732. [44]

One of the Arrêts of Marly forbade the selling of wild land. No mention was made of regulating the cens et rentes charged per annum for the roture. There was only one seigniorial grant where the title-deed specified the rent to be charged by the seignior to the censitaire. This was issued in 1717 to the Seminary of Montreal. [45] In New France the censitaire had to grant the seignior all that was demanded if these demands were articulated in the title-deed for the roture. [46] If the seignior thought that the title-deed was no longer appropriate to his/her financial requirements and the censitaire agreed to a new more burthensome title-deed, the censitaire would be obliged to fulfil the terms of the document. The colonial authorities held to the position that the censitaires were responsible for whatever exactions the seignior thought fit to make of them. Thus, the colonial authorities would not intervene in favour of the censitaires.

This position of the colonial authorities was never challenged by the Crown. A despatch sent by the governor Beauharnois and the intendant Hacquart in 1730 to the Crown makes clear the position of the State to

the censitaire: [47]

> "Il a crû que les concessionaires n'ayant point profité des dispositions des arrêts du Conseil qui leur sont favourables, esté leur pure faute d'avoir donné des sommes pour les concessions qu'ils ont eues, et qu'il n'y avait pas lieu à restitution suivant la maxime de droit: Volenti non fit injuria."

The government thus legitimated the contravention of the law when the seignior managed to make illegal demands upon the censitaire, such as the charging of an entry fee for wild land. But if the censitaire did not comply with the law; if the censitaire did not clear the land to the satisfaction of the seignior, government permitted the land of the censitaire to be reunited with the seigniorial domain.

Under French rule the legal system did not offer the censitaire much protection from the exactions of the seignior. Ultimately the centaire depended upon his/her bargaining power with regard to the seignior to obtain conditions for the concession which would have been acceptable. The Arrêts of Marly decreed that the seigniors could not keep land off the market nor charge a fee in excess of the rental price for it. But this aspect of the law was never enforced. However meager the Arrêts of Marly were with respect to controlling the seignior, they were not enforced by the officials of the French Régime. But the officials, at the same time, did not intervene so as to increase the power of the seignior.

(iii) The concession of land: The British Régime

The conquest of New France by Britain did not result in changes in the laws regarding the seigniorial tenure. By the Articles of Capitulation of Montreal, dated September 8, 1760 the French population was guarenteed by the British authorities all rights in property, which was inclusive of seigniorial rights. Article 34 of the Articles of Capitulation reads: [48]

> "All the communities and all the priests shall preserve their movables, the properties and revenues of the seigniories and other estates, which they possess in the colony, of what nature soever they be; and the same estates shall be preserved in their privileges, rights, honours, and exemptions."

By the Treaty of Paris of 1763 the French population was confirmed in the concessions and privileges guaranteed by the Articles of Capitulation. [49]

Nevertheless confusion reigned in the administration of Britain's newly acquired colonial possession. Only British law was to be applied to the colony and all new grants of land were to be made under the domain of free and common soccage. [50] By 1766 it was decided that French law should be applied to all matters pertaining to property. [51] In 1771, at the request of Governor Carleton the King issued instructions permitting the granting of land en seigneurie. [52] The Québec Bill of 1775 reaffirmed the provisions of the royal instructions of 1771. [53]

With the passage of the Constitutional Act in 1791, the seigniorial tenure could only be applied to a portion of what was the territory of Québec. All land where grants had been made en seigneurie were encompassed within the boudaries of the Province of Lower Canada. In the portion of the territory of Québec which became the Province of Upper Canada only English Law and the freehold system of land tenure could be applied. But within the Lower Province the seigniorial tenure was firmly established in law. [54]

Nevertheless, in the Lower Province provision was made for the commutation of the seigniorial tenure into the freehold system of land tenure. But the provisions for commutation were not attractive to the seignior. By the Constitutional Act the seignior would have had to forfeit one-seventh of the seigniorial land for the Clergy Reserves.

This provision was eliminated only in 1822 with the passage of the Canada Trade Act. But, by the Canada Trade and Tenures Act of 1825, the seignior could only commute on the payment to the Crown of five per cent of the value of the seigniory. At the same time the seignior was obliged to make provision for the censitaire to commute. This presented the seignior with a dilemma: to minimize the payment to the Crown it would have been best to minimize the estimate of the value of the seigniory. But this would have brought pressure to bear upon the seignior to allow the censitaire to commute on equally favourable terms which would have reduced the income of the seignior. [55] This is one reason why so few seigniors applied for commutation. [56]

That land granted en seigneurie did not increase under British rule did not imply that there was no land available for an expanding agricultural population, even if that population preferred the seigniorial tenure. Somewhat less than 9,429,000 acres of which 1,527,102 acres were mountainous and barren, were granted en seigneurie by the French. [57] By 1784 only about 1,348,785 acres had been sub-granted to the censitaires. [58] Thus, 6,553,113 acres of land remained to be sub-granted. By 1838 approximately 4,241,785 acres had been ceded to the censitaires. [59] Finally by 1851, about 5,129,424 acres of seigniorial land had been sub-granted to the censitaires. [60] In relation to the number of agricultural families, the size of the typical family in terms of the amount of land held was about the same in 1784 and 1851. [61] Thus there was a considerable amount of seigniorial land was available for settlement, even by the early nineteenth century.

A serious constraint upon settlement on seigniorial land was the manner in which land was granted by the seignior. The Report of the Commissioners of 1843 examined this question in detail: [62]

> "We cannot overlook a stratagem of which some Seigniors, as we are informed, have availed themselves to elude the law prohibiting the sale, by the Seignior, of uncleared lands on their concession for rent with an additional bonus.
>
> "The mode of proceeding to attain this object is by making a fictitious concession to an agent or friend, who forthwith sells the land and pays the price to the Seignior.
>
> "The pricipal argument used by the advocates of the feudal tenure is that, if the feudal property were converted into free tenure, facilities would be afforded to land speculators, to become proprietors of large tracts of land in the Seigniories, to the great inconvenience, and in some cases to the ruin of its inhabitants.
>
> "This argument is not only ill-founded but wholly inapplicable, for, under the present system in some Seigniories, the real land speculators are the Seigniors themselves.
>
> "The lands are brought for sale for payment of the high rents, and the Seignior, free from all competition, buys the finest farms for sums scarcely adequate to the payment of the arrears, and make a traffic of the land by selling again for large sums, or by conceding on conditions infinitely more onerous, thereby securing to himself a monopoly ultimately ruinous to his censitaires."

The speculation in land and the high prices charged for land by seigniors are recorded as early as 1823. This is in one of the most thorough investigations of the conditions prevalent in the seigniories, which was published by the Legislative Assembly of Lower Canada as the Letters from the Curates. Information is available for 68 parishes concerning whether the censitaires desired to obtain grants in their respective seigniories or in the surrounding area. In 44 of these parishes most of the censitaires desired to obtain such grants; in 2 of the parishes all of the censitaires desired the same; in only 3 of the parishes did the censitaires not want obtain such grants.[63]

Of the 65 parishes where the censitaires wanted grants of land, 40 parishes had land available for settlement. For 6 of the parishes no information is available on this point. In 67 of the parishes there were obstacles to further settlement in the "old seigniories". Only in 4 of the parishes did no obstacle to further settlement exist. For the remainder of the 17 parishes investigated, no information is available.

In 21 of the parishes high seigniorial dues were found to be the major obstacle to further settlement. In 23 of the other parishes high seigniorial dues plus another factor were found to be the major obstacles to further settlement. These other factors include the seignior's refusal to grant land (in 14 of the said parishes) and the lack of capital on the part of censitaire (in 6 of the said parishes).

Lack of capital on the part of the censtaire was mentioned as the sole obstacle to further settlement in only 7 of the parishes.

The government reacted to the Letters from the Curates by establishing a committee to investigate the problems faced by the censitaires with relation to the settlement of available land. The findings of the committee, published in 1824, confirmed the findings of the curates. The main obstacles to further settlement according to the censitaires and 'experts' reporting to the committee were, in order of importance: (i) excessive seigniorial rents; (ii) the selling of wild land by the seignior; (iii) the refusal of the seignior to grant land; and (iv) the lack of land suitable for settlement.

The report of John Neilson, a member of the Legislative Assembly and one of the future leaders of the Lower Canadian revolt of 1837, most clearly reflects the general mood of most other reports. Neilson argued that during the War of 1812 prices were high, thus the censitaires were able to bear

the costs of seigniorial tenure, but "...since the close of the war, the progress of settlements have been yearly diminishing; the decline in the prices of agricultural produce, the obstacles of unusually high rents and new and onerous conditions of the grants, and the absolute refusal to concede on the part of many of the seigniors, with the expense and difficulties of laying out roads...are more than they can bear." [64]

In 1836 another report was prepared in relation to the seigniorial tenure. It too was in response to complaints pertaining to its modus operandi. [65] This report was not that detailed. But, given its limited scope, it reitterates the conclusions of the previous reports. [66]

The complained-of behaviour of the seigniors was not impeded by government authorities. The government authorities never intervened in favour of the censitaires. The censitaires' peaceful recourse for retribution was the Courts of King's Bench. But in all legal contests with the seignior, the censitaires emerged as the vanquished, with one exception. [67] The Report of the Commissioners of 1843 concluded that the courts, which enforced the law made by government, and which were given the responsibility of the intendant to deal with conflicts related to the seigniorial tenure. [68]

> "By their judgements they have maintained that the Seignior had the right of conceding upon such terms and for such rents as he might agree upon with his tenant; and have refused to give relief to the censitaires from such conventional burthens."

The situation did not change for the better by 1849 when a select committee of the Legislative Assembly of the Province of Canada submitted its report on the causes of emigration from Lower Canada. High rents charged by the seigniors on new concessions is mentioned as a cause, as is the refusal of the seigniors to concede land. [69]

To prevent the seignior from charging an entry fee for wild land or from speculating with land granted en seigneurie, the colonial authorities under the French Régime were werved with royal arrêts and ordinances by the Crown. These regal dictums were rarely if ever enforced. What was enforced by the colonial authorities was the title-deed between censitaire and seignior. Under British rule the administration of the seigniorial tenure did not change to any significant extent.

(iv) Cens et rentes

In New France the cens was a nominal charge upon the censitaire. It indicated that the censitaire held the land en censive, and that the land so granted could not be sub-granted en seigneurie. The payment of the cens indicated, accordingly, the subordinate position of the censitaire in relation to the seignior. [70]

The rentes was a payment intended as a source of revenue to the seignior. [71] For the purpose of this essay we will examine the cens and the rentes together as the cens et rentes. We have already seen that the cens et rentes was regulated neither by the French or British authorities.

Prior to 1663 the cens et rentes was no higher than 0.85 pence per superficial arpent or 1 sol 9 deniers (12 deniers = 1 sol; 20 sols = 1 livre and 12d = 1s; 20s = Ll, finally 25 livres tournois = 1 pound currency). [72] Post 1663, and up to 1711 the typical cens et rentes charged to the censitaire was 1 penny per arpent or 2 sols 1 denier. In the Montréal region the rate of cens et rentes stood on average at 1.2 pence per arpent or 2 sols 6 deniers, 20 per cent above that prevailing in the typical concession. [73] From 1711 to 1732 there was "no perceptible or material alteration in the rate of cens et rentes" even in those concessions made after the proclamation of the Arrêts of Marly. [74] From 1732 to 1759 there were only a few cases where the cens et rentes had

risen.[75] The above figure are those of The Report of the Commisioners of 1843.

The recent study by R.C. Harris reiterates the findings of the commissioners.[76] At one point Harris writes:[77]

> "...there was no over-all tendancy for rentes to be pushed up. Indeed, they may have been decreasing slightly; in the last three decades of the French regime fifteen sols for an arpent of frontage, or fifteen sols for thirty square arpents was quite commonly charged."

After the conquest of New France the rate of cens et rentes began to rise. According to The Report of the Commissioners of 1843 the rate of cens et rentes rose after 1800 from the original rate of 1.0 penny per arpent to 3.0 pence, then to 6.0 pence and in some cases to 8.0 pence per arpent.[78] These calculations were derived from a collection of title-deeds made available by the commissioners.[79]

From these title-deeds we derive the following trend in the cens et rentes per arpent: 1790-1799, 2.3 pence; 1800-1810, 3.0 pence; 1811-1820, 4.4 pence; 1821-1830, 3.5 pence; 1831-1842, 4.6 pence. Average price of wheat per bushel for these periods were: 1790-1799, 4s 8d; 1800-1810, 7s 7d; 1811-1820, 8s 10d; 1821-1830, 5s 2.5d; 1831-1841, 5s 7d. The average price of wheat per bushel from 1727 to 1757 was 2s 6d.[80] Using the price data we convert the rates of cens et rentes above, into real terms: 1790-1799, 1.3 pence; 1800-1810, 1.0 penny; 1811-1820, 1.3 pence; 1821-1830, 1.7 pence; 1831-1841, 2.1 pence.

It is clear from the data that the rate of cens et rentes rose in real terms. It is from the 1821-1830 period that the rise is substantial. And this rise occurred as a result of prices beginning to fall while the rate of cens et rentes was inelastic downwards. Our calculations confirm the commissioners conclusion that the rate of cens et rentes rose during

the British period. And it is The Report of the Commissioners which remains the basic source on this question. [81]

Maurice Séguin basis his argument, of the cens et rentes, on the commissioners' findings. [82] He raises doubts upon the validity of these findings by arguing that the cens et rentes rose only in nominal terms, not in real terms. [83] This we have found to be untrue. Another point raised by Séguin is that the commissioners incorrectly estimated the cens et rentes from the data which they themselves make available. [84] However, our calculations demonstrate that the commissioners were not very far off the mark.

(v) The grist-mill banalité

A banal right is a form of monopoly over the provision of goods and services to the censitaire. [85] For the purpose of this essay, we are interested in the evolution of the grist-mill banalité. [86] The grist-mill banalité was not introduced into New France with the institution of the Custom of Paris in 1664. The Custom of Paris makes no provision for the seigniors having a monopoly in the grinding of their censitaires' grain. Initially, the censitaires had to grind their grain in the seignior's grist-mill, only when stipulated in the title-deed. [87]

In response to a petition of seigniors in New France, an order was issued by the Crown in 1667, stipulating that the rate of toll for having grain ground in a seigniorial mill be one-fourteenth of the grain ground. [88] In 1686 a royal arrêt was issued which ordered all seigniors of New France to construct banal mills within one year of the publication of the arrêt. But this arrêt was not published until 1706 on the orders of an intendant somewhat sympathetic to the needs of the censitaire: Raudot. [89] One reason for this delay may have been the high cost involved in the construction of

a grist-mill [90] and the fact that the government, most members being seigniors, did not wish to force upon their brethren such a financial burden. [91]

The censitaire was obliged to take to the banal mill only that grain used for subsitence. [92] If the censitaire took that grain elsewhere that grain, and the vehicle used to transport it, could have been seized by the seignior. [93] Moreover, the seignior could have demolished any grist-mill within his/her seigniory once the seigniorial banal mill became operative. [94] Only when the grain ground in the banal mill was defective could the censitaire take the grain outside his/her seigniory to be ground. [95]

With the conquest of New France the grist-mill banalité remained unchanged from what it was under the French Régime. Since the banal mill could face no legal competition, the one-fourteenth toll payable to the seignior could not decline as a result of competitive pressures. This was true even when a substantial increase in the density of population, which developed in many of the seigniories by the early nineteenth century, would have otherwise allowed for such a decline. [96]

(vi) The corvée

According to article Lxxi of the Custom of Paris the corvée or free labour demanded by the seignior of the censitaire was allowed only if stipulated in the title-deed between the seignior and the censitaire. [97] The exaction of the corvée was not widespread in New France. [98] There is little evidence that it became any more widespread when the seigniories came under the domain of the British authorities. [99]

In New France, Munro suggests, there was rarely an occassion when the corvée exceeded six days per annum. [100] And this , according to a decree issued in 1714 by the intendant, could have been commuted for 40 sol or

2 livres per annum.[101]

As opposed to the corvée as simply free labour, there was the corvée demanded by the seignior in return for the use of land in the seigniorial domain. According to the intendant Bégon, the corvée was demanded in return for the use of the seigniorial commons and forests. The corvée was also used by the seignior to clear land for pasturage in return for which the censitaire was supposed to have been permitted the future use of that pasturage.[102] There is no evidence of this type of corvée being widespread.

(vii) Additional seigniorial charges

The charges imposed by the seignior upon the censitaire for fishing within his/her seigniory were not of considerable significance. This is true of both the French and British periods.[103]

Post conquest, particularly in the nineteenth century, the seigniors were able to further encroach upon the degree of freedom open to the censitaire. The Report of the Commissioners of 1843 concluded that:[104]

> "...there are in many Seigniories, the prohibitions to build mills, the right of appropriating six arpents for the erection of any mill by the Seignior, and this without indemnity for the land, but paying for improvements only, should there be any; the right of taking all timber, such as pine, oak and saw logs, all stone, sand and materials necessary for building, and this without indemnity; the right of changing the courses of all streams over rivers for manufacturing purposes, and the right of ferry over rivers."

Apart from this the seignior had "...diminished the value and extent of the rights and estates of the censitaires in the lands granted to them, imposing many burthensome conditions, reserving wood and timber for private uses, as well as all mill-sites, not merely for the lawful exercise of the banalité, but for the establishment of all kinds of mills and manufactor-

ies." [105]

One of the more generally complained of and burthensome of the above seigniorial reservations is the reserving of wood and timber. Mention is made of this in the Legislative inquiries into the seigniorial tenure of 1824 [106] and 1836. [107] Of more importance is the survey of censitaires made under the auspices of The Report of the Commissioners of 1843. [108] In ten of the thirteen regions where information on this point is available, the reserving of wood and timber is said to be very burthensome. In only one region is it said that this reservation is not onerous. Of the remaining two regions, one did not have much timber available, the other presents no opinion on the subject.

(viii) Lods et ventes

With every mutation in the ownership of an en censive holding, be it through sale, gift or inheritance other than in the line of direct succession, a fine was payable to the seignior within forty days of the date of the mutation. This fine, referred to as the lods et ventes was fixed by the Custom of Paris at one-twelfth or 8.25 per cent of the mutation price. This is the rate of lods et ventes which applied to New France under both French and British rule. If the censitaire did not or could not pay, the seignior could obtain a judgement from the intendant allowing him/her to seize the property of the censitaire, including the en censive holding. If the seignior so desired one-third of the lods et ventes could have been remitted to the censitaire. But the seignior was under no obligation to do so. [109]

The censitaire could reduce the value of the lods et ventes by concealing the de facto selling price from the seignior. In this way the censitaire could sell land for a price higher than one which the seignior

is made aware of. For the protection of the seignior there existed a droit de retrait. No mention of this is made in the Custom of Paris, although it is contained in the Custom of Normandy, which was not the governing body of law in New France. This droit de retrait gave the seignior the option of purchasing the land sold by his/her censitaire at the price of sale. [110] Although the intendant Jacques Raudot claimed, in a despatch to France in 1707, that its use was illegal, since no mention of it is made in the Custom of Paris, the droit de retrait was never prohibited. In 1714 a judgement by the intendant Bégon sanctioned its use. [111]

The lods et ventes was an ex poste tax upon improvements made on en censive holdings which are eventually sold out of the line of direct succession. The lods et ventes was based upon the value of the roture made at the time of sale, inclusive of the value added by the censitaire since coming into possession of the land. If the lods et ventes was effectively applied the censitaire would not receive, from a sale, the full value of his/her investment in the land. This, inturn, could act as a deterrent to investment on the land.

Given the effective employment of the droit de retrait, the censitaire could avoid bearing the direct burden of the lods et ventes only by charging a price for the land, marked-up so as to cover the lods et ventes. This would place the burden of paying this fine upon the censitaire purchasing the land. But for the censitaire to have been able to have adopted such a tactic would have required a heavy demand for cleared land. To the extent that this was less the case in the underpopulated St. Lawrence river valley during French rule than during the more densely populated nineteenth century, there was a greater probability of the seller bearing

the full load of the lods et ventes in the French period than in the nineteenth century.

The buying and selling of land by the peasant farmer is an intregal part of the economics of peasant family production. It is an intregal part of the 'life-cycle' of the peasant family. The size of the peasant landholding is invariably a function of the size of the peasant family. The size of the peasant family, ceterus paribus, is a function of the age-structure of the peasant family. Thus, in the early stages of the development of the peasant family (the young couple starts off with a new farm), less land is required than when the couple begets a few children. As the couple ages and their children move off their farm, less land is required. An important mechanism for adjusting the size of the farm to the size of the family is the buying and selling of land. [112] Much of the buying and selling of land need not be in the line of direct succession, and would thus involve the payment of lods et ventes.

During the French Régime, William Bennet Munro argues the lods et ventes were not of substantial importance. [113] Louise Dechêne argues the opposite. [114] R.C. Harris provides evidence that the buying and selling of rotures by the censitaires out of the line of direct succession was part and parcel of the economics of the peasant farm during the French period. [115] Harris estimates that the seignior received from the lods et ventes two to three hundred livres per annum for every 100 rotures on his/her seigniory. [116] We estimate, from the data provided by Harris, that in a typical newly settled seigniory of ten to twenty families, the lods et ventes probably composed one-fifth of the total seigniorial revenue. In an established seigniory, with twenty or more families, we estimate that the lods et ventes probably composed one-quarter of the total seigniorial revenue. [117]

After the conquest of New France, more particularly in the nineteenth century, the lods et ventes became of increasing importance to the total seigniorial revenue. According to The Report of the Commissioners of 1843 the lods et ventes brought in one-half as much of the annual seigniorial income as was generated by the cens et rentes in the majority of the "old and well establish seigniories." [118]

In the French period the lods et ventes brought in approximately 41 per cent as much of the annual seigniorial income as did the cens et rentes for both the recently and well established seigniories. [119] But in the nineteenth century, according to The Report of the Commssioners of 1843, the lods et ventes generated more than what was generated in the more established seigniories. In the newly settled seigniories the seignior forced the censitaire to sell his/her concession so as to cover the payment of cens et rentes which was typically higher in these seigniories. [120] The seignior was legally entitled to the arrears of cens et rentes going back twenty-nine years, these arrears being tied to the roture not the censitaire. [121] Thus a censitaire purchasing a roture tied to years of arrears of unpaid cens et rentes would have to pay these arrears. If the censitaire could not pay these arrears he/she could be forced to sell the roture by the seignior.

An indication of the extent to which the lods et ventes was an economic burden to the censitaire, in both rural and urban areas, is that in the survey of censitaires conducted under the auspices of The Report of the Commissioners of 1843, in all regions examined where the relevant information is available, it was found that the lods et ventes was a severe economic burden upon the censitaire. [122] Since the population was much greater at this time than during the French period, it is probable that the burden of

the lods et ventes fell predominantly on the shoulders of the buyer of the roture, since the seller probably took advantage of the population pressure to mark-up the sale price of the roture so as to cover the lods et ventes.

(ix) The tithe

The Catholic clergy was entitled to one twenty-sixth or 3.8 per cent of the grain produced per annum by the censitaire. In 1663 Bishop Laval ordered an annual tithe of one-thirteenth of the produce of the farms of New France. When this was given the force of law by the government in the same year, protest followed. The Bishop than agreed to a tithe of one twenty-sixth. This was approved by the King of France in 1679.[123] By 1705 the government of New France ruled that the tithe could be imposed only upon grain. In 1707 this action was approved by the Crown.[124] The tithe remained at one twenty-sixth of the grain produced by the censitaire throughout the French Régime and throughout the period of most relevance to this essay: 1780 to 1850.

The tithe was not the only payment made by the censitaire to the church. It is only the one which is most easily quantifiable. Money was demanded of the censitaire by the church at every turn. Fernand Ouellet summarizes the payments, other than the tithe, which the typical peasant typically made to the church:[125]

> "Mais la fiscalité ecclésiale ne se limite pas à la dîme [the tithe] . L'habitant loue un banc dans l'église, donne à la quête le dimanche et les jours de fête, à celle de l'Enfant-Jésus, fait dire des messes, paye des honoraires à l'occasion des baptêmes, des mariages et des sépultures et contribue aux cotisations spéciales pour la construction et la réparation de l'église. Il fait aussi des dons à son curé."

(x) The economic burden of the seigniorial tenure during the French Régime

In the seventeenth century, the population pressure in the St. Lawrence River valley was not in any way significant, although, over the years, towards the end of the French Régime, the choice land had been settled by the censitaires. As Harris writes: [126]

> "At the end of the French regime there were two ribbons of settlement, one extending for more than one hundred and fifty miles along the north shore of the St. Lawrence, the other for almost two hundred miles along the south."

Censitaires were also settling along the minor tributaries of the St. Lawrence river: the Assomption, Batiscan, Boyer on the north shore and the Rivière du Sud, Boyer, Chaudière and Richelieu on the south. In most cases the censitaires had occupied the first range of the seigniory only. But particularly on the island of Montréal and the south shore facing the island, the second and third ranges of the seigniory were being settled as well. [127] This indicates that population pressure increased towards the end of the Frecnh Régime.

We estimate that by 1734 approximately 523,254 arpents or 443,928 acres were conceded to the censitaires. [128] Of this only 100,768 arpents were under cultivation or 34 per cent of the land occupied by the censitaires. Apart from this, about 8,500,00 arpents of unconceded land remained in the hands of the seignior at this time. [129] One may hypothesize the censitaire who felt under the increasing pressure of rising seigniorial exactions could have moved on to another roture. And for the seignior, the loss of a censitaire meant a loss of revenue at a time when the population was scarce and the relatively small population of his/her seigniory generated only a minimal profit. [130]

The scarcity of a peasant population in New France, one would expect, would have forced the seigniors to compete for the valuable peasantry. The more censitaires farming rotures meant more revenue to the seigniors. Under these conditions one would expect that the seigniorial dues would have imposed only an insignificant burden upon the censitaires, as most analysts in the field have concluded. [131] A different result would have been expected if the institutions of New France were so much in favour of the seigniors that they would have outweighed all advantages which the censitaires had over the seigniors through demographic factors.

Such a development would have resembled what occurred in Eastern Europe in the fourteenth and fifteenth centuries. Here too the demographic factors were to the advantage of the peasantry. But as Jerome Blum writes: [132]

> "Instead of reducing obligations, as was the general practice in the West where the lords tried to hold their peasants and attract new ones by asking less of them, seigneurs in Bohemia, Silesia, Poland, Brandenburg, Prussia, and Lithuania imposed new and heavier obligations, notably in the form of labour dues and cash payments."

According to Louise Dechêne the institutions of New France greatly favoured the seignior. These favourable institutional constraints permitted the seignior to siphon off the disposable savings of the censitaire in spite of the demographic factors which were heavily weighed on the side of the censitaire. Dechêne makes the following argument: [133]

> "Sous forme de cens et rentes, de dîmes et droits de mouture, c'est environ de 10% à 14% du revenu brut de l'habitant qui est versé au seigneur décimateur. Lorsque la terre ne produit qu'entre cinquante et cent minots de grains, ces charges absorbent presque la totalité de l'épargne disponible."

Dechêne basis her argument upon the work of R.C. Harris.[134] The manner in which Dechêne presents her case suggests that the taring away of the disposal surplus of the censitaire was typical. Interestingly enough Harris argues that in terms of seigniorial dues the peasant would pay "probably under 10 per cent, and may have been no more than 5 per cent" of his/her yearly income. Harris continues that there was a no more reasonable way for the censitaire to obtain land.[135]

To provide a more precise picture as to the to evolution of seigniorial dues and output during the French Régime we have made a detailed analysis of the census material from 1608 to 1734 inclusive, 1734 being the last and most accurate and reliable census produced during the French period.[136] Our results are presented in Table 1.

Since data are available only for wheat, we make calculations for the surplus of wheat remaining to the typical peasant family, after the deduction from the total amount produced of the wheat consumed per family per year; the seed required for the next year's planting; the amount of cens et rentes payable to the seigrior in terms of wheat; the mill banalité payable to the seignior; and the tithe payable to the church. We make the plausible working assumption that all other output of the farm was geared towards family consumption.[137] Our net surplus of wheat is synonymous with the disposable savings of Dechêne.

Our estimates of seigniorial dues differ from that of Harris, upon whom Dechêne's argument is based. But this difference is not substantial. Harris omits the tithe from his calculations which serves to underestimate his calcualtion for total seigniorial dues. His estimates for cens et rentes are based upon the assumption that a farmstead of 180 arpent was typical. This does not appear to be a realistic assumption given Harris'

Table 1

Census Data and Estimates for New France: 1688–1734

	1688	1695	1698	1719	1720	1721	1734
1. Population	10,303	12,786	13,815	22,530	24,434	24,951	37,716
2. No. of families: [1]	1,717	2,131	2,303	3,755	4,072	4,158	6,286
3. No. of families engaged in agriculture: [2]	1,288	1,598	1,727	2,816	3,054	3,119	4,714
4. Land under cultivation(arpents):	31,913 [3]	31,705	37,683	71,050	71,489	74,348	180,768
5. Land under cultivation per family(arpents):	24.78	19.84	21.80	25.21	23.40	23.80	38.34
6. Arpents under wheat:	21,497	21,082	24,393	47,274	46,018	46,609	122,333
7. Minots of wheat:	100,974	129,154	160,978	243,566	134,439	282,700	737,892
8. Minots of wheat per agricultural family (7 ÷ 3)	78.39	80.82	93.21	86.49	44.02	90.63	156.53
9. Minots of wheat per arpent:	4.69	6.13	6.60	4.96	2.90	6.06	6.03
10. Wheat seed:yield ratio: [4]	3.03	3.95	4.26	3.20	1.87	3.91	3.89
11. Agricultural pop. wheat consumption(minots): [5]	46,363	57,537	62,167	101,385	109,953	112,279	169,722
12. Seed requirements(minots):	33,321	32,677	37,809	73,275	71,328	72,244	189,616
13. 11 + 12:	79,684	90,214	99,976	174,660	181,281	184,523	358,336
14. Gross surplus of wheat (7 - 13):	21,287	38,940	61,002	59,906	-46,842	98,177	378,554
15. Gross surplus per family: (14 ÷ 3)	16.53	24.37	35.32	21.27	-15.34	31.48	80.30
16. Cens et Rentes per family(minots of wheat): [6]	1.5	1.1	1.2	1.4	1.3	1.3	2.1
17. Tithe per family(minots of wheat): [7]	3.0	3.1	3.5	3.2	1.7	3.4	5.9
18. Mill banalité per family (minots of wheat): [8]	5.4	5.6	6.5	5.8	3.1	6.3	10.9
19. 16 + 17 + 18:	9.9	9.8	11.2	10.4	6.1	11.0	18.9
20. Net surplus of wheat per family (15 - 19):	6.6	14.6	24.1	10.9	-21.4	20.5	61.4
21. Seigniorial dues as a % of gross surplus of wheat (19 ÷ 15):	59.89	40.21	31.71	48.89	———	34.94	23.62
22. Seigniorial dues as a % of wheat per agricultural family (19 ÷ 8):	12.63	12.12	12.01	12.02	13.85	12.14	12.07

Table 1 (continued)

1) The number of families is estimated by dividing the average number of individuals into the population. The number of individuals per family is estimated by using the information provided in the census of 1667 and of 1681 where the number of familes are specifically recorded. If the number of families is divided into the population we are left with a maximum estimate for the number of individuals per family: 5.8 for 1667 and 6.17 for 1681. For later years the census provides no information as to the number of families. For these years information is given on the number of individuals who are married. By dividing this figure by 2 we estimate the number of couples. In dividing the number of single individuals by the number of couples we obtain a maximum estimate for the number of individuals per family. We make these calculations for the following census years: 1698, 1720, 1721, and 1734. Our estimates for the number of individuals per family for these years are as follows: 5.56, 5.82, 5.82, and 5.66 respectively. By using the figure of 6 individuals per family we slightly bias our estimates of output and surplus per family in favour of those who argue that the net economic surplus per family was low.

2) The number of families engaged in agriculture is estimated through the use of the 1681 census figure. Here figures are given for the number of individuals engaged in non-agricultural persuits. Assuming that each family was composed of 6 individuals, we estimate the non-agricultural population at 23 percent of the total. No such figures are available for the other census years. For this reason we use the 23 percent figure to estimate the agricultural population for all of our calculations.

3) For all years under the heading Land under cultivation we are specifying the arpents of land under culture plus the land in pasture. For the census year of 1688 no information is available on the amount of land in pasture. As a result this is estimated using the data for the 1695 census. For all census years there is no information on the amount of land under wheat. This figure is estimated using data provided for in Harris' The Seignierial System in Early Canada, p. 151. Harris writes that about 75 percent of the land under culture is planted with wheat. This 75 percent figure is used to estimate the amount of land,which the census lists as being under culture, which is planted with wheat.

4) The wheat seed:yield ratio is estimated by dividing the output per arpent by the amount of seed typically sown per arpent. The figure for the amount of seed sown is 1.55 minots per arpent. This is the figure used by Harris in his The Seignierial System in Early Canada, p. 153. Harris argues, that this is the figure taken from the France of the late Middle Ages is used for New France since no better one exists.

5) For information of the consumption of wheat per typical peasant family refer to note 35 chapter 7 of this essay. We assume that the average per annum consumption of wheat was 6 minots per individual.

6) The cens et rentes are estimated using the data on this provided for in the Report of the Commisioners of 1843. The estimates made in this report are derivrd from an analysis of title deeds listed in item no. 128 of appendix of The Report. The estimates made in this report have yet to be challenged. The Report finds that prior to 1663 the cens et rentes was 1 sols and 8 deniers per arpent, where 12 deniers = 1 sol and 20 sols = 1 livre.

Table 1 (continued)

From 1663 up to 1711 the highest rate of cens et rentes stood at 2 sols and 1 denier per arpent. Between 1711 and 1732 there was no tendancy for the cens et rentes to change. Finally, between 1732 and 1759, the average cens et rentes stood at 2 sols and 1 denier per arpent. Harris argues, in his The Seigneurial System in Early Canada, that during the last three decades of the French Régime there may have been a tendancy for the cens et rentes to fall (p. 67). We converted the estimates made for cens et rentes from the nominal terms given into minot(s) of wheat by assuming that one minot of wheat was valued at 2 livres. In fact the price of wheat fluctuated widely in New France. Two livres per minot was the minimum price arrived at over the years. Between 1728 and 1750 inclusive, the average price of wheat was 2 livres and 14 sols. Between 1728 and 1840 inclusive, the average price of wheat was 2 livres and 5 sols per minot. Using the 2 livre per minot figure biases our estimates of net surplus slightly in favour of those who argue that the net surplus per peasant family was falling towards the end of the French Régime. Our information on prices is obtained from The Report of the Commisioners of 1843, item no. 126 of appendix F. Similiar price estimates are arrived at by A.J.E. Lunn in her M.A. Thesis of 1934, The Economic Development of French Canada 1740-1760, p. 120.

7) The tithe was one of the payments which the French peasant had to make to the Catholic church. The tithe constituted one-twenty-sixth of total grain production. Our estimates are based solely upon wheat production.

8) The mill banalité, instituted in New France by the Royal Arrêt concerning Seigniorial mills of June 4, 1686, constituted one-fourteenth of the of the grain used for domestic consumption by the peasant family. All surplus grain could be milled other than in the mill located within the Seigniory wherein the censitaire lived. But, all grain milled would have cost the one-fourteenth charge. For our estimates we assume that one-fourteenth of the wheat produced by the peasant was the banalité. (For a discussion of the mill banalité refer to (i) Harris, The Seigeurial System in Early Canada p. 72. (ii) Munroe, Documents Relating to the Seigniorial Tenure in Canada p. Lxxxviii. See p. 61 for a copy of the above mentioned Royal Arrêt.

Sources: a) primary sources: (i) Report of the Commissioners Appointed to Inquire into the Sstate of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada and Appendix, 1843. Published in 1844. (ii) Lower Canada Reports, Seigniorial Questions. Vol.A, edited by M.M. Lelievre and Angers. Published in 1856. b) secondary sources: (i) E. Dechêne. "L'Evolution du Régime Seigneurial au Canada: le Cas de Montréal aux xvii^{e} et xviii^{e} Siècles" . Recherches Sociographiques, vol. 12 no.2 1971. (ii) R.C. Harris. The Seigneurial System in Early Canada, The University of Wisconsin Press 1968. (iii) V. Morin. Seigneurs et Censitaires, castes disparues, Les Editions des Dix 1941. (iv) W.B. Munro. The Seigniorial System in Canada: A Study in French Colonial Policy, Longmans, Green and Company 1907. (v) W.B. Munro. Documents Relating to the Seigniorial Tenure in Canada, The Champlain Society 1908.

own analysis of the typical size of the family in New France. He argues that 95 per cent of all rotures were bewteen 40 and 200 square arpents and that 80 per cent of these contained 120 arpents or less. [138] The census material does not contain any data as to the amount of land held by the censitaires. We base our estimates for the cens et rentes upon the land under cultivation, for which there is data. This is sure to lead to an underestimation in our estimates of the cens et rentes per typical peasant family. If we had assumed instead that the typical farm held 60 square arpents of land the cens et rentes per farm would have been 3.0 minots. Our estimates of the cens et rentes range from a low of 1.1 minots of wheat per farm in 1695 to a high of 2.1 minots of wheat per farm in 1734 (Panel 16 Table 1). We will see that given the total seigniorial dues estimated, our underestimation of the cens et rentes have only an insignificant affect upon our calculations.

Total seigniorial dues ranged from 9.9 minots of wheat per typical peasant family to 18.9 minots of wheat in 1734. In 1698 the seigniorial dues per typical peasant family was 11.2 minots of wheat and in 1721, 11.0 minots of wheat. In 1720 the total seigniorial dues per typical peasant family was only 6.1 minots of wheat, but this was a result of the collapse of wheat production since both the banalité and the tithe were dependant upon the amount of wheat produced. Output per typical family farm had fallen from 86 minots of wheat in 1819 to 40 minots of wheat in 1820. (Panels 8 and 9 Table 1).

The net surplus of wheat per typical peasant family ranged from 6.6 minots of wheat in 1688 to 61.4 minots of wheat in 1734. The net surplus of wheat was 14.6 minots of wheat in 1695 and 24.1 minots of wheat in 1698. By 1719 the net surplus of wheat was 10.9 minots of wheat per typical pea-

sant family, followed by minus 21.4 minots of wheat in 1720 and 20.5 minots of wheat in 1721 (Panel 20 Table 1).

The movements of the net surplus of wheat per family was largely a function of a change in the amount of land under cultivation and/or a change in productivity. In all census years when productivity was low the net surplus of wheat was low or in deficit, as in 1720. Productivity in New France, as reflected in the census material, fluctuated considerably. But there was no tendancy for output per arpent to fall.

The trend in output per arpent was: 4.69 minots in 1688; 6.13 minots in 1695; 6.60 minots in 1698; 4.96 minots in 1719; 2.90 minots in 1720; 6.06 minots in 1721; and 6.03 minots in 1734 (Panel 9 Table 1). The amount of land under cultivation per typical family was between 19.84 square arpents and 25.21 square arpents. The exception to this was in 1734 when there were 38.34 square arpents under cultivation (Panel 5 Table 1). This represents an increase of 62 per cent over the 23.80 square arpents of land that was under cultivation in 1721. The substantial increase in the net surplus per typical family in 1734 was a result of this increase in the amount of land under cultivation.

It is clear that Dechêne was incorrect to suggest that the disposable savings of the censitaire were siphoned off through seigniorial dues. In fact, there was an indisputable tendancy for the seigniorial dues to decline as a percentage of the total surplus of wheat produced per typical family (Panel 21 Table). The validity of Dechêne's argument is dependant upon the assumption that the typical farm produced less than fifty minots of wheat.[139] This occurred only in 1720 (Panel 8 Table 1). And it was only in this census year that there was no net surplus or disposable savings remaining under the control of the censitaire.

(xi) Summary

Our analysis of the census material leads us to the conclusion that the institutional constraints upon the censitaires living under French colonial rule were not sufficient enough to overwhelm the demographic forces which were very favourable to the censitaires. Although the laws and the administration of the laws pertaining to seigniorial tenure permitted the seigniors to extract what they could from the censitaires, the censitaires were not prevented from making use of their scarcity in relation to the demand for them by the seigniors. The censitaires were not bound to any seigniory or seignior. They were permitted to buy and sell cleared land and they could have requested en censive grants from the seignior of their choice. Although the seigniors tried their best, they could not increase the seigniorial dues to any substantial extent during the French period.

The seigniorial dues increased substantially only in the period which followed upon the conquest of New France by Britain, more specifically, post 1800. And these increases ocurred although the institutional constraints were not very much more favourable, if at all to the seignior. However, demographic pressures became a factor which increasingly favoured the seigniors. The censitaires were unable to develop institutions capable of overcoming their new found weakness.

We are interested in examining the implications of the substantial post 1800 increases in seigniorial exactions upon the trend in agricultural productivity in Lower Canada. We are interested in determining whether the substantial increase in seigniorial exactions was causally related to the falling productivity of the soil which typified nineteenth century Lower Canadian agriculture.

FOOTNOTES

1. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 9-19.

2. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. xciii. In 1762 the British authorites made two grants of land en seigneurie: the seigniories of Murray Bay and of Mount Murray. The British authorities made only two grants of land en seigneurie since.

3. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study. The data are contained in the inner cover of the book.

4. Lucas, C.P., Lord Durham's Report on the Affairs of British North America, Vol. 3, Appendix B, p. 41.

5. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 9-19.

6. Munro, William B., The Seigniorial System in Canada: A Study of French Colonial Policy, pp. 143-44 and 206-07; Munro, William B., Documents Related to the Seigniorial Tenure in Canada, pp. xc, xcviii and ciii.

7. Morin, Victor, Seigneurs et Censitaires, Castes Disparues, pp. 25 and 52. Morin's argument differs from that of the commissioners, Munro and Harris in that he claims that the seignior and censitaire lived in harmony under the realm of mutual aid.

8. Trudel, Marcel, The Seigneurial Regime, pp. 12, 17, 18 and 20.

9. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 69, 81, 194, 196 and 197.

10. Wallot, Jean-Pierre, "Le Régime Seigneurial et son Abolition au Canada", pp. 373-75, 377, 379 and 380.

11. In her book Dechêne presents an elaborate discussion of the evolution of agriculture on the island of Montréal in the seventeenth century. Refer to Habitants et Marchands de Montréal au xvii^{e} Siècle, troisième partie. Her discussion of the evolution of seigniorial dues made in the book is taken directly from her article. Refer to pp. 247 to 258 of her book.

12. Dechêne, Louise, "L'Evolution du Régime Seigneurial au Canada, Le Cas de Montréal aux xvii^{e} et xviii^{e} Siècles", p. 148.

13. Ibid., p. 147.

14. Ibid., p. 180.

15. Ibid., p. 153.

16. Ibid., p. 179.

17. Ibid., p. 173.

18. Munro, William B., The Seigniorial System in Canada: A Study of French Colonial Policy, p. 78.

19. Ibid., p. 54.

20. For a discussion of the quint refer to: Ibid., pp. 62-63; Morin, Victor, Seigneurs et Censitaires, Castes Disparues, pp. 42-43; and The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances with the Seigniorial Tenure in Lower Canada, the 2nd page of The Report. Prior to 1664, under the Company of One Hundred Associates, the seignior had to pay the Crown the value of one year's income of the seignior on all mutations of en seigniorie holdings.

21. Ibid., Munro, p. 21.

22. Ibid., p. 22.

23. Ibid., p. 31.

24. Ibid., p. 58.

25. Ibid., pp. 35-36; Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. xxxviii.

26. Munro, William B., The Seigniorial System in Canada: A Study of French Colonial Policy, p. 38.

27. Ibid.

28. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 31.

29. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. L.

30. Ibid., p. 76 (documents).

31. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 59.

32. Ibid.

33. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, pp. 91-93 (documents).

34. Ibid.

35. Lelièvre, M.M. and Angers, eds., Lower Canada Reports: Seigniorial Questions, Vol. A, 1856, pp. 56-60.

36. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. Lvii.

37. Ibid., pp. Lxxvi-Lxxxii.

38. Ibid., p. 174 (documents).

39. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 36.

40. Ibid.

41. Ibid.; Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. Lxxvii.

42. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 36.

43. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, pp. Lxxxii-Lxxxiii.

44. Ibid., p. 176 (documents).

45. The Report of the Commissioners Appointed to Inquire Into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 3rd page of The Report.

46. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 66.

47. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 176.

48. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. 192 (documents).

49. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 191.

50. Ibid., p. 193; Morin, Victor, Seigneurs et Censitaires, Castes Disparues, p. 93. Land granted in free and common soccage obligates the grantee to pay the purchase price for the land. No other economic burden is imposed upon the grantee.

51. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 196.

52. Ibid., p. 203.

53. Ibid., p. 213.

54. Ibid., p. 219; Lelièvre, M.M. and Angers, eds., Lower Canada Reports: Seigniorial Questions, Vol. A, 1856, pp. 65a-66a; The Report of the Commissioners Appointed to Inquire Into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 9th page of The Report. By the Judicature Act of 1793 the Courts of King's Bench were given the power to deal with all legal matters related to the tenure. The Courts of King's Bench became the surrogate of the intendant of the French Régime.

55. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, pp. cix-cx.

56. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, Appendix F. From the data presented in the appendix we can determine that up to 1842 only twenty seigniors from twelve seigniories requested the commutation of the seigniorial tenure and only thirty-nine censitaires did the same.

57. Report on the Affairs of British North America From the Earl of Durham with Appendices, The Colonies, Canada, Vol. 2, Appendix B, Minutes of Evidence Taken Before Assistant Commissioner of Crown Lands and Emigration, the testimony of John Davidson, p. 41.

58. The 1784 census.

59. Report on the Affairs of British North America From the Earl of Durham with Appendices, The Colonies, Canada, Vol. 2, Appendix B, Minutes of Evidence Taken Before Assistant Commissioner of Crown Lands and Emigration, the testimony of John Davidson, p. 41.

60. The 1851 census.

61. Refer to Table 3.

62. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, the 10th and 9th pages of The Report. In the appendix of The Report a survey of the censitaires of Lower Canada is presented. Censitaires from 19 regions responded to a comparable questionaire. Of the 19 regions surveyed, 12 contained complaints of excessive seigniorial rents. In the three other regions, where information on this point is available, no complaints in relation to the level of rents were registered. In 12 of the regions surveyed the seigniors were selling wild land. In only 2 of the regions, where information on this point is available, was wild land not sold by the seignior. In all cases where the censitaire brought charges against the seignior for selling wild land, the seignior won.

63. Letters From the Curates of the Respective Parishes of Lower Canada, printed by order of the House of Assebly of Lower Canada, 1823.

64. Appendix A of Appendix R of the Appendix to the Journals of the Legislative Assembly of Lower Canada, Vol. 33, 1823-24.

65. Refer to Chapter 8, section (vi), for details in the reaction of the censitaires to the operation of seigniorial tenure in the nineteenth century.

66. The First Report of the Standing Committee on Lands and Seigniorial Rights, Appendix EEE, 1836.

67. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 9th page of The Report.

68. Ibid.

69. Report of the Select Committee Appointed to Inquire into the Causes and Importance of the Emigration which takes place annually from Lower Canada to the United States, Appendix AAAAA, 1849.

70. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 63-64; Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, pp. 85-93.

71. Ibid., Harris, pp. 64-69; Munro, pp. 93-96.

72. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 4th page of The Report.

73. Ibid.

74. Ibid.

75. Ibid.

76. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 67

77. Ibid.

78. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 5th page.

79. Ibid., Appendix B of Appendix F, document no. 128.

80. Ibid., Appendix B of Appendix F, document no. 129.

81. As an example refer to: Wallot, Jean-Pierre, "Le Régime Seigneurial et son Abolition au Canada", p. 380, footnote 63.

82. Séguin, Maurice, La Nation "Canadienne" et l'Agriculture (1760-1850), pp. 178-180.

83. Ibid.

84. Ibid.

85. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 101.

86. Ibid. Refer to chapter six for an elaborate discussion of the evolution of the banalities of New France.

87. Ibid., p. 103.

88. Ibid., p. 104.

89. Ibid., p. 89; Munro, William B. Documents Related to the Seigniorial Tenure in Canada, pp. 61 and 106 (documents).

90. Harris, R.C., The Seigneurial Tenure in Early Canada: A Geographical Study, pp. 72-73.

91. Munro, William B. The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 106.

92. Ibid., p. 117. Munro makes reference to article LXXI of the Parliament of Paris.

93. Ibid., p. 110. This is according to the royal order of July 1675.

94. Ibid., p. 120. Refer also to: Lelièvre, M.M. and Angers, eds., Lower Canada Reports: Seigniorial Questions, Vol. A, 1856, pp. 76a-79a.

95. Ibid., Munro, p. 112.

96. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 73-74. Harris discusses the profitability of banal mills during the French Régime, and its relationship to popualtion size.

97. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 127.

98. Ibid.; Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 70.

99. None of the major works on the subject, which we have already referred to, mention the corvée as being a significant seigniorial burden. There is some reference to the corvée being added to the titres nouvelles in the nineteenth century. These would usually be commuted on an annual payment to the seignior. Refer to: The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 10th page of The Report.

100. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 132.

101. Ibid., p. 129.

102. Ibid., p. 128; Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. Lxviii.

103. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 70; Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 353.

104. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 10th page of The Report; The Testimony of Olivier Arcard, Appendix A of Appendix R of the Appendix to the Journals of the Legislative Assembly of Lower Canada, Vol. 33, 1823-24.

105. Ibid., The Report of the Commissioners, 5th page of The Report.

106. The Testimony of Joseph Bideaux of Batiscan, Appendix A of Appendix R of the Appendix to the Journals of the Legislative Assembly of Lower Canada, Vol. 33, 1823-24.

107. The Testimony of Jacques Auffroi of Shoolbred, The First Report of the Standing Committee on Lands and Seigniorial Rights, Appendix EEE, 1836.

108. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, Appendix F.

109. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, pp. 96-100.

110. Munro, William B., Documents Related to the Seigniorial Tenure in Canada, p. 73, footnotes 1 and 2 (documents).

111. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 99.

112. Chayanov, A.V., Peasant Farm Organization, pp. 60, 67 and 68.

113. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, p. 97.

114. Dechêne, Louise, "L'Evolution du Régime Seigneurial au Canada, Le Cas de Montréal aux xvii^{e} et xviii^{e} Siècles", p. 157.

115. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 140-146.

116. Ibid., p. 76.

117. Ibid., p. 78, Table 5-1. Our estimates are based upon the data presented in this table.

118. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 14th page of The Report.

119. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 78, Table 5-1.

120. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 14th page of The Report.

121. Ibid., 11th page of The Report.

122. Ibid., Appendix F.

123. Munro, William B., The Seigniorial Tenure in Canada: A Study of French Colonial Policy, pp. 133-134.

124. Ibid., p. 134.

125. Ouellet, Fernand, Le Bas-Canada, 1791-1840, p. 195. See also p. 66.

126. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 100.

127. Ibid.

128. No data are available as to the amount of land held. To estimate the amount of land held we multiply the number of families in 1734 (Table 1 Panel 3) by what we estimate to be the typical size of the family farm (111 arpents). Our estimate of the amount of land held per typical family farm is based on data on the size of en roture concessions made in the French period. This data is presented in: The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, Appendix F, document no. 128.

129. To be more specific we are referring to the total amount of land granted en seigneurie by 1760.

130. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 78, Table 5-1.

131. Refer to section (i) of this chapter.

132. Blum, Jerome, "The Rise of Serfdom in Eastern Europe", pp. 820-821.

133. Dechêne, Louise, "L'Evolution du Régime Seigneurial au Canada, Le Cas de Montréal aux xvii^{e} et xviii^{e} Siècles", p. 180.

134. Ibid., p. 180, footnote 1. Dechêne refers to Harris, pp. 160-161.

135. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 81.

136. The Canadian Census, 1870-71, Vol. 4, 'The Census of 1734', p. 57, footnote. It is mentioned here that the 1734 census is the "exact" of those taken up to this period.

137. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, pp. 154-155. Harris finds that a surplus output in other products were minimal on the typical peasant farm during the French Régime.

138. Ibid., pp. 117-119.

139. Dechêne, Louise, "L'Evolution du Régime Seigneurial au Canada, Le Cas de Montréal aux xvii^{e} et xviii^{e} Siècles", p. 180.

CHAPTER FIVE

Diminishing Productivity of the Soil: Technical Causes and Economic Rationality

What type of agricultural techniques were required and available to the censitaire if output per measure of land was not to decline? Upon what conditions do the adoption of such techniques, by a rational peasantry, depend? Once these factors are known it is possible to unearth the probable and most significant cause(s) for the censitaire not adopting the most appropriate agricultural techniques.

(i) The quality of the land

The land of Lower Canada, granted under the seigniorial system of land tenure, was relatively fertile. The soil of this region has been classified as a first class stong soil. It is a clay soil, composed of approximately forty per cent clay, twenty-two per cent sand, thirty-six per cent carbite of lime, and four per cent humus. [1] William Evans, secrtary to the Montreal Agricultural Society in 1836, argues that: "All the useful species of grain, pulse, and other vegetable, that are raised in England, can be cultivated here [in Lower Canada], with equal success, with the exception of turnips." Evans adds: "The severe frost and snow fertilizes to a great degree, the ploughed soil, and prepares it in the best manner to receive the seed in spring." [2] The opinion of Evans, as to the fertiltiy and viability of a clay soil, is reiterated by an expert in agronomy, Henry Jackson Waters. He argues that: "Small grains, such as wheat, oats, and barley, as well as some of the most important grasses, as timothy and blue grass, are usually better adapted to fertile clay loams or silt loams." [3]

Another opinion as to the natural fertility of the soil in Lower Canada is advanced in The Report of the Special Committee on the State of Agriculture

in Lower Canada, published in 1850 by the Legislative Assembly of the Province of Canada. [4] Here it is laid down as an "established principle, that few countries have been more highly favoured than Lower Canada as respects the quality of the soil, and the position it holds in point of climate is nowise unfavourable." [5] Moreover, it is argued in this report: [6]

> "If Lower Canada should not be prosperous, it will be owing neither to its geographical position, the inferiority of its soil, nor the disadvantages of its climate."

One problem with clay soils is that they are hard to work because they are fine grained, thus they become plastic when wet and very hard when dry. [7] For these reasons, to work clay soils involves a heavy expense. A powerful team of oxen is required as well as stong implements. [8] According to R.C. Harris, reports of soil exhaustion are recorded from the 1660's in Lower Canada. Even the most fertile land eventually became exhausted as a result of the "rudimentary agricultural practices" of Lower Canada. [9]

(ii) Cultivation and the fertility of the soil

At least ten elements are absolutely essential for the healthy growth of a plant. These are water, nitrogen, carbon, oxygen, phosphorus, potassium, calcium, iron, sulphur and magnesium. [10] A farm with a healthy crop must contain soil which possesses these elements in adequate amounts. The plant obtains its food from the soil when the food is dissolved in water. The food is absorbed into the plant through the root hairs. But the roots will not grow unless the soil is well supplied with air since they require oxygen to grow. [11] Thus, the soil must not only contain adequate amounts of water and essential elements so as to support a healthy crop, it must also be well aired.

Other than water, the most important elements to the growth of plants are nitrogen, phosphorus and potassium. These are used in the largest

quantities. Not all of the essential elements contained in the soil can be made use of by the plants. Only that proportion which is dissolved in water can be absorbed into the plants. [12] The best soils originally contain 6,000 to 8,000 pounds of nitrogen; 2,000 to 3,000 pounds of phosphorus; and 30,000 to 40,000 pounds of potasium per acre in the first twelve inches. Continuous cropping for twenty years or more will leave the same piece of land with 3,500 pounds of nitrogen; 1,200 pounds of phosphorus; and 30,000 pounds of potassium. Of the quantity of these elements contained in the soil, only two per cent of the nitrogen; one per cent of the phosphorus; and one per cent of the potassium is available for the use of the plants per season. [13] It is estimated that one bushel of wheat grain removes from the soil 1.17 pounds of nitrogen, 0.15 pounds of phosphorus, and 0.27 pounds of potassium. One bushel of oats grain removes from the soil 0.60 pounds of nitrogen, 0.10 pounds of phosphorus, and 0.12 pounds of potassium. [14] Prior to 1760, the typical yield of wheat per arpent was approximately 6 bushels per arpent or 7.07 bushels per acre (Table 1 Panel 9). Thus an acre of land required 413 pounds of nitrogen, 106 pounds of phosphorus, and 191 pounds of potassium for the growth of wheat.

Once the land becomes cultivated, the soil begins to lose the elements essential for plant growth to the plants being cropped. Once cultivated the soil also loses many of its essential elements through surface washing and leaching. Unless the elements taken out of the soil are somehow replaced the soil would become exhausted and unable to support agricultural production.

(iii) Cultivation and the maintenance of soil fertility: extensive agriculture

A farmer does not require many inputs, other than a minimal contribution of labour time, if there is sufficient cultivable land available, to support existing demands for agricultural output while most of the cultivable

land lies fallow. Land is placed under crop by burning part of the forested area. The resulting ash contains phosphorous, potassium, calcium, iron, sulphur and magnesium which increases the fertility of the soil. [15] But the burning also destroys part of the humus (formed from decomposing animal and plant remains) which is an important source of nitrogen. [16] Enough humus remains so that the cleared land can be planted for a few years (up to six). [17] This land is then rested for twenty to thirty years so as to restore the fertility of the soil. [18]

Yields from this extensive agricultural practice have been estimated to be three to four times greater than the yield or ordinary ploughland by Darby. [19] Van Bath provides evidence that extensive agricultural techniques result in higher seed:yield ratios than more intensive agricultural practices. Van Bath finds that the more intensive farming techniques are more productive only if substantial amounts of fertilizers are introduced into the process of cultivation. [20]

Extensive farming techniques typically required four to five hours of labour time per farmer per day. [21] If the land under crop cannot be rested for twenty to thirty years, the land would have to be worked with greater intensity and fertilizer would have to be added to the soil so as to prevent the productivity of the soil from declining. But with the introduction of intensive farming techniques output per unit of labour falls. [22] For total output not to decline more labour time must be applied to the soil. [23] Boserup writes: [24]

> "It is obvious that the clue to the problem of output per man-hour of forest fallow cultivation [extensive agriculture] lies in the clearing of the land, since no labour is needed for land preparation, weeding and manuring, and for the care of draught animals. The time used for clearing forest for one or two years cultivation varies widely with differences in climate, type of vegetation and make of the axe, but the

> important point to note is that land clearing for shifting cultivation in the forest is in any case a summary operation. The fire does most of the work and there is no need for the removal of roots, which is such a time-consuming task when the land is cleared for the preparation of permanent fields. The time used for superficial clearing under the system of forest fallow therefore seems to be only a fraction -perhaps ten or twenty per cent- of the time needed for complete clearing."

For extensive farming techniques to continue, without diminishing the fertility of the soil, enough land must be available to keep in a state of rest for the length of time required to restore the fertility of the land previously under crop. Moreover, if the land cannot be rested for the appropriate length of time after being under crop for a few years, the land under crop would have to be burned at shorter intervals, so as to rid the land of weeds and bush. This would have the effect of destroying the humus in the soil thereby generating a vary infertile soil. The soil would also become more compact and harder to work. [25]

To determine the minimum amount of cultivable land that must be available to the typical peasant family so that the land under crop could be rested for the appropriate length of time so as to restore its fertility, one must know the minimum number of years that the land must be rested; the maximum number of years that the land can be under crop without experiencing decreasing yields; and the amount of land to be placed under crop. Using this information and the simple mathematical formula we have constructed we can determine the minimum amount of land required by the typical peasant family.

(1) $\left[\left(\frac{\text{The number of years the land is to be rested}}{\text{The number years the land is under crop}} + 1\right) \times \text{The amount of land under crop}\right]$

= The amount of land required by the typical peasant family

If we take the realistic case where the land can be under crop for three years and the land then has to be rested for twenty-one years and we assume

that twenty acres of land is placed under crop, our formula would read as follows:

$$(2)\ \left[\left(\frac{21}{3} + 1\right) \times 20\right] = 160 \text{ acres}$$

The validity of our formula may be illustrated graphically.

No. of fields, each of 20 acres

	Years																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
2	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-

The positive sign indicates that the field is under crop. The negative sign indicates that the field is being rested.

A field which we designate as number 1, composed of twenty acres is first placed under crop. After three years it is rested, and must be rested for twenty-one years for its fertility to be restored. While being rested other land must be placed under crop. Only if 160 acres is available to the peasant can all fields of twenty acres be rested adequately. In the twenty-fifth year field number 1 can once again be placed under crop, replacing field number 8 which must be rested. If less land had been available to the peasant, if seven fields had been available instead of eight, field number 1 would have had to have been brought back under crop in the twenty-second as opposed to the twenty-fifth year. It would have been rested only eighteen years as opposed to the necessary twenty-one years. Once the land cannot be rested for the appropriate length of time, intensive agricultural techniques must be adopted if the fertility of the soil is not to fall.

Only when enough cultivable land is available will extensive farming techniques maximize output per unit of labour and minimize, in general,

the cost of production. Given the appropriate ratio of land under crop to land in rest, extensive agricultural practice is the most rational and efficient of the available farming techniques.

This ratio would be disturbed if the agricultural population rises, resulting in the need to increase the proportion of land under crop so as to feed that population. If a large enough proportion of land is placed under crop, land previously under crop cannot be rested for the necessary length of time. Thus the 'natural' fertility of the soil will not be restored.

One must conclude that in a region where land is abundant in relation to the demands placed upon it and thereby in relation to the land under crop, extensive agricultural practice should be utilized in order to maximize the output per person. Only when demands upon the land increase and the land can no longer be adequately rested does extensive agricultural practice become irrational. As Boserup argues: [26]

> "As long as the population of a given area is very sparse, food can be produced with little input of labour per unit of output and with virtually no capital investment, since a very long fallow period helps to preserve soil fertility. As the density of the population in the area increases, the fertility of the soil can no longer be preserved by means of long fallow and it becomes necessary to introduce other systems which require a much larger agricultural labour force."

The adoption of intensive agricultural techniques is forced upon the peasant by population pressure. More individuals must be fed while the amount of cultivable land available remains limited either by natural or institutional constraints. To change to a new farming technique that requires an increased input of labour time and capital per unit of output cannot be expected of a rational peasant unless it is believed that the shortage of cultivable land will not be obviated in the near future and that a decrease

in the fallow period will result in the gradual exhaustion of the fertility of the soil. Moreover the peasant must have the available capital with which to adopt the more intensive techniques of agricultural production.

Initially the peasant may simply reduce the fallow period without using any of the more intensive agricultural techniques. This would deplete the fertility of the soil. As one study concludes: [27]

> "The transition from one system to another is probably a slow process; a cultivator would likely not change over all his land at once but would modify only part of his holdings to more frequent croppings and make no change in the rest for the time being."

If the peasant farmer is to avoid a declining standard of living more intensive agriculture must be practised or the population must fall either through population control, starvation, emigration, etcetera. [28]

(iv) Cultivation and the maintenance of soil fertility: intensive agriculture

A Legislative Committee of 1816 investigating the problems of Lower Canadian agriculture in the early nineteenth censtury concluded, according to Ouellet, that the prime reasons for the inability of the agricultural sector to supply the existing internal and external demand were located in the "...manque de soins dans le choix des semences, absence de rotation dans les cultures, défaut d'engrais, de scarclage, de prairies artificielles, labours défectueux de même qu'au caractère attardé de l'équipement." It is asserted that the equipment used was primarily of the same type as that used at the time of the conquest (in the 1760's). [29]

The already cited Legislative Committee Report of 1850 stipulated that the three basic problems of agricultural production in Lower Canada were: the inadequate use of manure; the improper rotation of crops; and the inadequate and improper breeding and raising of cattle. The Report discussed the reasons underlying this stipulation. It is worthy of Quotation: [30]

> "The primitive soil, which was in itself endowed with an extraordinary fertility, which yielded abundant harvests without the use of manure, or with manure deposited on it for centuries, rendered the work of man useless, or rather of less utility in this respect. The virgin state of the soil and its durability, admitted of the same crops being raised on the land for several years. Wheat being the most profitable grain, nothing but wheat was sown, and all the land was sown with it, what was barely sufficient for the stock of cattle kept, being only what was necessary, and the manure furnished by them not being taken into consideration. Thus our soil kept on getting poorer until having lost all its strength it ceased to produce wheat, or produced only a sickly grain without sufficient strength to resist accidents."

A more general point is made by an expert in agriculture, Mr. William Meiklejohn, to a committee of the Legislative Assembly of Lower Canada in 1823. He argues that the soil was being exhausted as a result of the censitaire growing a succession of 'scourging crops' such as wheat and oats. The censitaire failed to use green crops and did not generally make use of artificial grasses in the land laid to rest, which would have contributed to the fertilization of the soil. [31]

If cropped land cannot be rested for the proper length of time manure is required if the soil is not to be depleted of its fertility. Manure is defined as: "Any material which contains considerable quantities of more or less available nitrogen, phosphorus, or potassium, and which is added to the soil for the purpose of increasing crop yields..." [32] Two types of manures exist. One is the manure derived from farm animals the other is derived from legumes such as clovers, peas, beans and alfalfa. This is denoted as green manure. We will examine the importance of the animal manure first.

Insufficient manuring of the soil was a technical cause for the exhaustion of the soil in pre-1850 Lower Canada according to Harris [33], Harris and

Warkentin [34], Jones [35], Parker [36], and Bouchette [37]. Scientific evidence indicates that the application of animal manure upon land farmed continuously with wheat for sixty seven years would increase the per acre yield by 183 per cent. [38]

The value of animal manure to the fertility of the soil is related to the feed given to the animals. Manure rich in nitrogen is obtained from animals fed feeds containing much protein, such as cottonseed meal, linseed meal, tankage, clover hay, cowpea hay, and alfalfa hay. A poor quality manure is obtained from animals fed corn, timothy hay, millet, corn stover, and straw. [39] In so far as the farm animals are poorly fed and ill-cared for, they cannot be expected to produce a high quality manure. Such improper raising of cattle is documented by Ouellet [40], Jones [41], and Lunn [42] for Lower Canada.

No matter the quality of the manure produced by the farm animals it is of little avail if it is not carefully stored and applied. Manure may lose half of its mineral value in an April to September exposure to the weather. If the manure is not kept moist and well compacted, fermentation would occur and valuable nitrogen would be lost. [43] To retain the nutritive value of the manure it is best to keep it under cover or in a water-tight pit. [44] But to produce a high quality of animal manure requires the capital and available labour time to store it. As Henry Jackson Waters writes: "Poor farmer, poor barn, poor care of manure, poor soil, and poor crops are companions." [45]

The ability of a farmer to control the application of animal manure is related to the manner in which the farm animals are raised and fed. Information is available on the quantity of manure that can be produced by livestock. It has been estimated that in late eitheenth century Europe (we lack information of this type on Lower Canada), an adult beast produced a per annum average of three to four thousand kilograms of manure. [46] In

the latter half of the nineteenth century ten thousand kilograms of manure could be produced yearly by an adult beast when stall feed was practised throughout the year. [47] But stall feeding required investment in barns, feed, and labour. There is no evidence that stall feeding was generally practised in the first half of the nineteenth century in Lower Canada. In the environment of Lower Canada even to produce the three to four thousand kilograms of manure, obtained in Europe without stall feeding, would require investment in barns as a result of the cold weather. Waters' comment upon the relationship between the lack of capital and the poor quality of manure may be applied to the deficiency of manure: a poor farmer with a poor barn will be deficient in manure, resulting in poor soil and thereby in poor crops.

Information exists as to the amount of manure required so as to prevent the fertility of the soil from diminishing. Four tons of manure applied per annum increases the yield of corn by forty-five per cent. Sixteen tons of manure applied every four years increases the yield of corn by thirty-seven per cent. [48] Waters argues that eight tons per acre ploughed under and four to six tons per acre for top-dressing every four or five years is a "good application" of manure. More intensive farming (truck farms) requires fifteen of more tons of manure. [49] In Western Europe, in the eighteenth and nineteenth centuries, ten to fourteen thousand kilograms (eleven to fifteen thousand tons) of manure was required per harvest for every hectare, or four to five thousand-six hundred kilograms per acre (four thousand-four hundred to six thousand-one hundred and sixty tons). [50] The amount of manure which a farmer would have to apply to the land is finally determined by the degree to which the soil's fertility is depleted and the extent to which the farmer wishes to increase the productivity of the soil.

It is possible to estimate the number of 'adult beasts' required per typical Lower Canadian farm to produce an adequate quantum of manure. Tech-

nically, the manure of one full grown ox or cow equals two-thirds of that produced by a horse equals that produced by four pigs equals that produced by ten sheep. [51] It would be safe to argue that the typical farm in Lower Canada in the 1830's and the 1840's required at a minimum from 3,500 to 8,000 pounds of manure per acre. This would be on a farm not geared towards a very commercialized farming, rather one where productivity of the soil must be increased and thereafter maintained. [52] In 1844 the typical farm had about twenty acres under crop. In 1851 the typical farm had about twenty-four acres under crop.[53] Thus, in 1844 the typical farm would have required 160,000 pounds of manure and in 1851 the typical farm would have required 192,000 pounds of manure. To supply this manure the typical farm would have needed about eighteen adult beasts in 1844 and twenty-one adult beasts in 1851 when there was no stall feeding. With stall feeding the typical farm would have needed seven adult beasts in 1844 and nine adult beasts in 1851. [54] In 1844 the typical farm possessed the equivalent of eleven adult beasts and in 1851, the equivalent of ten adult beasts. [55]

If stall feeding were practised in Lower Canada, and it was not, an adequate number of animals were kept by the typical farm to produce the necessary manure. Since stall feeding was not typical of the Lower Canadian farm, less manure could be collected by the peasant. More animals would have been required to produce the necessary manure than the peasant possessed. And much of the manure accumulated without stall feeding would have lost much of its value since the typical peasant did not possess the proper storage facilities for the manure.

To have purchased more cattle would have cost 4 pounds 10 shilling a milch cow; 10 shilling per sheep; and one horse cost 15 pounds. To construct adequate stalls would have cost 10 pounds or more. To purchase all of the necessary manure on the market would have cost the peasant 0.011 pence per pound or about 7 pounds for the 1844 manure requirements and about 9 pounds

for the 1851 manure requirements.[56] Aside from this the peasants would have had to grow the necessary crops to feed the animals so that a high quality manure would be produced. As William Evans, secretary to the Montreal Agricultural Society, wrote in 1835: "No food, no cattle; no cattle, no dung; no dung, no corn, is a maxim that ought to be fixed in every farmer's mind."[57]

Although legumes are the best feed for farm animals in relation to the quality of manure produced, they also serve as a excellent fertilizer when ploughed into the land.[58] Legumes have the unique property of being able to obtain their nitrogen requirements from the air. In general, legumes obtain one-third of their nitrogen requirements from the soil and two-thirds from the air.[59] If the plant is ploughed back, in its entirety, into the soil, the soil becomes enriched in its nitrogen content. If the tops of the legumes are cut so as to produce feed for the farm animals, two-third of the nitrogen content of the plant is lost. But since the legumes take only one-third of their nitrogen requirements from the soil, the cutting of the tops would not diminish the nitrogen content of the soil.[60] Waters finds:[61]

> "The greatest gain to the soil growing a legume comes from turning under the crop as a green manure. It is, however, not often profitable to plow under one of the regular legume crops as manure, for the reason that legumes are too valuable as food for livestock."

The legumes, when fed to livestock, produce a manure which possesses 75 per cent of the nitrogen, phosphorus, and potassium originally contained in the legume.[62] The legumes, when applied to the soil in the form of animal manure, indirectly enriches the soil, while allowing for the production of dairy products, meat products, and horsepower as a 'byproduct'. But the planted and harvesting and ploughing under of legumes requires as much as 50 per cent more labour time than simply leaving the cropped land to rest.

The use of legumes and animal manures increase the yield per unit of land. One 'expert' argues that there is no affect upon labour productivity. [63]

For both animal manure and green manure to be used most effectively it must be ploughed into the soil. [64] Since the soil of Lower Canada was predominantly of a heavy clay type a heavy metal plough was required. But to employ a heavy plow required the use of up to eight oxen. [65]

Ouellet quotes the President of the Agricultural Society of Beauharnois, Québec, of 1831, that it was necessary for the censitaire to utilize metal ploughs to cut adequate furrows with the necessary regularity. But Ouellet asserts that that practise was an atypical phenomenon. [66] William Evans also considers deep ploughing of considerable importance to farming in Lower Canada. [67] He also argues that the growth of wheat requires two ploughings per annum. [68] But the ploughings could take place only at a heavy expense given the heavy soils typical of Lower Canada. [69]

Séguin argues that the censitaire was satisfied with one ploughing per year: after the thaw. [70] This opinion is seconded by Jones. [71] The Surveyor General of Lower Canada in the early nineteenth century, Joseph Bouchette, argues that ploughs were poorly used. Only the surface of the land was broken, thus the weeds were not rooted out. [72] The information we have suggests that this failure to turn over even the topsoil was due to the use of weak wooden ploughs. [73]

The use of heavy ploughs would have involved the censitaire in another set of expenses. To purchase an iron plough would have cost the censitaire 3 pounds. A sub-soil plough would have cost 6 pounds. We are not certain of the probable cost of bulls, but we know that horses, which could replace the bulls as drawing power, cost 15 pounds each. [74]

Crop rotation is recognized as being important to the maintenance of

soil fertility in Lower Canada by important commentators of the first half of the nineteenth century: Joseph Bouchette; [75] William Evans; [76] William Meiklejohn; [77] and the authors of The Legislative Report of 1850. [78]

Scientific research has shown that crop rotation results in the increased productivity of the land. A 1921 study shows the effect of crop rotation upon the per acre output of wheat. When wheat is grown on the same land for twenty-nine consecutive years, on the twenty-ninth year the output of wheat is 0.2 bushels per acre. When wheat is part of the following crop rotation: corn, oats, wheat, then clover, the output of wheat in the twenty-ninth year of the rotation is 30.0 bushels per acre. No manure is applied to the land in this case. When manure is applied to this rotation, the output of wheat in the twenty-ninth year of the rotation is 39.4 bushels per acre. [79]

William Evans makes a suggestion for crop rotation in Lower Canada: [80]

> "The particular crops which enter into a system of rotation must be such as are suited to the soil and climate, varied by local circumstances, such as the proximity to towns, where there is generally a demand for potatoes, turnip, hay, etc. In a thinly peopled district, peas, beans, tares, flax, summer fallow, clover, and timothy might be interposed between corn crops on clay soils, and potatoes, carrots, Indian corn, clover, and timothy, on dry loams and sands."

Evans adds that one-sixth of the arable land may be planted with wheat, barley, or oats. The wheat crop is followed by a green crop or summer fallow. After this, the field is seeded with clover and timothy or other grass seeds. [81]

In 1850, David Handyside presented a proposal for crop rotation in Lower Canada. He assumes a farm of one hundred acres divided into ten fields of ten acres each. These fields, designated by numbers one through ten were to be cropped as follows: [82]

No. 1. -Fall wheat with dung; sown in with grasses in spring.
No. 2. -Spring wheat with dung; sown in with grasses in spring.
No. 3. -Barley.
No. 4. -Barley.
No. 5. -Oats.
No. 6. -Mangel Wirzel, with dung.
No. 7. -Beans.
No. 8. -Three of which in potatoes with dung; 7 pease.
No. 9. -Pasture, which may be found on the farm.
No. 10. -Pasture.

This rotation would supply the feed for twelve cows; twelve calves; and twelve one-year hogs. Handyside argues that the same rotation is possible on a smaller farm, such as a fifty acre farm. One presumes that here less livestock could be kept.

William Evans argues that in a rotation which supports twelve milch cows a proper market must be available within fifty miles of the farms. Where further from the market less milch cows should be kept. [83]

The size of the market cannot determine whether or not a censitaire adopts more intensive techniques of agricultural production. The size of the market determines the type of intensive techniques of agricultural production eventually adopted and amount of agricultural production. Boserup makes the point that a peasant family forced to adopt more intensive agricultural techniques, so as to provide for a larger family does not require the existence of a enlarged and more specialized market: [84]

> "The widespread idea that a family can subsist on a smaller area only if it can find a market for labour-intensive and high-yielding crops is based on the assumption that the system of land use does not change. But this is to forget that if the land is cropped more frequently than before, the area may be reduced without the introduction of new crops. For instance, two sons may share the land of their father by having an irrigated crop of wheat each year instead of a dry one every second

> year, or by having two transplanted crops of paddy each year instead of one broadcast one."

In Lower Canada, more intensive agriculture could have developed in various ways, two of which exemplify two contrasting economic scenarios. One mode of intensive agriculture is suggested by Handyside. This implies a market for agricultural produce. The other, suggested in passing by Evans, could have been modified to suit the prevailing market environment.

Intensive agriculture need not increase output per capita. The reason underlyling the adoption of intensive agriculture is to increase output per unit of land either to maintain output per capita of a rising population or to compensate for a tendancy of the output per unit of land to diminish so as to maintain the output per capita of a relatively constant population. We will see in the following chapter that the problem which the censitaire of Lower Canada faced was a falling output per unit of land plus less land available for cultivation per peasant family(Refer to Table 3 of chapter 5). If a peasant so chose, intensive agriculture could result in raising per capita output so as to increase the material standard of living of the peasant.

The 1851 census provides us with the first statistical series stipulating the amount of land devoted to specific crops.[85] In that year 38 arpents of land were under cultivation, of which 22 arpents were under crop in the typical family farm.[86] The remaining 16 arpents were in pasture. Of the land under crop, about 4 arpents were planted with wheat; about 6 arpents with oats; 1.7 arpents with peas; less than 1 arpent with potatoes; and less than one-half an arpent was planted with barley, rye and various legumes respectively. Each farm possessed about 5 cows, 2 horses, 1 ox, 7 sheep, and 2 swine. Such a combination did not prevent output per unit of land from falling.

To increase output per unit of land without requiring an increase in

the size of the market would necessitate a crop rotation which would include legumes. A rotation that would be condusive to a relatively high output per unit of land is oats, wheat, and clover.[86] The point of such a rotation would be to increase soil productivity through the planting of soil enriching legumes. Such a rotation could have taken place on the land under crop if this would have been sufficient to provide the necessary quantum of output. If not, land in pasture could have been placed under crop to the extent necessary to provide the required output. The rotation could have been modified so as to allow for the production of some other required crops, such as barley, rye, and garden vegetables. Moreover, every few years a certain proportion of the land under crop could have been converted into pasture, while a compensating proportion of land in pasture could have been placed under crop.[87]

The farm animals raised by the censitaire could have been maintained by the above rotation. Both clover and oats make an excellent feed. The manure properly collected and stored make an excellent fertilizer.

To adopt the more intensive agricultural practice the censitaire would have had to invest labour time in more ploughing, weeding, planting, and distributing manure. The censitaire would also have had to invest capital to purchase the necessary tools; to construct the necessary facilities for the farm animals and manure; and to purchase the necessary draft animals. The extent of the necessary investment would have been a function of the degree to which it was desired to increase the productivity of the soil and aggregate output. For example, if there existed a market for dairy products it would have been necessary to invest in milch cows, at 4.5 pounds a piece; a cheese press, at 5 pounds; a churn, at 2 pounds 10 shillings; milk pans, at 2 shillings 6 pence each; and a boiler built of bricks, at 5 pounds.[88]

(v) Summary:
Rational choice and the productivity of the soil

It would be a fair approximation of reality to argue that a peasant population faced by an increased population, which cannot be supported at the culturally acceptable standard of living by extensive agriculture, given the amount of cultivable land, would attempt to find a way to maintain that standard of living without, unnecessarily, increasing the labour time required to do so.[89] Rational behaviour on the part of the peasant need not involve the adoption of more intensive agricultural techniques. But if the excess population could not easily migrate, so that the typical peasant of the community would not be able to maintain his/her standard of living given the amount of cultivable land with extensive agricultural techniques, the adoption of intensive agricultural techniques would be gradually forced upon the rational peasant.

The rational peasant may not attempt to maintain his/her standard of living if the means to do so were not available. This could cause a 'subsistence crisis'. As D.E. Dumond argues:[90]

> "When population growth approaches the point beyond which subsistence may not be expanded with relative ease, the people are faced with the alternatives of either limiting the size of the population or accepting a degenerating level of living and perhaps ultimate starvation."

It is clear, from our discussion of intensive agriculture, that if the peasant does not have available capital or excess labour time intensive agriculture would become beyond the reach of the typical peasant. Necessary tools and equipment must be either built or purchased if intensive agriculture is to be practised.

The peasants of Lower Canada, living in the seigniories, typically did not engage in intensive agriculture. Their behaviour could be categorized as irrational if, and only if, extensive agriculture was willingly practised once the peasants were convinced that this traditional mode of farming was no longer able to meet their expressed material needs and sufficient capital and/or

labour time were available in order to adopt the more intensive agricultural techniques. In the course of this essay we examine the extent to which evidence exists which would permit us to agree with Ouellet's claim that the French-Canadian peasant was irrational and for this basic reason did not adopt the avaialble more intensive techniques of agricultural production.

FOOTNOTES

1. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, p. 61.

2. Ibid., p. 45.

3. Waters, Henry Jackson, The Essentials of Agriculture, p. 60. On the same page, Jackson refers to winter freezing after a fall plowing as a manner by which the soil may be improved.

4. Lower Canada and Upper Canada were united into the Province of Canada by The Act of Union of 1840.

5. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. The pages of this report are not numbered.

6. Ibid.

7. Waters, Henry Jackson, The Essentials of Agriculture, p. 59.

8. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Production of Agriculture in Canada, pp. 130-131.

9. Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study, p. 17.

10. Waters, Henry Jackson, The Essentials of Agriculture, p. 26; Nelson, Curtis J., "Agricultural Science (plant)", p. 141.

11. Waters, Henry Jackson, The Essentials of Agriculture, pp. 27-28.

12. Ibid., pp. 72-73.

13. Ibid., p.75.

14. Ibid., p.73.

15. Boserup, Ester, The Conditions of Agricultural Growth: The Economics of Agrarian Growth Under Population Pressure, p. 24; Waters, Henry Jackson, The Essentials of Agriculture, p. 25.

16. Clark, Colin and Haswell, Margaret, The Economics of Subsistence Agriculture, p. 39.

17. Boserup, Ester, The Conditions of Agricultural Growth: The Economics of Agrarian Growth Under Population Pressure, p. 18; Darby, H.C., "The Clearing of the Woodlands in Europe", p. 203; Clark, Colin and Haswell, Margaret, The Economics of Subsistence Agriculture, p. 39.

18. Ibid. and Waters, Henry Jackson, The Essentials of Agriculture, p. 82. On this page Jackson makes the following important point as to the

effect of placing under crop either virgin land or land similiarly rich in organic matter and nitrogen. The reason for such land being very productive is that it sets free "abundant supplies of nitrates and makes the other plant foods available." But once such land is placed under crop, there takes place a rapid decay of organic matter which results in the loss of large quantities of nitrogen, primarily through the escape of free nitrogen into the air. Waters writes: "Experiments have shown that in the first two or three decades after new land is brought under crop, the loss of nitrogen... may be two or three times as large as the loss through the removal of the crops grown on the land."

19. Darby, H.C., "The Clearing of the Woodlands in Europe", p. 208.

20. Slicher Van Bath, B.H., The Agrarian History of Western Europe, A.D. 500-1850, p. 245.

21. Boserup, Ester, The Conditions of Agricultural Growth: The Economics of Agrarian Growth Under Population Pressure, p. 35.

22. Ibid., pp. 71, 95, and 104.

23. Ibid., pp. 30, 37-38, and 43.

24. Ibid., p. 29.

25. Clark, Colin and Haswell, Margaret, The Economics of Subsistence Agriculture, pp. 42 and 55.

26. Boserup, Ester, The Conditions of Agricultural Growth: The Economics of Agrarian Growth Under Population Pressure, p. 117. A similiar point is made in Dumond, D.E., "Population Growth and Cultural Change", p. 318.

27. Smith, Philip E.L. and Cuyler Young Jr., T., "The Evolution of Early Agriculture and Culture in Greater Mesopotamia: A Trial Model", pp. 16-17.

28. Ibid.

29. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 222.

30. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850.

31. A Report to the Legislative Assembly of Lower Canada. (The testimony of Mr. William Meiklejohn), Appendix T, 1823.

32. Waters, Henry Jackson, The Essentials of Agriculture, p. 92.

33. Harris, R.C., "Of Poverty and Helplessness in Petite-Nation", p. 34.

34. Harris, R.C. and Warkentin, John, Canada Before Confederation: A Study in Historical Geography, p. 50. The point is made that

little manure was available as cattle roamed in the forest and that (p. 52) little manuring of the soil was practised.

35. Jones, R.L., "French Canadian Agriculture in the St. Lawrence Valley, 1815-1850", p. 115 (much manure was dumped into the river); Jones, R.L., "Agriculture in Lower Canada, 1792-1815", p. 18 (Little use was made of manure).

36. Parker, W.H., "A Revolution of the Agricultural Geography of Lower Canada, 1833-38", p. 190.

37. Bouchette, Joseph, A Topographical Description of the Province of Lower Canada, p. 66.

38. Hughs, Harold D. and Henson, Edwin R., Crop Production: Principles and Practices, p. 750.

39. Waters, Henry Jackson, The Essentials of Agriculture, p. 93.

40. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, pp. 222, 256, 258, 338, 455, and 458.

41. Jones, R.L., "Agriculture in Lower Canada, 1792-1815", p. 36.

42. Lunn, A.J.E., Economic Development of New France, 1713-60, p. 124 (on the pre-conquest period).

43. Waters, Henry Jackson, The Essentials of Agriculture, p. 94.

44. Ibid., p. 96.

45. Ibid., p. 117.

46. Slicher Van Bath, B.H., The Agrarian History of Western Europe, A.D. 500-1850, p. 293.

47. Ibid., p. 294.

48. Hughs, Harold D. and Henson, Edwin R., Crop Production: Principles and Practices, p. 189. Our calculations are based upon the data contained in the table on this page.

49. Waters, Henry Jackson, The Essentials of Agriculture, p. 98.

50. Slicher Van Bath, B.H., The Agrarian History of Western Europe, A.D. 500-1850, p. 280.

51. Ibid., p. 294.

52. In Lower Canada, productivity was at a very low level in this period. For details refer to Table 3.

53. Calculations are made from the data in Tables 6 and 15.

54. The information on the manure produced through stall feeding as opposed to when there was no stall feeding seriously inflates the data

as to what may be obtained without stall feeding. Estimates of amount of manure collected without stall feeding is based upon information of livestock stall fed for only 120 days per year, which is considered to be a minimal number of days. But it is doubtful that livestock were fed for even this number of days in Lower Canada. Refer to Slicher Van Bath, B.H., The Agrarian History of Western Europe, A.D. 500-1850, pp.293-294.

55. Calculations are made from the data in Tables 6 and 15.

56. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside, Appendix TT; John Neilson estimates that the cost of building a simple log house covered with bark was 10 pounds. We assume that a proper barn with facilities to store animal manure would have cost as much to construct, if not more. Refer to The Plan of John Neilson. Appendix A of Appendix R of the Appendix to the Journals of the Legislative Assembly of Lower Canada, Vol. 33, 1823-24.

57. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, p. 17.

58. Ouellet, Fernand, Histoire Sociale et Economique du Québec, 1760-1850, pp. 254, 336, and 338; Jones, R.L., "French Canadian Agriculture in the St. Lawrence Valley, 1815-1850", p. 115 (There was much idle land available but this was not planted in fallow).

59. Hughs, Harold D. and Henson, Edwin R, Crop Production: Principles and Practices, p. 166.

60. Waters, Henry Jackson, The Essentials of Agriculture, p. 88.

61. Ibid., p. 89.

62. Ibid., p. 92.

63. Timmer, Peter C., "The Turnip, the New Husbandry, and the English Agricultural Revolution", p. 392.

64. Hughs, Harold D. and Henson, Edwin R., Crop Production: Principles and Practices, p. 187.

65. Slicher Van Bath, B.H., The Agrarian History of Western Europe, A.D. 500-1850, p. 69.

66. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 339.

67. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada. pp. viii and 164.

68. Ibid., p. 17.

69. Ibid., pp. 130-131.

70. Séguin, Maurice, La Nation "Canadienne" et l'Agriculture (1760-1850), p. 131.

71. Jones, R.L., "Agriculture in Lower Canada, 1792-1815", p. 34.

72. Bouchette, Joseph, A Topographical Description of the Province of Lower Canada, p.66.

73. We refer to Evans' argument that the clay soil in Canada yielded "grand crops" but only at a heavy expense, since strong instruments and and a powerful team were required to work the land. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, pp. 130-131.

74. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside, Appendix TT.

75. Bouchette, Joseph, A Topographical Description of the Province of Lower Canada, p. 66.

76. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, pp. viii and 162; Evans, William, Supplementary Volume to a Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture, p. 156.

77. A Report to the Legislative Assembly of Lower Canada. (The Testimony of Mr. William Meiklejohn), Appendix T, 1823.

78. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850.

79. Hughs, Harold D. and Henson, Edwin R., Crop Production: Principles and Practices, p. 750.

80. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, p. 162.

81. Ibid.

82. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside. Appendix TT.

83. Evans, William, Supplemetary Volume to a Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, p. 156

84. Boserup, Ester, The Conditions of Agricultural Growth: The Economics of Agrarian Growth Under Population Pressure, p. 106.

85. The Census Report of the Canadas, Vol. 2, pp. 162-166.

86. Hughs, Harold D. and Henson, Edwin R., Crop Production: Principles and Practices, pp.750-751.

87. Waters, Henry Jackson, The Essentials of Agriculture, p. 86. Experiments have shown that a field in a rotation of corn, oats, and clover for ten years, then placed in pasture for eighteen years generates very high yields. If corn was replaced by wheat in the rotation, yields would be even higher since wheat is a less exhaustive crop than is corn (p. 86).

88. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside. Appendix TT.

89. Chayanov, A.V., Peasant Farm Organization, pp. 79 and 81; Dumond, D.E., "Population Growth and Political Centralization", pp. 287-292.

90. Dumond, D.E., "Population Growth and Cultural Change", pp. 318-19.

CHAPTER SIX

Economic Surplus and the Productivity of the Soil

In this chapter we examine the evolution of the economic surplus on the typical family farm in Lower Canada from 1784 to 1851. By economic surplus we are referring to the excess of output over consumption plus seed requirements. This indicates the potential income available to the typical peasant family which could have been utilized to make purchases towards increasing the productivity of the soil. [1] Given the available economic surplus, we probe the possible causes for the per farm economic surplus evolving as it did.

(i) Economic surplus: general effects

It has been argued, by certain scholars, that the lack of economic surplus resulted in the deterioration of agricultural production. M.M. Postan argues: [2]

> "...it is important not to disregard the possibility that in the Middle Ages not enough was done to maintain the fertility of large areas of cultivable land, especially in the holdings of dependent peasants. In England the manorial smallholders were so weighed down with dues, and their grazing facilities so restricted, that it must have been very difficult for them to keep their land in good heart."

Rodney Hilton argues specifically with regard to England: [3]

> "It seems almost certain from the evidence at our disposal that the per capita productivity of agriculture was stationary and falling towards the end of the 13th century. This was not simply the result of increasing population, which pressed on institutionally restricted land reserves, resulting in the reduction in the average size of the family subsistence holding, the proliferation of smallholders and landless labourers and the reduction in the pasture:arable ratio. It was also the result of the pressure of landowners for rent, jurisdictional fines, death duties, and entry fines, and the state of taxation and purveyance - pressures which removed all cash surpluses and prevented even the most elementary investment."

Georges Duby argues that in Europe, generally speaking, between 1075 and 1180, productivity increased on dependent peasant plots. He argues that the increase of productivity was due to the need of the peasant to meet the demands of the Lord. But according to Duby, what permitted this increase was that the Lord granted his/her peasantry greater independence by reducing his/her demands upon the peasantry. Duby writes: [4]

> "Conciously or otherwise, lords reduced partially their inroads into the resources of their men. It was their way of making an investment, by leaving the workers the wherewithal to develop the productive forces of their households, bring up more children, feed more draught animals, add necessary parts to the plough and gain enough ground at the expense of untilled waste. Between 1075 and 1180 the main channel of investment and saving was through the relaxation of seigniorial burdens."

In the cases mentioned above it was the deprivation of 'economic surplus' which acted as the significant cause of the deterioration in the state of agriculture. It was the increase in the economic surplus available to the peasant which allowed for improvements in the state of agriculture.

(ii) Economic surplus in Lower Canada

The Surveyor-General of Lower Canada, Joseph Bouchette, concluded from his examination of the geography of Lower Canada in the 1820's, that in most seigniories the condition of the censitaire had deteriorated. [5] Maurice Séguin asserts that between 1760 and 1850 the peasantry of Lower Canada produced principally for themselves. Little was produced for sale to local and external markets. [6] Harris and Warkentin argue that in the latter part of the first half of the nineteenth century the censitaire was generally short of credit and in debt to the seignior and local

merchant. [7] The same argument is made by Harris in an article specific to the seigniory of La Petite Nation. [8] Stanford Reid asserts that the censitaires were in debt as a result of their attempts to purchases seed and equipment in the seigniory of Mille Isles. Reid maintains that such a scenario was typical of the seigniories of Lower Canada. [9] Both Harris [10] and Reid [11] relate the censitaire's debt problems to the seigniorial payments which the censitaire was obliged to make. In 1843, a legislative committee of Lower Canada concluded, after a detailed investigation of the state of agriculture in Lower Canada, that the censitaires were heavily in debt and that one-fifth of all judicially enforced land sales were pursued so as to force the censitaires to pay their debts to the seignior. [12] Jones argues that the peasantry of Lower Canada were lacking in the income required for investments in the breeding of cattle, [13] while Parker argues that the peasantry of Lower Canada were unable to drain their land properly as a consequence of the inadequacy of the necessary income. [14]

Ouellet maintains that as a result of declining income in the 1820's, the peasant was forced to reajust production so as to meet, at the very minimum, immediate consumption needs. [15] Wheat was being replaced by potatoes and there was rise of cattle breeding, which indicates to Ouellet a movement towards autoconsumption. [16] In particular, Ouellet finds that the censitaire responded to the decline in income in the 1823-1836 period by engaging in subsistence agriculture. [17]

Wheat, the primary revenue generating item produced on the typical Lower Canadian farm, was declining in importance as the soil became progressively more exhausted. From the available census material [18] we calculate that by 1827 wheat contributed 20.56 per cent (in terms of bushels) to the total harvest; potatoes, 47.80 per cent; and oats, 17

per cent. In 1844, wheat contributed 4.4 per cent (in terms of bushels) to the total harvest; potatoes, 46 per cent; and oats, 34 per cent. In 1851, wheat contributed 15.38 per cent (again in terms of bushels) to the total harvest; whereas potatoes contributed 22.14 per cent and oats 44.9 per cent. In the eighteenth century wheat accounted for 65 to 73 per cent of the harvest. [19] Potatoes steadily declined in importance, from the 1840's on, as the potato crops continuously failed. [20] One reason for these crop failures was that the censitaire continued to employ the same soil exhausting techniques of agricultural production that were used in the growing of wheat, to the growing of potatoes. [21] Thus potatoes could not successfully replace wheat as the main ingredient of the consumption basket within the framework of subsitence agriculture.

The raising of cattle was one way to compensate for the loss of income resulting from the decline of wheat production. But the quality of the cattle raised is an important determinant in the marketability of the cattle. As it was, the censitaire did not possess the necessary financial resources to produce an animal of competitive quality in the 1820's through to the 1840's. The poor quality of cattle could not compete with the American and Upper Canadian (now known as Ontario) product. [22] Thus the cattle were primarily raised for family consumption. [23]

The raising of sheep did not provide a means to accrue additional income. The censitaire was able, given his/her resources, to produce an animal of very poor quality such that only a very shabby wool was produced. This inhibited the growth of a wool based textile industry in Lower Canada. [24] Thus sheep raising too was part of a subsistence economy.

The inability to substitute another marketable commodity for wheat appears to have resulted in the censitaires experiencing a shortage of

capital. Ouellet cites evidence that after 1833 peasants were forced to dig into their capital stock so as to obtain food. [25] Ouellet also cites evidence, from a 1851 legislative report investigating the effect of the seigniorial system of land tenure, that the censitaire did not have the resources to invest in the new equipment required to renovate a degenerating system of cultivation. [26] The President of the Beauharnois Agricultural Society makes a similiar point in 1851. [27]

The rather sketchy evidence presented above suggests that from the 1820's onwards the censitaire was in debt; short of capital; and at times did not even have enough to eat. Productivity of the soil was falling and the censitaire was without the financial resources necessary to alter his/her method of cultivation.

(iii) Economic surplus in Lower Canada as viewed through the Bishop's census

One indicator of the decline of economic surplus in the agricultural sector would be the decline in per capita output. Such information is available, and it is provided through the data collected by priests passing through various parishes in Lower Canada from 1787 to 1838. The priests amassed data on the tithes collected in these parishes. A tithe was the payment to the Catholic Church of one twenty-sixth of the grain harvested by Catholics. Where the Church collected and recorded the payment of tithes, the data thereby generated allows one to estimate the trends in production.

The available data are provided through surveys conducted by priests under the auspices of the Bishop of Lower Canada. The priests passed through, on average, 15 to 25 parishes per annum, from 1787 to 1838. Thus we have years when only a few parishes were frequented, and others when 30 to 35 were. Fernand Ouellet presents these data in his article, "L'agriculture Bas-Canadienne Vue à Travers les Dimes et la Rente en Nature."

Obviously, what the priests provide us with is not an ideal set of data. But it is the only such source of production trends available. Although the data were not collected from the same parish every year, Ouellet maintains that, "L'évèque, selon les rapports des curés conservés jusqu'à aujourd'hui, aurait donc visité 175 paroisses comprises dans une region donné où en gross les conditions étaient donc consistants. On peut penser qu'ils étaient représentatifs sinon de toute la province, d'au moins un district." [28] Thus the information provided can be used as an indicator of production trends.

Since the tithe represents one twenty-sixth of the total harvest of grain, and Ouellet provides us with the Bishop's data in terms of the tithe per communicant, one may estimate the level of production by multiplying the tithe per communicant by a factor of twenty-six. As communicants are those of the Catholic community who are six years and older, one may use estimates of output per communicant as an indicator of output per individual in the agricultural sector.

We may safely assume that the per capita consumption of wheat was 6 minots per annum, which is approximately equivalent to 6 bushels per annum. [29] If one substracts per capita per annum consumption from per capita output one arrives at an estimate of per capita economic surplus. This overestimates the per capita economic surplus since it is not net of seed and other inputs requisite to the renewal of the cycle of agricultural production. On the other hand, the estimates of the per capita economic surplus do not take into consideration the production trends of potatoes and livestock. For this reason, the "Bishop's Census" permits us to deduce only a partial view of the trends in production and thereby in the per capita economic surplus.

Ouellet presents the data in a discontinuous series, as can be gathered from Table 2. We have periods rather than years. We have upper and lower limits to tithe categories rather than discrete numbers. Thus for every period one may estimate the lower and upper limits of production for a percentage of the population. For example, for the 1787-92 period, 16 per cent of the population produced from 6.5 to 12.74 per capita.

Using the information provided by Ouellet (Panel A Table 2) we have constructed a table to indicate the economic surplus available per capita (Panel B Table 2).

In the 1787-1792 period a substantial economic surplus existed for most of the population. In 83 per cent of the parishes there was an excess over consumption ranging from 7 to over 20 minots per communicant, and over 20 minots per communicant in 16 per cent of the parishes. By the 1832-38 period, 31 per cent of the parishes had hardly any output in excess of consumption. In this period, 47 per cent of the parishes held only a meager excess over consumption of 0.5 to 6.74 minots per communicant. In this same period not one surveyed parish had an excess of output over consumption greater than 20 minots per communicant.

The 1803-1810 period marked an important turning point. In this period the proportion of parishes producing an economic surplus greater than 13.5 minots per communicant fell from 42 per cent to 17 per cent, or by more than one-half. But, in this period, 77 per cent of the parishes surveyed produced an excess of output over consumption of only 0.5 to 13.24 minots per communicant; with 4 per cent producing only between 0.00 and 0.24 minots per communicant in excess of consumption.

By the 1814-1817 period, none of the surveyed parishes produced an excess over consumption of greater than 20 minots per communicant, while only 8 per cent of the surveyed parishes produced an excess over cons-

Table 2

The Bishop's Census and the Economic Surplus of Lower Canada

year	1787–92	1795–1802	1803–10	1814–17	1825–31	1832–38
	percentage of parishes					
A. tithe in minot per communicant						
0.00 – 0.24	1	5	4	16	33	31
0.25 – 0.49	16	15	24	25	46	47
0.50 – 0.74	44	33	53	50	17	17
0.75 – 0.99	21	21	11	8	3	2
1.00 ———	16	21	6	0	0	0
B. 'economic surplus' per communicant						
0.00 – 0.24	1	5	4	16	33	31
0.50 – 6.74	16	15	24	25	46	47
7.00 – 13.2	44	33	53	50	17	17
13.5 – 19.7	21	21	11	8	3	2
20.00 ———	16	21	6	0	0	0

Note: Economic surplus, in these calculations, refers to the excess of production over consumption requirements, estimated to be six minits of wheat per capita per annum. Production is estimated as being 26 times the tithe collected, the tithe being one twenty-sixth of the total grain production.

Source: Ouellet, Fernand, "L'Agriculture Bas-Canadienne Vue àTravers les Dimes et la Rente en Nature."

umption of 13.5 to 19.74 minots per communicant. In this period 75 per cent of the parishes produced an excess over consumption of 0.5 and 13.24 minots per communicant, with 16 per cent of the surveyed parishes producing an economic surplus of no more than 0.00 to 0.24 minots per communicant. The proportion of parishes producing this meager economic surplus increased by 400 per cent from the previous period.

The 1825-1831 period marked another turning-point. In this period only 3 per cent of the surveyed parishes produced an excess over consumption of 13.5 to 19.74 minots per communicant, as compared to 8 per cent in the 1814-1817 period. As in the latter period, no surveyed parish produced an excess over consumption of 20 or more minots per communicant. And where in the 1814-1817 period, 41 per cent of the surveyed parishes produced between 00.0-00.24 and 00.5-6.74 minots per communicant as the economic surplus, in the 1825-1831 period 79 per cent of the surveyed parishes produced the same amount of economic surplus. In the 1825-1831 period, the percentage of surveyed parishes producing an excess over consumption of 7.0 to 13.2 minots per communicant was 17 per cent, while in the 1814-1817 period it was 50 per cent of the surveyed parishes. It is clear that by the 1825-1831 period an increasing proportion of the parishes were producing a very scanty economic surplus.

The "Bishop's Census" indicates that from the 1795-1802 period to the 1825-1831 period the excess of output over consumption per communicant (our rough measure of economic surplus) declined continuously, therafter stagnating until the 1832-1838 period, the last period for which data are available. Both the 1803-1810 and the 1825-1831 periods are noticable for the increased proportion of parishes which produced a small economic surplus per communicant. To gain more accuracy as an indicator of the trend in the per capita economic surplus, the "Bishop's Census" must be complemented

with information on the amount of seed required to renew the cycle of agricultural production and the quantities of non-tithe items, such as potatoes and livestock, produced on the typical peasant farm.

(iv) Economic surplus in Lower Canada: inferences from the census material, 1784-1851

The census provides us with a comprehensive set of datum, but only for a select number of years: 1784, 1827, 1844, and 1851. The most comprehensive of the data are for 1851, while the least comprehensive of the data are for 1784. No relevant data are available for the years between 1784 and 1827. This is where the importance of the "Bishop's Census" comes in. It helps to fill in the gap. The data provided by the census, in turn, by being so much more in detail than the "Bishop's Census", complements the information provided by the "Bishop's Census".

The "Bishop's Census" offers us no direct measure for the productivity of the soil. The census offers us little assistance on this point as well. It is only from the 1851 census that one may make estimates of output per unit of land. It is only for this year that data is provided on specific crops grown and the amount of land utilized to grow them. For this reason we cannot make comparisons with previous years as to changes in output per unit of land for wheat as well as for other crops. But the census material does permit us to make fairly accurate estimates as to the trend in the economic surplus per farm and per unit of land under crop. We can also make inferences as to the productivity of the soil by examining our estimates of the economic surplus per unit of land under crop per farm. Our statistical analysis of the census material is presented in Table 3.[30]

From the census material we have been able to estimate output per typical farm. Since the typical farm was comprised of a family of six individuals, movements in the output per typical farm can be viewed as

Table 3

Census Data and Estimates for Lower Canada: 1784-1851

	1784	1827	1844	1851
1. Agrarian population: [1]	113,012	420,797	621,576	583,499
2. No. of families occupying farms: [2]	18,924	70,133	76,440	95,813
3. Arpents under crop: [3]	247,322	1,002,198	1,552,907	2,072,341
4. Arpents under crop per family(3 ÷ 2):	13.08	14.29	20.31	21.62
5. Arpents under cultivation: [4]	No info.	2,946,595	2,671,768	3,605,167
6. Arpents under cult. per family(5 ÷ 2):	———	42.01	34.95	37.68
7. Arpents held:	1,569,096	No info.	4,038,521	8,113,408
8. Arpents held per family(8 ÷ 2):	82.91	———	52.83	84.68
9. Bushels of wheat produced: [5]	1,483,932	2,921,240	942,829	3,073,943
10. Bushels of oats produced:	No info.	2,441,529	7,238,744	8,977,380
11. Bushels of potatoes produced:	No info.	6,796,310	9,918,864	4,424,016
12. Bushels of peas produced:	No info.	823,318	1,219,413	1,415,806
13. Bushels of barley produced:	No info.	363,117	1,195,447	494,766
14. Bushels of corn produced:	No info.	No info.	141,000	401,284
15. Bushels of buckwheat produced:	No info.	No info.	374,801	532,412
16. Bushels of wheat minus seed requirements: [6]	1,100,583	2,103,293	698,837	2,433,538
17. Bushels of oats minus seed requirements: [7]	———	1,855,562	5,501,446	6,643,261
18. Bushels of potatoes minus seed requirements: [8]	———	5,708,900	8,331,846	3,937,374
19. Bushels of peas minus seed requirements: [9]	———	716,393	1,031,232	1,274,225
20. Bushels of barley minus seed requirements: [10]	———	286,832	1,029,758	421,576
21. Bushels of corn minus seed requirements: [11]	———	———	94,470	286,632
22. Bushels of buckwheat minus seed requirements: [12]	———	———	329,644	463,714
23. Bushels of wheat per farm(16 ÷ 2):	58.15	29.99	8.88	25.40
24. Bushels of oats per farm(17 ÷ 2):	———	26.46	71.97	69.33
25. Bushels of potatoes per farm(18 ÷ 2):	———	81.40	109.00	41.09
26. Bushels of peas per farm(19 ÷ 2):	———	10.21	13.49	13.30
27. Bushels of barley per farm(20 ÷ 2):	———	4.09	13.47	4.40
28. Bushels of corn per farm(21 ÷ 2):	———	———	1.24	2.99
29. Bushels of buckwheat per farm(22 ÷ 2):	———	———	4.31	4.84
30. Total consumption requirements of wheat (bushels): [13]	678,072	2,524,782	3,729,456	3,500,994
31. Total consumption requirements of wheat which can be met by the available potatoe supply: [14]	None	856,335	1,249,777	590,606
32. Bushels of wheat required to supplement the available supply of potatoes(30 - 31):	———	1,668,447	2,479,679	2,910,388

Table - 3 (continued)

Census Data and Estimates for Lower Canada: 1784-1851

	1784	1827	1844	1851
33. Bushels of wheat available to supplement the supply of potatoes (16):	——	2,103,293	678,837	2,433,538
34. Surplus (+) or deficit (-) in the supply of wheat required to supplement the potatoe supply(33 - 32):	——	+ 434,846	- 1,800,842	- 476,850
35. Consumption requirements of wheat which can be met by the supply of oats given the exhaustion of the potatoe and wheat supply: [15]	——	————	1,800,842	476,850
36. Surplus (+) or deficit (-) in the supply of wheat A (16 - 30):	422,511	- 421,489	- 3,050,619	- 1,067,456
37. Surplus (+) or deficit (-) in the supply of wheat B (16 - 32):	————	+ 434,837	- 1,800,842	- 476,850
38. Surplus (+) or deficit (-) in the supply of potatoes(18 - bu. of potatoes for 31):	————	0.00	0.00	0.00
39. Surplus (+) or deficit (-) in the supply of oats(17 - bu. of oats for 35)	————	+ 1,855,562	+ 454,126	+ 5,403,451
40. Value in pounds currency of the economic surplus((16 - 33) + (38) + (39)): [16]	L95,064 [17]	L213,812	L28,383	L337,716
41. Value per farm, in pounds currency of the economic surplus (40 ÷ 2):	L5 0s 6d	L3 0s 11d	7s 5d	L3 10s 6d
42. Value per arpents under crop, in pounds currency, of the economic surplus(40 ÷ 3):	7s 8d	4s 3d	4d	3s 3d

Table 3 (continued)

Notes

1. Figures for the agrarian population are estimates based upon data supplied by the census. By agrarian population we are refering to those members of peasant families who constitute units of agricultural production. For 1784, the census population estimate of 113,012 is consistent what the agrarian population should have been given the census estimates that there were 18,924 homes in the agricultural sector, thus, most probably 18,924 families engaged in agriculture. In this case there would have been 6 people per peasant family. Such a family size is consitent with information on eighteenth century Québec fertility and mortality rates found in pp. 205-208 of Jacques Henripin article,"From Acceptance of Nature to Control". The fertility rate ranged from 8 to 13 children per woman. The mortality rate was such that45 per cent of those born died prior to reaching their tenth year, while 50 per cent died before their twentieth year. Our estimates for the 1827, 1844, and 1851 census years are more complicated. They are based upon the data provided for the occupiers of the land; for those engaged in non-agricultural pursuits; and for the total population. For 1827 we multiply the number of those engaged in non-agricultural pursuits by 6 (assuming each individual, so engaged is the head of a family unit). Substracted this from the estimate, given by the census, for the total population, we arrive at a figure for the agrarian population. If this is divided by the census estimate for the occupiers of land, we arrive at an estimate for the size of the typical peasant family of six. We use the same procedure for 1844 and 1851. But in 1844 there are estimates for servants. We assume that the servants are members of agrarian families, thus we do not multiply their number by 6, but by 1. The total agrarian population which we estimate is consistent with the census estimate for the owners of land. We arrive at an estimate of about 8 individuals per peasant family. We assume that those listed as tenants were employed in agricultural work. But this would preclude them from controlling the economic surplus produced on the peasant farm. If both tenants and owners were included in our calculations, we would have arrived at an estimated size of the peasant family of about 5. To the extent that our estimate of the number of peasant families is an underestimate we would be inflating our estimates for economic or tradable suplus per peasant family. For 1851 we followed the same procedure as we did for our 1844 estimates. This leaves us with an estimate for the size of the peasant family of 6.

2. These figures are taken from the census material. For details see note no. 1.

3. For the years 1827 and 1851, the figures presented for land under crop are those provided by the census. For 1844 we assume that the land under crop was the same proportion of the land under cultivation as that which prevailed in 1851. The census provides data only for land under culture for the year 1784. But Séguin argues that this data is for land conceded (La Nation "Canadienne" et l'Agriculture, 1760-1850, p. 174). Our analysis suggests that Séguin is correct. From our Table 1 we know that the seed:yield ratio for wheat in 1734 was 1:6. This is the last year, prior to 1851, for which data exists to calculate the seed:yield ratio. We assume that the seed:yield ratio for 1784 was the same. The census provides data as to the amount of bushels sown (probably for wheat only). From this information we estimate that there was probably 247,322 arpents of land under crop. To assume that much more land was under crop could have been consistent only with a much lower seed:yield ratio. And this would not have been consistent with the still high fertility of the land recently brought under crop.

Table 3 (continued)

Notes

4. The data for land under cultivation is provided by the census, as is the data for the amount of land held

5. The data for the quantity of wheat produced is provided by the census, except for 1784. Here we estimate the the quantity using the data for bushels of grain sown, provided by the census, assuming a 1:6 seed:yield ratio, and assuming that 1.55 bushels of wheat are required to sow one arpent of land (refer to Harris, R.C., The Seigniorial System in Early Canada: A Geographical Study, p. 153).

6. To determine the seed requirements for wheat as well as for the other crops we are concerned with requires data on the seed:yield ratios of these crops. To determine the seed:yield ratios requires data on the quantity of land sown with each crop and the amount of seed required to sow that crop. Data for the amount of seed required to sow an acre of oats, potatoes, wheat and other crops are available in H.J. Waters, The Essentials of Agriculture, Appendix J. No information is available as to the amount of land sown with specific crops, for the years 1784, 1827, and 1844. We can calculate the seed:yield ratios for wheat, oats and potatoes only for 1851. For 1784 the data does not exist to make any estimate for the seed:yield ratio for wheat. Apart from this, no data exist as to the crops planted other than wheat. For 1827 and 1844 the census provides data as to the amount of wheat, oats and potatoes harvested as well as to the amounts harvested of other crops. We could have assumed that the seed:yield ratios calculated for 1851 from the census was the same for 1827 and 1844. Instead of this, we attempted to estimate the seed:yield ratios for wheat, oats and potatoes for 1827 and 1844. To do this we had to estimate the amount of land planted with each of the above crops respectively. This was possible only by assuming that the relative productivities, (in terms of bushel per arpent) for all the crops listed were the same in 1827 and 1844 as they were in 1851. We convert the relevant crops into wheat terms. For example, oats was 213 per cent more productive than wheat, thus we multiplied oats by 0.469 (1 divided by 2.13). Once all crops were reduced to wheat terms we calculated the proportion of the total output, in wheat terms, composed by each crop respectively. This should be the same as the proportion of land planted with each crop respectively. Still, the data used to make such calculation, were not adequate enough to obtain very accurate estimates. In fact, we find that productivity rose, albeit very minimally, for wheat, oats and potatoes from 1827 to 1851. This does not appear to be consistent with our finding specified in this table of falling output per peasant family in spite of the fact that more land was placed under crop. But since we used the seed:yield estimates only to calculate the seed requirements, this point is not important. It only biases our results slightly in favour of a greater economic surplus towards 1851 (the higher the seed:yield ratio the less seed required for planting, the greater the disposable surplus).

7. See note no. 6.

Table 3 (continued)

Notes

8. See note 6.

9. See note 6.

10. See note 6.

11. See note 6.

12. See note 6.

13. We assume that the typical censitaire consumed approximately 6 minots of wheat per annum (where one minot equals 1.00158 imperial bushels). This assumption is based upon the information provided by Reid, ("The Habitant's Standard of Living...", p. 275). We also rely upon the analysis of William Meiklejohn (A Report to the Legislative Assembly of Lower Canada of 1823). Reid argues that the per capita consumption of wheat ranged between 6 to 10 minots of wheat per annum. The estimate made by Meiklejohn is equivalent to a per capita consumption of wheat of 6 minots of wheat per annum. For the pre-1760 period Harris, in his The Seigneurial System in Early Canada: A Geographical Study, estimates that the per capita consumption wheat came to 5 or 6 minots per annum (p. 160). The consumption of such a quantity of wheat represented only a portion of a possible subsistence diet of the censitaire. Clark and Haswell in The Economics of Subsistence Agriculture find that a kg. of wheat (unmilled) yields 3,150 calories (p. 58). The typical male requires 3,200 calories per day while the typical female requires 2,300 calories per day at a minimum (FAO Report of the Committee on Calorie Requirements, 1949). In a population composed half of men and half of woman, the minimum calorie requirements of the 'typical person' would be 2,750 calories per day. Clark and Haswell argue that the typical person , even when working an eight hour day, requires less than 2,500 per day (The Economics of Subsistence Agriculture, chapter 1). If we assume 2,500 calories to be the minimal requirement per person per day, it would take 10.6 bushels of wheat to supply the 2,500 calories every day for one year (each bushel of wheat typically weighs 60 lbs.). The 6 minots consumed by the censitaire would represent only about 60 per cent of their total minimum diet. This is not a very large amount , given that in other communities greater proportions of the peasant's diet was and is composed of wheat (Clark and Haswell, The Economics of Subsistence Agriculture, chapter 4).

14. The potato served as a substitute for wheat when not enough wheat was available to meet the consumption needs of the typical peasant (Ouellet, Histoire Economique et Sociale du Québec, 1760-1850, p. 257). To estimate the amount of potatoes required to replace a bushel of wheat, in terms of the caloric value of wheat, we must know the relative caloric value of potatoes in relation to that of wheat. Since a kg. of potatoes contains 15 per cent of the caloric value of a kg. of wheat (Clark and Haswell, The Economics of Subsistence Agriculture, p. 60), it would take 6.66 kgs. of potatoes to to replace 1 kg. of wheat (both a bushel of wheat and a bushel of potatoes weigh 60 lbs.). Using this information we calculate the bushels of potatoes required to replace the caloric value of wheat.

Table -3 (continued)

Notes

15. When the potato and wheat were no longer grown in adequate quantities to realize the consumption demands of the typical peasant family, oats served as a partial replacement (Ouellet, Histoire Economique et Sociale du Québec, 1760-1850, pp. 239-240). But oats was more predominantly used as an animal feed (William Meiklejohn, A Report to the Legislative Assembly of Lower Canada of 1823). To determine the quantity of oats required to replace a given amount of wheat in terms of caloric value we had to determine the relative caloric value of the two crops, which was 1 (FAO Food Composition Tables). But since 30 per cent of oats is composed of hull and is therefore unfit for human consumption, and there are 30 lbs. of oats to a bushel as opposed to 60 lbs. for wheat, it would take 2.85 bushels of oats to compensate for 1 bushel of wheat in terms of caloric value (Hughs and Henson, Crop Production, p. 417).

16. The surplus of wheat, oats and potatoes constitute what can be sold on the market. Most of the other crops grown on the typical farm are used to feed the farm animals (Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside). We assume that the price of wheat was 4s 6d per bushel and that the price of oats was 1s 3d per bushel in 1851; where L1 = 20s = 12d (Report of David Handyside and Ouellet, Histoire Economique et Sociale du Québec, 1760-1850, pp. 603-604). We use these prices for all years.

17. For 1784, we assume that the economic surplus is composed of the wheat surplus only. To the extent that other crops were grown on the farm and were part of the economic surplus, our estimate of the economic surplus for 1784 would be an underestimate.

Sources: The Canadian Census, 1870-71, Vol. 4, Ottawa, 1876; Clark, C and Haswell, M., The Economics of Subsistence Agriculture; FAO Food Consumption Tables; FAO Report of the Committee of Calory Requirements; Harris, R.C., The Seigneurial System in Early Canada: A Geographical Study; Henripin, J., "From Acceptance of Nature to Control"; Hughs, H.D. and Henson, E.R., Crop Production: Principles and Practices; Ouellet, F., Histoire Economique et Sociale du Québec, 1760-1850; Reid, S.W., "The Habitant's Standard of Living on the Seigneurie des Milles Isles, 1820-1850"; Séguin, M., La Nation "Canadienne" et l'Agriculture, 1760-1850; Waters, H.J., The Essential of Agriculture.

being indicative of movements in output per capita. [31]

Wheat was the most important crop grown by the censitaire, from two perspectives. One, wheat was one of the main components in the diet of the typical censitaire. Over half of the censitaire's caloric needs were met through the consumption of wheaten bread. When the wheat was available, the censitaire consumed, on a per annum basis, approximately 6 minots of wheat (1 minot = 1.00158 imperial bushels). [32] On the other hand, wheat was an important source of income. It could have been easily disposed of on the market. [33]

Wheat output per farm fell from 58 bushels in 1784 to 30 bushels in 1827, and then to 9 bushels in 1844. In 1851 it stood at 25 bushels. Wheat output per farm, estimated here, is net of seed requirements (Table 3 Line 23).

Oats output, net of seed requirements, was 26 bushels per farm in 1827 (no information is available for 1784). It rose to 72 bushels per farm in 1844, and fell slightly to 69 bushels per farm in 1827 (Table 3 Line 24). It would appear that oats was replacing wheat as the main crop.

Potato output, net of seed requirements, stood at 81 bushels per farm in 1827. It rose to 109 bushels per farm in 1844. But once the potato blight struck Lower Canada, the potato crop did not recover. [34] By 1851, potato output per farm, net of seed requirements, had fallen to 42 bushels per farm (Table 3 Line 25).

The drastic fall in the output of wheat per farm was of much greater severity than the compensating increases in oats and potato production may lead one to believe. If wheat could not have been substituted by other crops, as a basic ingredient in the diet of the censitaire, the typical censitaire would have been short of food supplies by 1827. This situation

would have deteriorated considerably by 1844, only to improve slightly by 1851 (compare Lines 16 and 30 of Table 3). At least after 1827 the wheat produced in Lower Canada would not have been sufficient to meet the demands for it by the agrarian population. [35]

Potatoes were being grown as a substitute for wheat in terms of a consumption good. [36] We have estimated that if all potatoes harvested were consumed by the agrarian population, 1,668,447 bushels of wheat would have required to supplement this if the censitaire was to have recieved the equivalent calories contained in 6 bushels of wheat consumed per year (Line 32 Table 3). This would have left 6.2 bushels of wheat per farm as a surplus. [37] But by 1844 there was inadequate supply of wheat to meet what was required once the supply of potatoes was exhausted. Just so as to meet the per farm consumption needs there would have been a shortage of 23 bushels of wheat per farm. [38] The situation improved somewhat by 1851. Since wheat output rose substantially over what it was in 1844, the shortage of wheat, given the supply of potatoes, decreased in volume. The typical farm was short by about 5 bushels of wheat. [39] Thus, by 1844 the potato and wheat supply, together, were unable to meet the consumption requirements of the agrarian population. Only to the extent that oats was used in the place of wheat and/or potatoes could the consumption requirements of the agrarian population have been met by 1844 up to the close of the period under examination.

Even if oats was used to supplement the supply of wheat and potatoes in 1844 and 1851, there would have remained a surplus of 6 bushels of oats in 1844 and 56 bushels of oats in 1851. [40] If, for the moment, we ignore the other crops grown (and these were not grown in large quantities [41]), the economic surplus for 1844 and 1851 would have consisted entirely of oats.

In 1827, oats would have been complemented by a surplus of wheat.

This economic surplus, which is net of both seed and consumption requirements, can be estimated in terms of 1851 prices. The economic surplus for the years 1827, 1844, and 1851 were: L3 0s 11d, L0 7s 5d, L3 10s 6d respectively (L1 = 20s = 12d). For 1784, the economic surplus, which takes into consideration only the production of wheat, and is therefore an underestimate, was L5 0s 6d (Line 41 Table 3). The economic surplus produced can be examined from the angle of the economic surplus per arpent under crop. And the economic surplus per arpent under crop was 7s 8d in 1784; 4s 3d in 1827; 4d in 1844; and 3s 3d in 1851 (Line 42 Table 3).

As did our estimates from the "Bishop's Census", our estimates from the census material indicate a decline in the economic surplus available to the typical censitaire from the 1720's to the 1820's. The economic surplus per farm fell by 39 per cent from 1784 to 1827. It never returned to its 1784 level according to what we have gathered from the census materail.

If the fall in the economic surplus had been a function of less land being under crop than previously, the fall in economic surplus would have told us nothing about the productivity of the soil. As it was, the falling economic surplus per farm coincided with an increased amount of land being placed under crop. Although the amount of land under crop did not fall from 1784 to 1827, rather it rose slightly from 13.08 arpents per farm to 14.29 arpents per farm, the economic surplus produced per farm fell by 39 per cent. This fall is reflected in the decline in the economic surplus per arpent under crop of 39 per cent. From 1827 to 1851 the amount of land under crop increased from 14.29 arpents per farm to 21.62 arpents per farm or by 51 per cent. Nevertheless, the economic surplus per arpent under crop fell by 23 per cent. This suggests that the fall in the economic surplus was a

product of the falling productivity of the soil.

We also estimate the value of wheat, oats and potatoes per arpent under crop for the census years. These estimates are inclusive of the seed and consumption requirements. The value of wheat, oats and potatoes per arpent is estimated to be: Ll 6s 7d for 1784; Ll 2s lld for 1827; LO 14s lld for 1844; and LO 12s 10d for 1851. The value of output per arpent under crop decreased by 13.53 per cent from 1784 to 1827 whereas from 1827 to 1844 the value of output per arpent under crop fell by 35.04 per cent. And from 1844 to 1851 the value of output per arpent under crop fell by 14.12 per cent. Overall, from 1784 to 1851 the value of output per arpent under crop fell by 51.77 per cent. Once again a tendency for the productivity of the soil to decline is clearly evident, being most pronounced after 1827.

The falling productivity of the soil implied by our inferences from the "Bishop's Census" and the census are consistent with the ideas of Ester Boserup (refer to chapter five), that an increase in the proportion of the land under crop would result in a decline in the productivity of the soil if more intensive techniques of agricultural production are not adopted by the farmer. As a proportion of the land under cultivation per farm, the land under crop per farm was 34 per cent in 1827; 58 per cent in 1844; and 57 per cent in 1851. [42] The necessary information is not available to make a similiar calculation for 1784. The increased proportion of the land under cultivation being placed under crop resulted in the land not being rested for the proper length of time for the fertiltiy of the soil to be restored.

But we may have considerably underestimated the economic surplus per farm if crops other than wheat, oats and potatoes composed part of the

surplus and if the raising of livestock increased to such an extent that it also constituted part of the surplus.

The raising of livestock per farm did not increase over the period being examined (Table 5), and therefore could not have compensated for the fall in the economic surplus per farm. The number of horses and oxen kept per farm were barely sufficient to meet the requirements of the farm. Even when the number of horses and oxen kept were at their greatest, in 1827, there were only 2 horses and 2 oxen. According to Evans, this was just sufficient to meet the demands of a farmer working heavy soils. [43] The number of cattle was also no more than necessary to meet the needs of the typical peasant family. We have estimated that it takes the equivalent of one-half a milch cow producing 600 gallons of milk per year to meet the dairy requirements of the typical censitaire. [44] And we believe this to be an underestimate. The number of milch cows held in each of the census years was barely sufficient to meet the basic requirements of the typical peasant family. In fact in 1827, there were not enough milch cows to meet even the basic requirements. [45] In 1844 the number of milch cows had more than doubled from what they were in 1827, going from 1.55 per farm to 3.81. But in 1844, the 3.81 milch cows were just enough to meet the requirements of the typical peasant family, the size of which we estimate to have been eight. [46] The number of swine declined steadily over the period under study, going from 3.72 per farm in 1784 to 2.69 per farm in 1851. The number of swine were most probably only sufficient to meet the needs of the peasant family. Only the number of sheep increased over the period being examined. There were 4.47 sheep per farm in 1784. In 1827 there were 11.82. The number of sheep fell to 7.89 per farm by 1844 and to 6.77 per farm in 1851. It does not appear that commercial sheep farming

Table 4

Livestock in Lower Canada, 1784-1851

Year	Horses	Oxen	Cattle	Of which are milch cows [1]	Sheep	Swine
1784	30,146	22,091	76,497	47,428	84,696	70,465
1827	142,432	145,012	260,015	161,209	829,122	241,735
1844	146,726	———	469,851	291,308	602,821	197,935
1851	184,620	112,128	479,524	297,304	647,524	257,794

Notes

1. The number of milch cows are listed only for the 1851 census. We assume that for the other census years the number of milch cows compose the same proportion of the cattle as they did in 1851, namely 62 per cent.

Sources: The Census of the Canadas, 1851-52, 2 Volumes. Québec, 1853; The Census of Canada, 1870-71, Vol. 4. Ottawa, 1876.

Table 5

Livestock per Typical Peasant Family in Lower Canada, 1784 to 1851

Year	Horses	Oxen	Cattle	Of which are milch cows	Sheep	Swine
1784	1.59	1.17	4.04	2.51	4.47	3.72
1827	2.03	2.07	3.71	1.55	11.82	3.45
1844	1.92	———	6.15	3.81	7.89	2.59
1851	1.93	1.17	5.00	3.10	6.77	2.69

Sources: Tables Three and Four.

became of any great significance to the censitaire. The fact that the raising of livestock did not increase, on a per farm basis, sits well with Ouellet's argument that the censitaire failed to produce a competitive animal since he/she lacked the capital to do so. [47] On the whole it is clear that the raising of livestock did not serve to supplement the economic surplus of the typical censitaire.

In estimating the economic surplus we did not take into consideration the feed required for the farm animals. To the extent that these requirements were substantially less than were supplies of the necessary feed, our estimates of the economic surplus were underestimates.

We have estimated the amount of feed required for horses "moderately worked" and for milch cows. For every 100 pounds which a horse weighs, it is required to feed the animal 1 pound of grain (oats or corn) and 1 pound of roughage (a mixture of clover and timothy hay). Since a draft horse typically weighs 1,600 to 2,200 pounds, 5,840 pounds of grain plus 5,840 pounds of roughage was required, at a minimum, to feed each horse per annum. Since there are 30 pounds of oats to a bushel, we can say that it required 194 bushels of oats to feed one horse per year. [48] Amongst other things, it required 1 pound of grain for every 3 to 4 pounds of milk produced to feed a milch cow. Thus it required 30 bushels of oats per annum to feed a milch cow producing 600 gallons of milk per annum (1 gallon of milk = 8 pounds of milk). [49]

Even if we only take into consideration the feed requirements of the cows and horses, each farm would have needed about 150 bushels of oats, or its equivalent. Moreover, substantial amounts of roughage would have been a necessity. It is clear that surplus production of oats and minor crops such as peas and barely were not sufficient to meet all the feed

requirements of the typical farm. But since the typical censitaire kept much of his/her land under cultivation as pasture, it is possible that the typical censitaire was able to feed the farm animals its minimal requirements.

Since much of the oats production which we included in our estimation of the economic surplus was probably utilized to feed the farm animals, which were, inturn, kept for family use, it is quite probable that at least from 1827 onwards there existed no economic surplus on the typical farm. We must conclude that we overestimated as opposed to underestimated the economic surplus per farm and per arpent under crop.

To the extent that an economic surplus existed on the typical farm it could have been used to adopt more intensive agricultural technology. We know that the censitaire did not adopt such a technology. The question that we must examine, is whether the meager surplus produced by the censitaire was controlled by the censitaire. If this surplus was somehow appropriated, the censitaire would have been unable to appreciably modify his/her farming technology.

(v) Summary

Our analysis of the "Bishop's Census" in conjunction with our analysis of the census material indicates that the economic surplus per farm and the economic surplus per arpent of land under crop fell from the end of the eighteenth century to 1851. It is also quite probable that the productivity of the soil fell considerably during this time span. Not only were the potential investment funds of the censitaire declining, but the censitaire found it increasingly difficult to meet their consumption needs for grain.

The economic situation of the censitaire deteriorated as a result of the land not recieving enough rest after being under crop. The censitaire

had the economic resources to improve the existing farming pratices, although these resources were meager. It is possible that the censitaire decided that it was preferable to allow his/her standard of living to fall continuously. It is also quite possible that the economic resources which the censitaire initially possessed were eventually taxed away by the seignior and the Church.

FOOTNOTES

1. The concept of economic surplus has been vigorously criticized by Harry W. Pearson ("The Economy Has No Surplus: Critique of a Theory of Development"). Pearson argues that individuals produce no surplus unless they define a portion of output as such (p. 326). So long as society defines what it produces as necessary it produces no surplus (p. 332). And when society does produce 'extra' output and services, these are produced as a result of existing institutions (pp. 335-338). Thus, the concept of economic surplus cannot be used to explain the rise of particular institutions or of particular social changes. Marvin Harris has responded to Pearson's critique ("The Economy has no Surplus?"). He argues that Pearson's approach speaks against causal explanation; it purports "cultural phenomenon" to result from "whimsical and capricious processes" (p. 188). Harris documents that economic surplus can be defined and calculated and that we know the food requirements for people given their expenditure of energy. In other words, there exists a thermodynamic subsistence level of energy intake (p.189). Once society produces above this level, it is then, and only then, capable of having its members engage in non-food producing activities. Harris argues that the surplus theory should be used to seek out the relationships between the existence of a thermodynamic surplus and changes in social organization (p. 195) Whether, and the extent to which the existence of an economic surplus results in changes in social organization should be a matter left to empirical analysis to determine(p. 196). We make use of the concept of economic surplus in the sense Harris understands it to be fruitful. The existence of an economic surplus or the ability of a society to produce an economic surplus permits members of that society either to produce goods other than agricultural or engage in leisure activities. What individuals do is a matter of choice and/or circumstance. We argue that an economic surplus must exist and more labour time must be made available if more intensive farming practices were to have been adopted in Lower Canada. If there existed no economic surplus, the censitaire would not have capable of purchasing the required inputs. If these could not have been purchased the censitaire would have had to invest much 'extra' labour time to produce these inputs, that is if he/she had the skill and knowledge to do so.

2. Postan, M., "Medieval Agriculture", in Postan, M., Medieval Agriculture and General Problems of Medieval Economy.

3. Hilton, R.H., "A Crsis of Feudalism", p. 11.

4. Duby, Georges, The Early Growth of the European Economy, p. 211.

5. Séguin, Maurice, La Nation "Canadienne" et l'Agriculture (1760-1850), pp. 81, 102, and 136.

7. Harris, R.C. and Warkentin, John, Canada Before Confederation: A Study in Historical Geography, p. 86.

8. Harris, R.C., "Of Poverty and Helplessness in Petite- Nation", p. 36.

9. Reid, Stanford, W., "The Habitant's Standard of Living on the Seigneurie des Mille Isles, 1820-50", pp. 76 and 78.

10. Harris, R.C., "Of Poverty and Helplessness in Petite-Nation", p. 34, 37, and 38.

11. Reid, Stanford, W., "The Habitant's Standard of Living on the Seigniory des Mille Isles, 1820-50", p. 277.

12. The 1843 Report of the Commissioners; Ouellet refers to the substantial debt in which the censitaires were found in the 1842-1850 period (Histoire Economique et Sociale du Québec, 1760-1850, pp. 333, 466, and 459).

13. Jones, R.L., "French-Canadian Agriculture in the St. Lawrence Valley, 1815-50", p. 121.

14. Parker, W.H., "A New Look at the Unrest in Lower Canada in the 1830's", p. 62.

15. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 341.

16. Ibid., pp. 341 and 342.

17. Ibid., pp. 258, 456, 458 and 459.

18. Refer to the census of 1827, 1844 and 1851.

19. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 336.

20. Ibid., p. 53.

21. Ibid., pp. 257 and 340.

22. Ibid., p. 343.

23. Ibid., p. 458.

24. Ibid., p. 342.

25. Ibid., pp. 333, 340 and 459.

26. Ibid., p. 461.

27. Ibid.

28. Ouellet, Fernand, "L'Agriculture Bas-Canadienne Vue à Travers les Dimes et la Rente en Nature", p. 16.

29. Refer to Note 9 Table 3 for details.

30. The estimates which we make for economic surplus, with reference to farms within the bounds of the seigniorial system of land tenure are biased upward since they are predicated upon census material which is inclusive of farms outside the domain of the seigniorial system of land tenure, such as the farms of the Eastern Townships. For details refer to Chapter Eight, our section on the townships and seigniories, section (v).

31. On details of our estimates of family size refer to Note 1 Table 3. We have estimated that for all census years the size of the typical peasant family was six, with the exception of 1844, for which we estimate the size of the typical peasant family to consist of eight individuals.

32. For details refer to Note 13 Table 3.

33. On both the internal and external markets for wheat refer to the following chapter.

34. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 452.

35. At this point we are not taking into consideration the non-agrarian demand for wheat. For details refer to the next chapter.

36. For details refer to Note 15 Table 3.

37. These estimates are based upon the information contained in Line 34 Table 3.

38. Ibid.

39. Ibid.

40. These estimates are based upon the information contained in Line 39 of Table 3.

41. Refer to Lines 26 through 29 of Table 3.

42. These estimates are derived from the information contained in Lines 4 and 6 of Table 3.

43. Evans, William, Supplementary Volume to a Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, p. 156.

44. For details refer to Note 1 Table 6.

45. In 1827 we estimate that there were 6 individuals per typical peasant family (Note 1 Table 3). Three milch cows were required to meet typical family demands but only 1.55 milch cows were held per family.

46. In 1844 we estimate that there were 8 individuals per typical peasant family (Note 1 Table 3). Four milch cows were required to meet typical family demands and about 4 milch cows were held per family.

47. Refer to the next chapter for details on the extent of the internal market for livestock.

48. Waters, H.J., The Essentials of Agriculture, pp. 340 and 344.

49. Ibid., pp. 365 and 366.

CHAPTER SEVEN

The Existence of Markets and the Diminishing Productivity of the Soil in Lower Canada

Séguin postulates that the problems of Lower Canadian agriculture were, to a large extent, due to the deficiency and instability of the internal and external wheat markets, which was, in turn, a consequence of British rule. The inadequacy of these markets deprived the typical peasant of the incentive to move out of subsistence agriculture, thus making the accumulation of any capital an impossibility and the use of primitive agricultural technique a certainty (for details on this point see Chapter One). [1] The following passage from Séguin crystallizes the above argument: [2]

> "Comme la cause principale de la somnolence et par suite de la dégénérescence technique était la satisfaction paysanne entretenue par la médiocrité de la demande des produits agricoles et puisque le marché extérieur pour le blé allait être accaparé par le centre du continent, il restait au pays de Québec, comme condition première et comme seule espoir de redressement des méthodes de culture, la croissance d'un marché intérieur qui ferait appel à la production et réveillerait les paysans."

John McCallum, in his recently published work on this subject, Unequal Beginnings, accepts the essence of Séguin's causal explanation for the agricultural problems of Lower Canada in the first half of the nineteenth century. McCallum's argument differs from Séguin in details only.

McCallum states that the censitaire did not employ more intensive agricultural technology as a result of the inadequacy of markets for products other than wheat which, itself, was suffering from severe competition from Western producers. [3] To adopt the more intensive agricultural technology would not have been economical to the censitaire without greater markets. [4] Thus the soil was continuously mined and the productivity of the soil continued to fall. As opposed to Séguin, McCallum refers to the inadequacy of more than one market; Séguin emphasizing the market for wheat. Nevertheless, it

is clear that both authors stress the inadequacy of the market as the basic cause for the censitaire not employing more intensive agricultural technology. Séguin and McCallum clearly causally relate the improvement in farming techniques with the commercialization of the agricultural sector.

As did Séguin before him, McCallum considers the seigniorial system of land tenure to have been causally unrelated to the degeneration of agricultural productivity in Lower Canda. [5] Unlike Séguin, McCallum considers the predicament of the censitaire to have been a product of 'luck'. [6] The Québec farmers, as fate would have it, received no windfall of cash from their production wheat. [7] But even if such a cash widfall would have arisen in the first half of the nineteenth century, MaCallum believes that it would have been to no avail with relation to enhancing the ability of the censitaire to ameliorate the conditions of agricultural production. The "hopeless market conditions" of this period would have prevented the development of a commercialized and mixed farming, both of which were essential to intensive agriculture according to McCallum. [8]

Séguin argues that a market could have somehow been developed in Lower Canada for the agricultural produce of the censitaires. But the British did not seriously attempt to establish an important and regular market for the agricultural produce of their colony. [9]

(i) Markets, economic surplus and intensive agriculture

We have already argued, taking the extreme case, that the peasant family does not require either an internal or external market to adopt a more intensive agricultural technology. [10] The intensive agricultural technology is adopted so as to prevent or reverse a diminishing productivity of the soil and thus prevent a decline in the per capita standard of living. [11] The peasant family can adopt a more intensive farming practice without having to grow crops or raise livestock which require a market outlet.

The new farming practice would increase output, but it need not increase output to the extent that a market would be required.

We have also argued that to engage in a more labour intensive and productive agriculture (in terms of output per unit of land), would have required of the peasant family a substantial increase in the amount of labour time invested into the process of agricultural production. [12] We made the point that the increase in labour time would have to have been accompanied by an investment of economic surplus towards the purchase of the necessary inputs for the more intensive agriculture. [13] But if there exists no market for the surplus output how would it have been possible for the peasant family to purchase or acquire the necessary inputs?

To answer this question most effectively it is best to specify a model of peasant family production with relation to the requirements for the adoption of intensive agricultural technology. The peasant family can allocate its time to three basic activities. These three activities are: a) agricultural work ; b) non-agricultural work ; and c) leisure time. Stephen Hymer and Stephen Resnick argue that evidence indicates that the time devoted to agriculture and leisure "often accounts for only a portion of labour time". [14] They argue that the remainder of the peasant's time is spent "in a variety of processing, manufacturing, construction, transportation, and service activities to satisfy the needs for food, clothing, shelter, entertainment, and ceremony." [15] Peasants engaged in more primitive systems of agricultural production typically spend about four hours per day working in agriculture, although the time required per day depends upon the season and the weather. [16] More intensive agriculture could increase the labour requirements per typical peasant to eight to ten hours per day. [17] A specific farming practice used by the peasant family would imply a specific

allocation of the peasant family's time. A change in the farming practice would require a reallocation of the peasant family's time.

If we situate our peasant family in an institutional setting where all output produced is controlled by the peasant family and if we assume that any surplus produced can be sold on the market, the ratioanl peasant family can be expetced to react in a particualr manner to a recognizable tendency of the productivity of the soil to fall. As the productivity of the soil begins to fall the surplus product begins to decline. The surplus product that remains can be accumulated and invested in improved agricultural technology. [18] More labour time would have to be invested by the peasant family to accompany the investment of capital in the improved and more intensive agricultural technology. The change in farming practice would result in increasing the productivity of the soil. But less of the peasant family's time would be available for leisure and probably less time would be avaialble for the production of non-agricultural commodities.

If we assume our peasant family to be situated in an institutional setting where it controls all output produced, but where there exists no market for any surplus which is possible to produce, the reaction of a rational peasant family to a recognizable tendancy of the productivity of the soil to fall would be different from the case where a market existed for the producable surplus output. The peasant family which does not produce for a market could produce an output in excess of basic requirements for family use. [19] If tools and equipment are required to engage the more intensive agricultural technology the peasant family could divert the labour time devoted to producing surplus product for family use (a 'luxury good') towards the production of needed tools and equipment. The lack of a market would not prevent the adoption of a more intensive agricultural practice

if the necessary labour time exists, both to work the fields more intensively and to construct the necessary tools and equipment. But when there exists no market the peasant family cannot take advantage of the cost savings which the market makes possible through specialization and exchange.[20] It would take more time to produce their own tools and equipment, than for the peasant family to produce crops to exchange for tools and equipment produced by more skilled and efficient artisans. Thus, where a market does not exists, to adopt a more intensive farming practice would require that much more time be reallocated from leisure and the production of essential non-agricultural goods towards agricultural production than would be the case where a market exists.

Where no market exists and the peasant family was obliged to produce a certain quantity of their crop for the use of the landlord, the rational peasant would be forced to behave differently than in the above case when faced with a recognizable tendancy of the productivity of the soil to fall. When output per unit of soil begins to decline, the peasant family cannot reallocate labour time from the production of the surplus product towards the production of the tools and equipment essential for a more intensive agriculture. The peasant family would be faced by the constraint of having to produce for the landlord. Thus the peasant family could only reallocate labour time from leisure and the production of essential non-agricultural products towards the needs of the more intensive agriculture. Compared to the case where the peasant controlled all output produced, in this case the peasant family would have to invest a much greater amount of labour time to adopt a more productive agricultural technique of production. If the peasant family does not have the necessary labour time available to change

their farming practice, as a result of the necessity of devoting a portion of its labour time towards producing for the landlord, the peasant family would be unable to prevent the productivity of the soil from falling. [21]

The case where the peasant family was obliged to produce a certain quantity of output for the landlord, but where a market exists, is similiar to the above case. In this case the peasant family can purchase goods on the market. Less labour time would be required to adopt the more intensive agricultural techniques of production. Nevertheless the peasant family would remain constrained by the necessity of producing a certain quantity of output for the landlord. Therefore, as in the case where no market exists, the peasant family , may be unable to invest in the productive farming technology as a result of the lack of surplus labour which is reflected in the lack of a surplus product, which inturn is caused by the appropriation of the surplus by the landlord.

The key to allowing the rational peasant to adopt intensive agricultural technology is the existence of labour time which can be allocated towards employing the new technology. The ability of a peasant family to produce a surplus product indicates the existence of surplus labour time which can be directed towards the production of necessary tools and equipment for the new farming practice. The surplus product or economic surplus can also be used as a means of purchasing such tools and equipment where a market exists. Declining soil productivity reduces the amount of surplus which a peasant family can produce. Only if the peasant family is free to use the available economic surplus to invest in intensive agriculture can the intensive agriculture be employed.

What may prevent the peasant from renovating the system of agricultural production is not the absence of markets but rather an institutional setting which deprives the peasant family of a portion of its output and thereby of a portion of its labour time. There can be no doubt that the existence of markets facilitates changes in farming practices. It allows for product specialization and thereby a more efficiant allocation of labour time through the division of labour. The existence of markets makes it possible for the peasant family to purchase necessary inputs instead of producing them within the household.. To facilitate the transition from extensive to intensive agriculture does not require a large or growing market, it only requires a market capable of absorbing the amount of farm produce that would generate the income necessary to purchase the inputs required to engage in intensive agriculture.. Large and growing markets are pre-requisites for the commercialization and increasing commercialization of agriculture not for the regeneration of agricultural practice designed to prevent the productivity of the soil from falling or to increase the productivity of the soil so that the per capita standard of living does not fall.

To the extent that there existed internal and external markets in Lower Canada for the economic surplus produced on the typical farm,it would have been easier for the peasant family to adopt intensive agricultural technology. To the extent that the internal and external markets in Lower Canada were more extensive than the supply from the agricultural sector of Lower Canada'it would be clear that the peasants of Lower Canada could not produce enough; that supply was inelastic. But whatever the state of the market, this could not have been the determining factor in the maintenance, by the

censitaire, of a regressive agricultural technology in the face of a declining productivity of the soil.

(ii) The internal markets of Lower Canada

We will attempt to estimate the internal market in Lower Canada for wheat and dairy products. This accomplished we will determine the extent to which the supply of these items fulfilled the demand for them. Our estimates are presented in tables 5 and 7.

To estimate the total demand for wheat in Lower Canada we assume, given the available evidence that each individual of Lower Canada would consume six bushels of wheat per annum if this amount could be obtained. If such a quantity of wheat could not have been obtained, potaoes served as a substitute. [22] We divide the demand for wheat into the demand by the agrarian population and demand by the non-agrarian population. By the agrarian population we mean the demand by those not only engaged in agricultural production, but those who are part of families operating farms. It is these families which must supply the agricultural needs of the rest of the population and who receive an income from so doing. By the non-agrarian population we are referring to those individuals who are part of families not operating farms. These families are the ones which must be supplied by the farms of the other families. [23]

If we argue that the populace of Lower Canada preferred wheat to its possible substitutes, than the demand for wheat would have exceeded the supply of wheat in 1827, 1844, and 1851 (Table 5 Line 5). Moreover the deficiency in the supply of wheat would have quadrupled from 1827 to 1851. This would have been at a time when the estimated demand for wheat in Lower Canada increased by only 89 per cent. [24] The deficit in the supply

Table 6

Estimates of the Internal Market for Wheat in Lower Canada: 1784-1851

	1784	1827	1844	1851
A. Six bushels of wheat consumed per capita per annum				
1. Non-agrarian demand for wheat (bushels): [1]	67,807	306,468	453,048	1,840,572
2. Agrarian demand for wheat (bushels):	678,072	2,524,782	3,729,456	3,500,994
3. Total demand for wheat (bushels) A1 + A2:	745,879	2,831,250	4,182,504	5,341,566
4. The Supply of wheat minus seed requirements (bushels): [2]	1,100,588	2,103,293	678,837	2,433,538
5. Surplus (+) or deficit (-) in the supply of wheat (bushels) A4 - A3:	+ 354,709	- 727,857	- 3,503,667	- 2,908,028
6. Surplus (+) or deficit (-) in the supply of wheat per family farm (bushels): [3]	+ 18.74	- 10.37	- 45.83	- 30.35
B. Were potatoes substituted for wheat, the quantity of wheat required to supplement the available supply of potatoes (bushels).				
1. Quantity of wheat required (bushels): [4]	No info.	1,974,915	2,932,727	4,750,960
2. Surplus (+) or deficit (-) in the supply of wheat (bushels) A4 - B1:	———	+ 128,378	- 2,253,890	- 2,317,422
3. Surplus (+) or deficit (-) in the supply of wheat per family farm (bushels):	———	+1.83	- 29.48	- 24.18
4. Value, per family farm, in pound currency, in the deficit in the supply of wheat : [5]	———	———	L6 12s 8d	L5 8s 10d

Table 6 (continued)

NOtes

1. The estimates for the non-agrarian demand for wheat are based upon our estimates for the non-agrarian population. There are no figures available from the census as to the non-agrarian population. We are referred only to information as to the number of individuals employed in non-agrarian pursuits. From these figures we estimate the approximate size of the non-agrarian population (for details of our derivations see Table 3 Note 1). No information is available for 1784 as to the number of individuals employed outside of the agricultural domain. We estimate the number of individuals possibly employed outside of agriculture by assuming that 10 per cent of the population listed by population 1784 was non-agrarian. This is a much lower a percentage than for the other years examined and is probably an underestimate. Le Goff ("The Agricultural Crisis in Lower Canada, 1802-12: A Review of a Controversy", p. 21), for example, argues that in 1786 the urban population constituted about 22 per cent of the total population of Lower Canada. Our estimated non-agrarian population for 1827, 1844, and 1851 respectively was 51,078; 75,508; and 306,762. These constitued 11 per cent; 11 per cent; and 34 per cent of the population. The substantial jump in the percentage of the non-agrarian population from 1844 to 1851 requires further explanation. Firstly, the total population of Lower Canada rose from 697,084 in 1844 to 890,261 in 1851. This is an increase of 211,177 or 30 per cent. As mentioned in Table 3 Note 1, our estimate of the non-agrarian population and thus the agrarian population is consistent with the probable assumption that the size of the typical peasant family consisted of six individuals. The census informs us that there were 95,813 occupiers of land. This number divided into our estimate of the agrarian population (583,499) leaves us with 6.10 as the size of the typical peasant family. If our estimates are correct, they suggest that from 1844 to 1851 the increase in the population was absorbed into non-agrarian occupations. Apart from our own analysis Ouellet (Le Bas-Canada, 1791-1840, pp. 286-87) finds from 1831 to 1842 the proportion of the population listed under the classification 'cultivateurs' ranged from 62 to 72 per cent.

2. Refer to Table 3 Line 15.

3. This found by dividing the surplus or deficit in the supply of wheat (Table 6 A4) by the number of families occupying farms (Table 3 Line 1).

4. To derive this, we must add the non-agrarian demand for wheat (Table 6 A1) to the agrarian demand for wheat given the supply of potatoes (Table 3 Line 20).

5. We value the deficit in the supply of wheat in terms of the 1851 price of wheat, that is 4s 6d.

Sources: Table 3; Le Goff, T.J.A., "The Agricultural Crisis in Lower Canada, 1802-12: A Review of a Controversy".

of wheat, on per farm basis would have been: 10 bushels in 1827; 46 bushels in 1844; and 30 bushels in 1851 (Table 5 Line A6).

In fact, by 1827 wheat was being replaced, in part, by potatoes. If we assume that the populace enjoyed a mix of potatoes and wheat to wheat alone (which is doubtful) we can examine the extent to which there existed a deficiency in the supply of wheat given that potatoes substituted for wheat to the extent possible. In this case there there would have been a slight surplus in the supply of wheat or 2 bushels per farm by 1827. By 1851 there would have been a deficit in the supply of wheat of 24 bushels per farm (Table 5 Line B3). In 1844 there would have been a deficit of 29 bushels per farm. We have no data as to the supply situation between 1827 and 1844. [25] The deficit in the supply of wheat represented a potential economic surplus of L6 12s 8d per farm in 1844 and of L5 8s 10d per farm in 1851 (L1 = 20s; 1s = 12d). [26] In other words, the censitaire would have had more income to spend upon tools and equipment and other inputs for the farm if they had been able to meet, what we have estimated to be, the existing demand.

Instead of the peasants of Lower Canada supplying wheat to the populace of Lower Canada, Upper Canadian and American peasants did the supplying. Lower Canada was a net exporter of wheat up to 1827 (Table 7). In 1826, 26,000 bushels of wheat were exported net of imports or about 0.37 bushels of wheat per farm. In 1827 there was a net export of wheat of 35,000 bushels or 0.50 bushels per farm. [27] In 1828 there was a net import of 221,000 bushels of wheat or about 3 bushels per farm. In 1829 there was a net import of wheat of 238,000 bushels. In 1830 there were only 18,000 bushels of wheat exported net of imports, in 1831 631,000 bushels. No infor-

Table 7

Net Imports of Wheat and Flour into Lower Canada
1817-1851

year	net imports[1] (bushels)	year	net imports (bushels)
1817	- 117,000	1836	No info.
1818	- 326,000	1837	No info.
1819	- 20,000	1838	+ 348,000
1820	- 120,000	1839	+ 796,000
1821	- 11,000	1840	+ 1,223,000
1822	- 58,000	1841	+ 1,094,000
1823	No. info.	1842	No info.
1824	+ 25,000	1843	No info.
1825	- 732,000	1844	+ 911,000
1826	- 26,000	1845	+ 1,184,000
1827	- 35,000	1846	+ 1,280,000
1828	+ 221,000	1847	+ 1,874,000
1829	+ 238,000	1848	+ 2,416,000
1830	- 18,000	1849	+ 2,127,000
1831	- 631,000	1850	+ 1,490,000
1832	No info.	1851	+ 2,233,000
1833	+ 777,000		
1834	- 55,000		
1835	- 241,000		

Notes

1. The negative sign (-) indicates that after taking into consideration imports of wheat into Lower Canada there is an excess of exports. The positive sign (+) indicates that there is an excess of imports over exports.

Sources: McCullum, J.C.P., Unequal Beginnings: Agriculture and Economic Development in Québec until 1870, p. 124.

mation is available for 1832. In 1833 there was a net import of wheat of 777,000 bushels. In both 1834 and 1835 there were net exports of wheat. After this date, for every year for which information is available, Lower Canada was a net importer of wheat. In the 1840's net imports of wheat exceeded 1,000,000 bushels, with the exception of 1844 when it stood at 911,000 bushels. By 1848, net imports of wheat stood at 2,416,000 bushels of wheat.

Dairy production was not essential to the renovation of agricultural technology. To be sure, the animal manure produced from the milch cows would contribute to the fertility of the soil if properly collected and stored. But, as we have shown,[28] the fertility of the soil was to a large extent restored by returning nitrogen to the soil by ploughing legumes into the soil. This does not require the use of animal manure. If there is a market for dairy produce the censitaire could have increased productivity per unit of labour time employed more than if no such market existed. With such a market legumes rich in nitrogen can be fed to the cattle which will produce both dairy products for the market and manure for the soil. If no such market exists, the ploughing of legumes into the soil results only in the increased fertility of the soil. The production of dairy products for the market would make intensive agriculture a more productive proposition. It would add to the overall wealth of the censitaire.

It is difficult to estimate the demand for dairy products in Lower Canada. Only very fragmented data exist. But given the available data we have tried to indicate what the demand for dairy products was in terms of the number of milch cows that would have been required to meet that demand. We have found that a very concervative estimate of the demand for dairy

products in Lower Canada would be 300 gallons of milk per inhabitant, which is the equivalent to the demand for one-half a milch cow per inhabitant. In other words, it would take one-half a milch cow to produce the milk demanded per individual. The information we have argues that a well fed milch cow in Lower Canada should produce 600 gallons of milk. [29]

If our assumptions pertaining to the demand for dairy products are correct, the supply of milch cows were adequate enough to meet agrarian demands for milch cows in all census years but for 1851. [30] For all of the census years the supply of milch cows approximated the agrarian demand for milch cows. In 1784 the typical farm held 2.5 milch cows while we estimate that the demand for milch cows was for 3 milch cows. In 1827 the supply of milch cows stood at 1.5 milch cows while we estimate the demand for milch cows was for 3. In 1844 the supply of milch cows was 3.8, while the agrarian demand for them is estimated to have been 4. In 1851 the supply of milch cows was 3.1, while there was an estimated demand for 3 milch cows. [31] If we make the assumption that the agrarian demands for dairy products were just fulfilled by the supply of milch cows, it would be possible to argue that whatever was the non-agrarian demand for dairy products, it was not met by the farms of Lower Canada.

A superficial look at the estimates for the non-agrarian demand for milch cows would suggest that, on a per farm basis, the deficiency in the supply of milch cows was not that large, although it increased from one census year to the next (Table 8 Line 9). The deficiency in the supply of milch cows increased from 0.30 in 1784 to 0.36 in 1827. It then increased to o.49 milch cows in 1844 and to 1.60 milch cows in 1851.

The value of dairy produce that could have been sold on a per farm

Table 8

Estimates of the Internal Market for Dairy Products in Terms of the Demand for Milch Cows in Lower Canada, 1784-1851

	1784	1827	1844	1851
1. Non-agrarian demand for milch cows: [1]	5,650	25,539	37,754	153,376
2. Agrarian demand for milch cows:	56,506	210,398	310,788	291,749
3. Total demand for milch cows:	62,156	235,937	348,542	445,125
4. The supply of milch cows: [2]	47,428	161,209	291,308	297,304
5. Surplus (+) or deficit (-) in the supply of milch cows (4 - 3):	- 14,728	- 74,728	- 57,234	- 147,821
6. Surplus (+) or deficit (-) in the supply of milch cows per family farm: [3]	- 0.78	- 1.06	- 0.75	- 1.54
7. The potential value of dairy produce per family farm, in pound currency, given a deficit in the supply of milch cows: [4]	L6 16s 5d	L9 3s 2d	L6 11s	L13 9s
8. The surplus (+) of milch cows available to meet the non-agrarian demand:	None	None	None	None
9. The number of milch cows required, per family farm, to to meet the non-agrarian demand: [5]	0.30	0.36	0.49	1.60
10. The potantial value of dairy produce per family farm, in pound currency, required to meet the non-agrarian demand: [6]	L2 12s 5d	L3 3s	L4 5s 9d	L14

Table 8 (continued)

Notes

1. The evidence presented by William Evans (Supplementary Volume to a Treatise on the Theory and Practice of Agriculture..., p. 156) and David Handyside (Report of the Special Committe on the State of Agriculture in Lower Canada of 1850. Report of David Handyside. Appendix TT) allow us to estimate the potential output per milch cow: the quantity of milk produced and the quantity of cheese and butter that can be produced from the milk. We can also estimate the amount of dairy produce consumed per individual on the typical peasant farm. From this we can estimate the amount of dairy produce that is available to meet the non-agrarian demand. Handysidefinds that each milch cow can produce 600 gallons of milch per annum, from which can be produced 240 lbs. of cheese and 120 lbs. of butter giving a total value produced per milch cow of L8 15s. Handy side does not exaggerate the quantity of milk which can be produced per milch cow. Slicher Van Bath (The Agricultural History of Western Europe, 500-1850, p. 335) finds that the output of milk per milch cow per day, in the early nineteenth century ranged from 4 to 8 litres, which is the equivalent of 306 to 771 gallons of milk per annum. Evans argues that in a farm with 12 milch cows there remains L5 per milch cow in dairy produce over and above family needs. This suggests that in a peasant family of six, the total consumption of milk per annum comes to 3,024 gallons of milk or 514 gallons per person per annum. We assume that the demand for milk per individual was 300 gallons of milk per annum, or its equivalent in terms of buuter and cheese. Thus there would be a demand for milk per individual equivalent to one-half of the productive capacity of a milch cow. This assumption is based upon the fact that in all but one of the census years (1827), the typical farm kept about 3 milch cows. This would have been sufficient to provide for the demands of a peasant family of 6. The demand for milch cows is estimated by multiplying the relevant number of individuals by 0.5, since 0.5 of a milch cow is what is necessary to provide for the dairy demands of one individual.

2. Refer to Table 4.

3. Refer to Table 3 Line 2 for the number of families holding farms.

4. All values are estimated in terms of 1851 prices. The price of cheese was 5d and the price of butter was 7.5d per lbs. (Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside. Appendix TT). To calculate our estimates we first must determine the amount of cheese and butter that can be produced by the milch cow(s) required to satisfy the demand which cannot be satisfied by the existing supply. For example, we know that for 1784 0.78 milch cow is required per farm to meet the 'excess' demand. This is equivalent to 0.78 of the value of cheese produced per milch cow (0.78 x L5) plus 0.78 of the value of butter produced per milch cow (0.78 x L3 15s). This gives us a total of L6 16s 5d per family farm.

5. Refer to Table 3 Line 2 for the number of families holding farms.

6. Refer to Note 4 above.

Table 8 (continued)

Sources: Table 3; Table 4; Evans, W, Supplementary Volume to a Treatise on the Theory and Practice of Agriculture...; Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside. Appendix TT.

basis given the deficiency in the supply of milch cows was substantial in relation to the economic surplus actually obtained by the censitaire in the first half of the nineteenth century. The value of the economic surplus that could have potentially been realized with the sale of dairy products for the census years of 1784, 1827, 1844, and 1851 was: L2 12s 5d, L3 3s, L4 5s 9d, and L14 respectively, on a per farm basis (Table 8 Line 10). If the censitaires had been able to raise one more milch cow they would have been able to consume more dairy products and would have realized much more of an economic surplus that they in fact did. Thus the size of the excess demand for dairy products was not large in Lower Canada. Nevertheless, if that excess demand would have been satisfied, it would have made a significant difference to the net income of the typical censitaire.

William Evans, secretary to the Montréal Agricultural Society in 1836, wrote that: [32]

> "It almost surpasses belief that the farmers of Canada do not supply the small proportion of the residents in her cities and towns with agricultural produce of the first necessity, namely, butcher's meat, cheese and butter, but allow foreigners to furnish a large proportion of these commodities. We may have this home market which is very considerable, at any time we choose to avail ourselves of it, turn our attention to supplying it, and demand of the Legislative Assembly reasonable protection against foreign competition as agricultural interests have a right to."

That there existed a market for dairy products in Lower Canada which was not filled by Lower Canadian farmers has not been refuted, even by those who stand firmly by the position that no such market existed. John McCallum offers the most rigorous attempt to prove that there existed no substantial market for dairy or beef products in Lower Canada. But the data he presents indicates that a market did exist for such products. This market

he dismisses as being too small to be of relevance. McCallum makes the following statement: [33]

> "It was in the area of livestock (other than horses) and livestock products that the habitants were unable or unwilling to compete with imports...Taking maximum estimates of the annual volumes, the annual value of imports at 1850 prices was about $345,000. This the equivalent to about 350,000 bushels of wheat, or just over 5 per cent of total shipments from Ontario in 1850. It works out to less than five dollars per farm, which is less than one-third of the average Quebec farmer's cash income from wheat exports at the beginning of the century. Consequently, if the figures are accurate...then even a total elimination of imports would have had a barely perceptible effect on the income and production levels of French-Canadian agriculture."

Our estimates for the potential internal market for dairy products are much greater than McCallum's estimates for the internal market for livestock products. McCallum's estimate of a per annum internal market of five dollars per farm is equivalent to approximately one pound currency. It would be fair to argue that our estimates are biased upward since we do not pay attention to the fact that a portion of, what we define as the 'non-agrarian' population, probably met their dairy requirements on small plots of land. But it would also be fair to argue that McCallum's estimates are biased downwards.

Nevertheless, it is clear from an examination of McCallum's and our own estimates, that there existed an internal market for dairy products which the farmers of Lower Canada could not fill. Contrary to the opinion of McCallum, this represented a problem on the supply side. But even if one accepts our estimates as being the more accurate, it is clear that the market for dairy products in Lower Canada was in no way adequate enough to act as a basis for the development of a 'commercialized' agriculture based upon dairy farming. This last point would be in line with the argument of McCallum.

But the point which must emphasized is that, contrary to the belief of both McCallum and Séguin, the commercialization of agriculture was not necessary for more intensive methods of agricultural production to be adopted by the typical farmer. Thus the inability of the censitaire to provide even for the existing demand cannot be explained by the lack of a market.

(iii) The British market

To examine the extent of the British market for Lower Canadian wheat and flour we examine Tables 9 through 13. We see that the wheat and flour imports into Britain were high in the 1780's, averaging 153,860.7 quarters per annum from 1780 to 1789 or 1,230,885.6 bushels (1 quarter = 8 imperial bushels). [34] British imports rose in the 1790's. From 1790 to 1799 the per annum average imports were 404,599.6 quarters or 3,236,796.8 bushels. The following decade offered an even greater market, with per annum average imports of 634,881.1 quarters or 5,079,048.8 bushels. If we leave out of the calculation the imports for 1800 and 1801, years of exceptionally high imports, the average per annum imports come to 457,440.75 quarters or 3,659,526 bushels. This is still above the average per annum imports of the previous decade. From 1810 to 1819, per annum imports averaged 773,225.4 quarters or 6,185,803.2 bushels. But in this decade there were years of extremely high and extremely low imports. Eliminating only the years of high imports from our calculation, the per annum average imports were 483,001.7 quarters or 3,864,013.6 bushels. This figure is still above the lowest figure for the 1800-1809 decade. The 1820-1829 decade gives 907,707.1 quarters or 7,261,656.8 bushels as the figure for the average per annum imports into Britain. In the following decade the average per annum imports

of wheat and flour were 1,623,149 quarters or 12,985,192 bushels (see Table 12A).

Clearly, Britain offered an increasing potential market to foreign producers of wheat and flour from 1780 to 1840. In the 1840's the British imports of wheat and flour increased most dramatically (see Tables 10 and 12). Since Lower Canada was part of the British Empire, one would think that this gave Lower Canadian producers an advantage over other producers, particularly given the existence of the 'Imperial Trade Preferences', which gave advantage to produce of the British colonies. [35]

But one may argue that although the British market for imported wheat and flour increased, this market was increasingly unstable, and this increasing instability led the rational peasant producer of wheat in Lower Canada to shift into subsistence agriculture or into the production of crops for which a more stable market existed. Let us recall that the Lower Canadian peasant was shifting out of wheat production in the 1810's. Ouellet argues that this resulted in a move towards subsistence agriculture. [36] Paquet and Wallot argue that the move towards new crops began even earlier, inaugurating the restructuring and modernization of the Lower Canadian economy. [37]

From Table 12B it is clear that, for the time span which is taken under consideration, the 1780-1789 period was the most unstable in relation to the British demand for foreign wheat and flour. In the following decade British demand for foreign wheat and flour increased in stability. From 1800 to 1809 there was a slight decrease in stability. This would in part confirm Paquet's and Wallot's short-term analysis. Thereafter, Britain's demand for foreign wheat and flour continuously increased in stability. Contrary to Séguin, we are forced to conclude that Britain offered an increasingly stable market to foreign producers of wheat and flour, Lower Canadian producers inclusive. Thus potential demand for Lower Canadian wheat and flour

Table 9A

Exports of Wheat and Flour from Lower Canada,
1793-1808 [1]

year	exports (minots or bushels) [2]	year	exports (minots or bushels)
1793	541,679	1801	663,453
1794	483,486	1802	1,151,538
1795	448,653	1803	438,052
1796	24,866	1804	273,138
1797	101,109	1805	114,966
1798	139,377	1806	151,893
1799	201,245	1807	333,753
1800	318,480	1808	399,018

Notes

1. These export statistics were compiled by G. Paquet and J.P. Wallot. They are presented here as modified by F. Ouellet.
2. Since 1 imperial bu. = 2219.36 $in.^3$ and 1 minot(Lower Canada) = 2218.19 $in.^3$ we will assume that the minot and bushel are, for our purposes, the same.

Sources: Le Goff, T.J.A., "The Agricultural Crisis in Lower Canada, 1802-12: A Review of a Controversy"; Ouellet, Fernand, "L'agriculture Bas-Canadienne Vue à Travers les Dimes et la Rente en Nature", p. 10.

Table 9B

Exports of Grain from Lower Canada,
1793-1802 and 1817-1822

year	wheat (minots)	flour (barrels)	biscuit (quintals)	(1) + (2) + (3) in terms of wheat (minots)
1793	487,000	109,000	9,800	1,055,520
1794	414,000	137,000	15,000	1,102,600
1795	95,000	18,000	20,000	152,000
1796	3,106	4,300	3,800	33,726
1797	31,000	14,000	8,000	120,000
1798	92,000	9,500	12,000	168,300
1799	129,000	14,400	21,500	252,600
1800	217,000	20,000	25,000	377,000
1801	473,000	38,000	33,300	742,920
1802	1,010,033	28,300	22,051	1,204,455
::::::				
1817-18	546,500	69.100	22,700	946,480
1819	37,800	12,100	11,200	125,180
1820	320,000	45,000	8,800	454,120
1821	318,400	22,600	11,200	458,280
1822	145,000	47,700	13,500	285,400

Source: Report to the Legislative Assembly of Lower Canada (The Testimony of William Meiklejohn, Appendix T, 1823).

Table 10

Imports of Wheat and Flour into Britain and
Exports of Wheat and Flour from Lower Canada
(1780–1850)

Year	1 Wheat and Flour Imported into Britain (quarters)	2 Wheat and Flour Imported into Britain (bushels) [1]	3 Wheat and Flour Exported from Lower Canada net imports (minots or bushels) [2]	4 column 3 divided by column 2
1780	3,915	31,320	—	—
1781	159,866	1,278,928	—	—
1782	80,695	645,560	—	—
1783	584,183	4,673,464	—	—
1784	216,947	1,735,576	—	—
1785	110,863	886,904	—	—
1786	51,463	411,704	—	—
1787	59,339	474,712	—	—
1788	148,710	1,189,680	—	—
1789	122,656	981,248	—	—
1790	222,557	1,780,456	—	—
1791	469,056	3,752,448	—	—
1792	22,417	179,336	—	—
1793	490,398	3,923,184	541,679	13.81 %
1794	327,902	2,623,216	483,486	18.43
1795	313,793	2,510,344	448,653	17.87
1796	879,200	7,033,600	24,866	00.35
1797	461,767	3,694,136	101,109	02.74
1798	396,721	3,173,768	139,377	04.39
1799	463,185	3,705,480	201,245	05.43
1800	1,264,520	10,116,160	318,480	03.15
1801	1,424,765	11,398,120	663,453	05.82
1802	647,663	5,181,304	1,151,538	22.22
1803	373,725	2,989,800	438,052	14.65
1804	461,140	3,689,120	273,138	07.40
1805	920,834	7,366,672	114,966	01.56
1806	310,342	2,482,736	151,893	06.12
1807	404,946	3,239,568	333,753	10.30
1808	84,889	679,112	399,018	58.75
1809	455,987	3,647,896	198,469	05.44
1810	1,567,126	12,537,008	170,900	01.36
1811	336,131	2,689,048	853	00.03
1812	290,710	2,325,680	263,178	11.32
1813	559,000	4,472,000	—	—
1814	852,567	6,820,536	—	—
1815	384,475	3,075,800	—	—

Table 10 (continued)

Year	Wheat and Flour Imported into Britain (quarters)	Wheat and Flour Imported into Britain (bushels)	Wheat and Flour Exported from Lower Canada net imports (minots or bushels) [3]	column 3 divided by column 2
1816	332,491	2,659,928	—	—
1817	1,089,855	8,718,840	117,000	01.34
1818	1,694,261	13,554,088	326,000	02.40
1819	625,638	5,005,104	20,000	00.04
1820	996,479	7,971,832	120,000	01.50
1821	707,384	5,659,072	11,000	00.19
1822	510,602	4,084,816	58,000	01.42
1823	424,019	3,392,152	—	—
1824	441,591	3,532,728	none	00.00
1825	787,606	6,300,848	732,000	11.62
1826	897,127	7,177,016	26,000	00.36
1827	711,868	5,694,944	35,000	00.61
1828	1,410,300	11,282,400	none	00.00
1829	2,190,095	17,520,760	none	00.00
1830	2,205,751	17,646,008	18,000	00.10
1831	2,867,860	22,942,880	631,000	02.75
1832	1,254,351	10,034,808	—	—
1833	1,166,457	9,331,656	none	00.00
1834	981,486	7,851,888	55,000	00.70
1835	750,808	6,006,464	241,000	04.01
1836	861,156	6,889,248	—	—
1837	1,109,492	8,875,936	—	—
1838	1,923,400	15,387,200	none	00.00
1839	3,110,729	24,885,832	none	00.00
1840	2,526,645	20,213,160	none	00.00
1841	46,821,572	374,572,576	none	00.00
1842	51,621,944	412,975,552	—	—
1843	18,042,924	144,343,392	—	—
1844	22,973,248	183,785,984	none	00.00
1845	18,893,100	151,144,800	none	00.00
1846	37,593,292	300,746,336	none	00.00
1847	71,361,452	570,891,616	none	00.00
1848	51,574,420	412,595,360	none	00.00
1849	80,052,576	640,420,608	none	00.00
1850	80,087,008	640,696,064	none	00.00 %

Notes

1. One imperial quarter = eight imperial bushels. Le Goff, "The Agricultural Crisis in Lower Canada, 1802-12...".
2. Since 1 imperial bushel = 2219.36 in.^{3} and 1 minot(Lower Canada) = 2218.19 in.^{3} we will assume that the minot and bushel are, for our purposes, the same.

Table 10 (continued)

Sources: Barnes, D.G., A History of English Corn Laws, Appendix C, p. 299; McCallum, John, Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1870, Table S.1, p. 124; Ouellet, Fernand, "L'agriculture Bas-Canadienne Vue à Travers les Dime et la Rente en Nature", p. 10; Report to the Legislative Assembly of Lower Canada (The Testimony of William Meiklejohn, Appendix T, 1823.

Table 11

Imports and Exports of Wheat and Flour,
yearly averages and percentage changes

years	imports into Britain (bushels)	% change a to b	exports from Lower Canada net imports (bushels)	% change a to b
a. 1793–97	3,956,896		319,959	
b. 1798–1802	6,714,968	69.70	494,819	54.64
a. 1803–07	3,953,576		262,366	
b. 1808–12	4,375,752	10.68	206,483	-21.30
a. 1813–17	5,149,424		—	
b. 1818–22	7,254,984	40.90	107,000	—
a. 1823–27	5,219,536		(i) 198,250 (ii) 20,000 [1]	
b. 1828–32	15,885,368	204.34	(i) 162,000 [2] (ii) 6,000	-18.28 -70.00
a. 1833–37	7,791,040		—	
b. 1838–42	169,606,864	2,076.95	none	—
a. 1843–50	380,578,016		none	
a. 1798–1802	6,714,896		494,819	
b. 1803–07	3,953,576	-41.12	262,366	-46.98
a. 1808–12	4,375,752		206,483	
b. 1813–17	5,149,424	17.68	—	—
a. 1818–22	7,254,984		107,000	
b. 1823–27	5,219,536	-28.05	(i) 198,250 (ii) 20,000	85.28 -81.31
a. 1828–32	15,885,368		(i) 162,000 (ii) 6,000	
b. 1833–37	7,791,040	-50.95	—	—
a. 1838–42	169,606,864		none	
b. 1843–50	380,578,016	124.39		00.00

Notes

1. In the 1823–27 period, in one year there were no net exports. In 1825 there were 732,000 bushels of net exports. In 1826 there were 26,000 of net exports and in 1827 there were 35,000 bushels of net exports. The 20,000 bushel figure is arrived at by leaving out of the calculation the 1825 export estimate.
2. In the 1828–32 period, in two years there were no net exports, in 1830 there were 18,000 bushels exported, and in 1831 there were 631,000 bushels exported. The 6,000 bushel figure is obtained by omitting from our calculation the 1831 export estimate.

Sources: Tables 7 and 10.

Table 12A

The Stability of Britain's Wheat and Flour Imports

years	(1) mean imports (quarters)	(2) standard deviation (quarters)
1780–89	153,863.7	163,060.6
1790–99	404,699.6	220,316.8
1800–09	633,881.1	433,765.5
1810–19	773,225.4	518,765.1
1820–29	907,707.1	538,199.5
1830–39	1,623,149.0	853,329.6

Table 12B

The Stability Factor
(2 ÷ 1)

years	stability factor [1]
1780–89	1.06
1790–99	0.54
1800–09	0.68
1810–19	0.67
1820–29	0.59
1830–39	0.52

Notes

1. The lower the 'stability factor' the greater the stability of imports of wheat and flour into Britain. The 'stability factor' is derived through the use of the standard deviation and the mean imports per decade. The standard deviation cannot be used by itself to indicate the extent of the changes in fluctuations of imports over time. It offers us, for every decade, a scatter of a series of numbers about their mean value. The increase in the standard deviation does not indicate an increase in the extent to which imports deviate from the mean of imports and thus the increasing instability of imports. As the standard deviation rises in value, so may the mean, more or less proportionally. This is what occurred in Britain. Thus, in the case of Britain, the standard deviation increases, but not in relation to the mean. Since instability is indicated only by a relative as opposed to an absolute rise in the standard deviation, one may conclude that in Britain the importation of wheat and flour was of an increasingly stable nature.

Source: Table 10.

was increasing, and increasingly stable.

(iv) The elasticity of supply in relation to British demand

Only rarely did the Lower Canadian supply of wheat and flour to Britain represent a significant proportion of its total imports. In the 1790's, Lower Canada's contribution to Britain's wheat and flour supply at one point represented 18 per cent of the total supply (in 1794). In 1795 it represented 17.87 per cent, whereas in 1792 it had composed 14 per cent of Britain's total supply. But what caused Lower Canada's supply of wheat and flour to represent an increasing proportion of Britain's supply was not a substantial increase in Lower Canada's net exports, but rather a substantial fall in Britain's imports of wheat and flour while Lower Canada's exports of the same to Britain did not fall proportionally. For the rest of the 1790's Lower Canada's exports of wheat and flour represented, at most, only 5 per cent of Britain's imports of wheat and flour. And this was a result of a substantial fall in the amount of exports of wheat and flour from Lower Canada. For the 1790's Lower Canada's exports of wheat and flour composed 9.99 per cent of Britain's imports of wheat and flour.[38]

From 1800 to 1809 inclusive, Lower Canada's exports of wheat and flour represented an average of 7.96 per cent of Britain's imports of wheat and flour. The average per annum exports of wheat and flour, for this period increased from what it was in the 1790's, from 277,202 bushels to 404,276 bushels. In the 1800 to 1809 period, as with the 1790's, when the exports of wheat and flour from Lower Canada represented a substantial proportion of Britain's imports of the same, it was a result of a significant reduction in the amount of wheat and flour imported into Britain not accompanied by a corresponding fall in exports of wheat and flour from Lower Canada.

In the 1810's Lower Canada's exports of wheat and flour represented

only 1.62 per cent of Britain's imports of wheat and flour. This insignificant percentage was a product of two factors. In the first place, exports of wheat and flour from Lower Canada collapsed to only 121,000 bushels per annum. At the same time average per annum imports of wheat and flour into Britain had risen to 7,476,128 bushels.

Although, in the 1820's, the exports of wheat and flour from Lower Canada represented 1.41 per cent of Britain's imports of wheat and flour, and the exports of wheat and flour fell only slightly, on a per annum basis, from the previous decade to 109,111 bushels, this decade marked a turning point in the ability of Lower Canada to supply wheat and flour to Britain. For three years in the 1820's there were no net exports of wheat and flour. For four years the average per annum exports of wheat and flour was only 32,000 bushels. There were two years when exports reached exceptionally high figures: 732,000 bushels in 1825 and 120,000 in 1820. In this decade Lower Canada became an erratic, unstable and insignificant supplier to Britain of wheat and flour.

For the 1830's information on net exports from Lower Canada are available for seven years only. For three of the remaining seven years there were no net exports of wheat and flour from Lower Canada. For two other years the average exports stood at 436,000 bushels per annum. For the other two years the average exports stood at 36,500 bushels per annum. And in the 1830's Britain imported, on average, 11,397,052 bushels of wheat and flour.

In the 1840's there were no net exports of wheat and flour from Lower Canada, and this in the face of rising imports of wheat and flour into Britain. From the 1810's onwards, the exports of wheat and flour from Lower Canada became increasingly insignificant in absolute terms and as proportion of Britain's imports of wheat and flour.

If the agricultural sector of Lower Canada were able to respond to the market conditions prevalent in Britain, a relationship would exist between the expansion and contraction of the British market of wheat and flour and the expansion and contraction in the supply of wheat and flour to Britain by Lower Canadian producers. Such a relationship does exist from approximately 1793 to 1807. [39] From the 1793-97 period to the 1798-1802 period imports of wheat and flour into Britain increased by about 70 per cent. Exports of wheat and flour from Lower Canada in this period increased by about 55 per cent. From the 1798-1802 period to the 1803-07 period imports of wheat and flour into Britain fell by about 41 per cent. In this period exports from Lower Canada fell by about 47 per cent. But while from the 1803-07 period to the 1808-12 period imports of wheat and flour increased by about 11 per cent in Britain, exports of wheat and flour from Lower Canada fell by about 21 per cent. The Lower Canadian producers were not taking advantage of the increasing British market for wheat and flour.

From the 1808-12 period to the 1813-17 period the British increased their importation of wheat and flour by about 18 per cent. From the 1813-17 period to the 1818-22 period the British increased there importation of wheat and flour by about 41 per cent. No comparable data is available for Lower Canada for these periods. But we know that from the 1808-12 period to the 1818-22 period the exports of wheat and flour from Lower Canada fell by 48 per cent. The inability of Lower Canada to participate in supplying the growing British market for wheat and flour continued. In the 1820's through the 1840's the supply of wheat and flour for export purposes did not improve, it only deteriorated in Lower Canada.

From the 1818-22 period to the 1823-27 period imports of wheat and flour into Britain fell by about 28 per cent whereas exports of wheat and flour

from Lower Canada fell by about 81 per cent. [40] From the 1823-27 period to the 1828-32 period imports of wheat and flour into Britain increased by about 204 per cent while exports of wheat and flour from Lower Canada fell by about 70 per cent. In these periods there was little relationship between movements in the size of the British market for wheat and flour and exports of wheat and flour from Lower Canada. And when the British market for wheat and flour did expand the Lower Canadian producers in no way took advantage of the situation. By the 1830's and 1840's Lower Canada was forced to import wheat and flour for its own needs. Although the British market for wheat and flour continued to flourish, the agricultural sector of Lower Canada was unable to produce wheat for export purposes. [41]

The fact that Lower Canadian farmers could not supply the British market with necessary quantities of wheat and flour did not prevent Montréal and Québec from becoming major entrepôts of the North American wheat trade. As a result of imperial trade policies colonial wheat was given preference over wheat grown elsewhere. [42] For this reason American suppliers shipped their wheat and flour through Montréal or Québec. Upper Canada's wheat also found its way through Montréal and Québec. Our estimates of wheat and flour exports from Lower Canada indicate only the amount of wheat and flour exported which probably originated in Lower Canada. They do not indictate what was in fact exported from Lower Canadian ports. Those years which our estimates indicate were without exports of wheat and flour of Lower Canadian origin, were years when there were substantial exports of wheat and flour from the ports of Lower Canada. [43] These were years when more wheat and flour was imported into Lower Canada than exported from Lower Canada. [44] For example, when in 1841 2,344,000 bushels of wheat and flour were exported from Lower Canada, 3,438,000 bushels were imported into Lower Canada. [45] A

portion of what was imported was retained for local consumption. The remainder was exported.

Britain made available an increasing market for wheat and flour to Lower Canada. The agricultural sector of Lower Canada simply could not meet the needs of the British market. Not only was Lower Canada unable to supply Britain, by the 1820's it was unable to provide even for local demand.

Apart from the supply of wheat and flour in Lower Canada being inelastic to internal and external demand pressures, the quality of the wheat and flour supplied by Lower Canadian producers was of a deteriorating quality. [46] This factor weakened the competitive position of Lower Canadian wheat and flour on the international market in relation to that produced in Upper Canada and the United States. Le Goff argues that from 1805 to 1817 wheat prices rose in Lower Canada to a greater extent than they did in the U.S.A.. Le Goff maintains that this too weakened the competitive position of Lower Canadian wheat. [47]

Although a poor quality wheat and flour and a relatively high price for wheat should have weakened the competitive position of the Lower Canadian wheat producer, it is doubtful that these were the major constraints upon Lower Canadian producers growing wheat for internal and external markets. If the price of wheat was a major deterrent to the purchase of Lower Canadian wheat, one would have expected that in the 1810-14 period, when the price of wheat was at its highest (see Table 13), the demand for Lower Canadian wheat would have declined. In 1810 Britain imported 12,537,000 bushels of wheat and flour and Lower Canada exported 170,000 bushels of wheat and flour. The following year Britain imported only 2,689,048 bushels of wheat and flour while, in Lower Canada, exports of wheat and flour collapsed to 853 bushels of wheat and flour. In 1812, British imports of wheat and

Table 13

Prices of Wheat in Lower Canada, 1760 to 1849

years	Québec Prices (livres tournois)[1]			Montréal Prices (livres tournois)			Price Series of Reverend M. Compte[2] (livres tournois)			Québec Prices (pound currency)			Montréal Prices (pound currency)			Price Series of Reverend M. Compte (pound currency)		
	Liv.	Sol.	Denier.	Liv.	Sol.	Den.	Liv.	Sol.	Den.	L	s	d	L	s	d	L	s	d
1760-64	4	12	–	–	–	–	–	–	–	–	3	5	–	–	–	–	–	–
1765-69	5	–	–	–	–	–	4	2	6	–	3	9	–	–	–	–	3	1
1770-74	3	10	–	4	10	–	4	2	–	–	2	7	–	3	4	–	3	1
1775-79	–	–	–	–	–	–	5	10	–	–	–	–	–	–	–	–	4	1
1780-84	8	17	–	8	1	7	7	13	7	–	6	8	–	6	7	–	5	9
1785-89	5	6	–	5	16	–	5	17	7	–	3	12	–	4	4	–	4	5
1790-94	4	14	–	4	8	–	4	4	–	–	3	6	–	3	4	–	3	2
1795-99	7	2	–	6	12	–	7	8	–	–	5	4	–	4	11	–	5	7
1800-04	–	–	–	–	–	–	7	12	–	–	–	–	–	–	–	–	5	8
1805-09	–	–	–	–	–	–	9	2	–	–	–	–	–	–	–	–	6	10
1810-14	14	–	–	13	12	–	13	14	–	–	10	6	–	9	9	–	9	9
1815-19	11	8	–	10	10	–	9	19	–	–	8	7	–	7	10	–	7	6
1820-24	5	18	–	5	12	–	5	8	–	–	4	5	–	4	2	–	4	1
1825-29	6	10	–	6	12	–	6	17	–	–	4	10	–	4	11	–	5	2
1830-34	–	–	–	–	–	–	6	–	–	–	–	–	–	–	–	–	4	6
1835-39	9	13	–	7	10	–	8	2	–	–	7	3	–	5	7	–	6	1
1840-44	–	–	–	6	18	–	–	–	–	–	–	–	–	5	2	–	–	–
1845-49	–	–	–	6	6		–	–	–	–	–	–	–	4	8	–	–	–

1 liv. = 20 sol.; 1 sol. = 12 denier. / Ll = 20s; 1s = 12d / 1 livre = (0.0375) x Ll (pound currency)

Notes

1. The Québec and Montréal price series are taken from F. Ouellet, Histoire Economique et Sociale du Québec, 1760-1850, pp. 101, 127-128, 170, 249, 327, 418, and 446.

2. This price series was computed for The Report of the Commissioners Appointed to Inquire into the State of the Laws and other Circumstances Connected with the Seigniorial Tenure in Lower Canada..., published in 1843 in no. 126 of Appendix F.

flour fell to 2,325,680 bushels. Instead of falling even further, exports of wheat and flour from Lower Canada jumped to 263,178 bushels, an amount greater than what was exported in 1810. (Table 10). The British market absorbed an increased quantity of Lower Canadian wheat and flour while its market for wheat market shrunk and while the price of Lower Canadian wheat and flour was at its highest.

The quality of Lower Canadian wheat and flour was probably at its worst in the 1830's. It was in this period that the wheat crop of Lower Canada was being ravaged by the wheat fly (particularly between 1833 and 1838). [48] This did not prevent what was being grown from being sold. In 1833 no wheat and flour of Lower Canadian origin was exported. The year after, 55,000 bushels of wheat and flour were exported from Lower Canada. This composed 0.70 per cent of all British imports of wheat and flour for 1834. In 1835, 241,000 bushels of wheat and flour of Lower Canadian origin were exported from Lower Canada. This represented 4.01 per cent of Britain's imports of wheat and flour. Lower Canadian wheat and flour exports did not compose such a high proportion of Britain's wheat and flour imports since 1825, and before that, since 1811 when Lower Canadian exports of wheat and flour composed 11.32 per cent of Britain's imports of wheat and flour. (Table 10). In a period when wheat and flour of Lower Canadian origin was of a poor quality and was being erratically produced it was sold even when the British market for wheat and flour contracted. The data available indicates that wheat and flour of Lower Canadian origin had no trouble being sold in spite of relatively high prices and a poor quality of the product.

(v) Summary

For Séguin and McCallum the existence of a large and stable market would have been essential if the censitaires of Lower Canada were to have

renovated their system of agricultural production. Such a market would have permitted the censitaires to sell a variety of crops and dairy products, thought to be essential to renovating the existing agricultural technolgy. Moreover, it would have provided the censitaires with the capital required to make such a change. But contrary to the opinions of Séguin and McCallum it is not necessary for a market to exist for more agricultural technology to be adopted. What is required, is the existence of the necessary surplus labour time. Labour time is required to construct needed equipment for a more productive farming practice and/or to produce items that could be sold on the market to provide the capital with which to purchase the necessary equipment. Additional labour time is required to employ the new equipment and care for the soil in a more intensive manner. The existence of a market, nor the particular case of a commercialized agriculture guarantees the existence of such surplus labour time. With such labour time at the disposal of, and under the control of a peasant farmer more intensive agriculture can be applied to the soil. The market only facilitates this by allowing the peasant to raise more livestock and therefore using the soil enriching legumes to both fertilize the soil (through the manure produced by the livestock) and feed the livestock, instead of only fertilizing the soil by ploughing the legumes into the soil.

The censitaire in Lower Canada did not face a situation where only a small and unstable market existed. There existed a growing internal and external market for wheat and flour. There also existed a <u>small</u> but <u>lucrative</u> market for dairy products within Lower Canada. Given what was produced in Lower Canada in the first half of the nineteenth century, the censitaire was able to produce a surplus product that could have been sold

on the market allowing for the accrual of capital. This could have been utilized so as to renovate the existing agricultural technology which, inturn, would have contributed towards increasing the fertility of the soil. The increased fertility of the soil would have allowed the censitaire to increase their consumption of wheat back to 6 bushels per capita per year. Apart from this, more wheat could have sold, which would have permitted the censitaire to increase his/her standard of living and further improve the state of agricultural practice.

The state of the market in Lower Canada was not an obstacle to adopting more intensive agricultural techniques. If an 'obstacle' did exist it would have to be situated in the lack of capital in the hands of the censitaire or in the refusal, on the part of the censitaire, to make use of the available capital.

FOOTNOTES

1. Séguin, Maurice, La Nation "Canadienne" et l'Agriculture, p. 141.

2. G. Paquet and J.P. Wallot develop one aspect of Séguin's argument with reference to the 1790-1812 period. They state that wheat production in Lower Canada declined as a result of inadequate and unstable markets. Refer to their "The Agricultural Crisis of Lower Canada, 1802-1812...", pp. 137-39 and "Crise Agricole et Tensions Socio-ethniques dans le Bas-Canada, 1802-1812...", pp. 205-211.

3. McCallum, John C.P., Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1850, pp. 4, 35 and 40-43.

4. Ibid., pp. 4 and 37.

5. Ibid., p. 35.

6. Ibid., pp. 52 and 103.

7. Ibid.

8. Ibid., pp.52 and 53.

9. Séguin, Maurice, La Nation "Canadienne" et l'Agriculture, p. 227.

10. Refer to Chapter Four section (iv).

11. Material components of the standard of living are inclusive of food, clothing, housing etc., of which food is of crucial importance. For an elaborate discussion of the standard of living in the first half of the nineteenth century in Lower Canada refer to Reid, S.W., "The Habitant's Standard of Living on the Seigneurie des Milles Isles, 1820-50".

12. Refer to Chapter Five section (iv).

13. Ibid.

14. Hymer, Stephen and Resnick, Stephen, "A Model of an Agrarian Economy with Nonagricultural Activities", p. 493.

15. Ibid.

16. Boserup, Ester, The Conditions of Agricultural Growth: The Economics of Agrarian Growth Under Population Pressure, p. 46. Boserup cites the conditions prevailing in the Bemba tribe of 'Rhodesia' as an example of the labour input per personal-hour per year under the system of forest fallow. Hours of agricultural work are limited

to three to five hours per day. In the busy season, the average working day consists of four hours for men and six hours for women. In the less busy season the average working day consists of two and three quarter hours for men and six hours for women, of which two hours are devoted to agricultural work, the remainder to 'domestic' activities. Under this very primitive system of agricultural production the average per annum working day consists of one to two hours of labour time devoted to agriculture. This is inclusive of the time involved in the clearing of the land.

17. Ibid., p. 30. Boserup finds that "The time used for superficial clearing under the system of forest fallow therefore seems to be only a fraction - perhaps ten or twenty per cent - of the time needed for complete clearing." If this were so, and the system of forest fallow requires an average of one to two hours of agricultural work per day, a much more intensive system of agriculture would require from five to ten hours of agricultural work per day per person, at a minimum (here we assume that the system of forest fallow requires only one hour of agricultural work per day per per person, see footnote 16 for details).

18. Nicholls, William H., "An 'Agricultural Surplus' as a Factor in Economic Development", p. 6.

19. See Chapter Six, footnote one for a discussion of the concept of an economic surplus.

20. Hymer, Stephen and Resnick, Stephen, "A Model of an Agrarian Economy with Nonagricultural Activities", p. 503.

21. Refer to Chapter Six section (i).

22. For details refer to Table 3 Note 13.

23. For details refer to Table 6 Note 1.

24. Derived from Table 6 Line B3.

25. This would be so, with the exception of the census taken in 1831.

26. See Table 6 Line B4.

27. We have estimated the 'agrarian' population of 1827 to have been 70,1333.

28. Refer to Chapter Five section (iv).

29. For details refer to Table 8 Note 1.

30. Refer to Table 8 Lines 2 and 4.

31. Refer to Tables 5 and 8.

32. Evans, William, A Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture in Canada, p. 133.

33. McCallum, John, C.P., Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1850, p. 40.

34. Le Goff, T.J.A., "The Agricultural Crisis in Lower Canada, 1802-12: A Review of a Controversy", p. 13 footnote 37.

35. From 1802 to just before 1815 the Corn Laws were inoperative. This was a result of poor wheat crops in Britain and the occasional shutting off of Baltic wheat from the British market. Through the Corn Law of 1815 colonial wheat gained an advantage over foreign wheat in the British market. Foreign wheat and flour were excluded from the British market until the average British price exceeded 67s a quarter. From 1816 to 1820 the average British price was above 67s a quarter. In November 1820 the average British price fell below 67s a quarter. But, by the Corn Law of 1822, colonial wheat and flour could enter Britain when average British price reached 59s a quarter. When the average British price fell between 59s and 67s a quarter, a duty of 12s a quarter was charged to colonial wheat. The actual average British price was contained within this boundary up to 1825. If the average British price were to rise between 67s and 71s a quarter, a duty of 5s a quarter was to be charged to colonial wheat. In 1825 a temporary regulation permitted all Canadian wheat to enter Britain, no matter the average British price, on the payment of a duty of 5s a quarter. In 1827 a temporary regulation allowed Canadian wheat into Britain on the payment of a duty of 5s a quarter when the average British price was less than 67s a quarter, and a nominal duty of 6d a quarter when the average British price exceeded 67s. A duty of 1s a quarter had to be paid on foreign wheat entering Britain when the average British price exceeded 73s a quarter. The duty on foreign wheat increased as the average British price fell to 67s a quarter. By the Corn Law of 1828, the 1827 regulation was made permanent. Thus Canadian wheat had a clear advantage over foreign wheat on the British market. From 1832 to 1835 the average British price of wheat was below 67s a quarter as a result of abundant wheat harvests in Britain. But after 1836 British wheat markets expanded considerably. In 1842 the Corn Laws were modified to the advantage of Canadian wheat exporters. But in 1846 Canadian wheat and flour were placed on equal footing with foreign supplies with the abolition of the Corn Laws. Source: Jones, Robert Leslie, History of Agriculture in Ontario, 1613-1880, pp. 28, 38-39, 46-47, 122, 135 and 138.

36. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, pp. 341-42.

37. Paquet, G. and Wallot, J.P., "The Agricultural Crisis of Lower Canada, 1802-1812: mise au point. A Response to T.J.A. Le Goff", p. 159.

38. The information here is taken from Table 10.

39. Refer to Table 11.

40. We excluded from this estimate the exceptionally high exports of one year.

41. Refer to Table 7 on the net imports of wheat and flour into Lower Canada.

42. Refer to footnote 35 above for details.

43. Refer to Table 10 Column 3. For data on the exports of wheat and flour from Lower Canada refer to McCallum, John C.P., Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1850, Table S.1, p. 124.

44. Ibid., McCallum, Table S.1, p. I24.

45. Ibid.

46. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, p. 251.

47. Le Goff, T.J.A., "The Agricultural Crisis in Lower Canada, 1802-1812: A Review of a Controversy", pp. 14 and 17.

48. Parker, W.H., "A Revolution in the Agricultural Geography of Lower Canada, 1833-1838", pp. 190, 193 and 194.

CHAPTER EIGHT

The Seigniorial System of Land Tenure and The Falling Productivity of the Soil

The seigniorial system of land tenure affected the investment capabilities of the censitaires by reducing the economic surplus controlled by the censitaires. The seignior collected various payments from the censitaire. He/she collected from the censitaire an annual payment for the use of the roture (cens et rentes); a payment for the use of the seigniorial grain mill (banalité); a payment for the use of timber on the roture; a payment in place of labour services (corvée) to the seignior; a payment on the 'granting' of wild land to the censitaire (the illegal entrance fine); and a payment on the selling by the censitaire of any part of the roture (lods et ventes). Finally the Church collected a tithe on all grain produced. [1] These payments to the seignior and the Church reduced the income under the control of the censitaire. The question is whether or not the income which remained under the control of the censitaire was sufficient to allow for the adoption of the available more intensive agricultural technology required to increase the productivity of the soil or at a minimum prevent the productivity of the soil from falling any further.

(i) Opinions and analysis

No attempt has been made, as of yet, to determine the extent to which the economic burden of the seigniorial system of land tenure reduced the investment resources of the typical censitaire. Most of what has been written are no more than educated guesses. Of the educated guesses, John McCallum's is the only one which stipulates that the seigniorial system did not impose a financial burden upon the censitaire. He quotes Joseph

Bouchette, writing in 1831, that the seigniorial rents were "not at all burthensome". [2] McCallum also cites a remark made by "an Englishman" in 1842 that "the annual rent paid in most of the old concessions was a simple bagatelle". [3] It is also the opinion of McCallum that "even the highest seigneurial rent did not exceed the interest in its raw state." [4] It is of interest that McCallum fails to cite the opinion of one of the most respected of the authorities on Lower Canadian agriculture, William Evans, secretary to the Montreal Agricultural Society in 1836. Evans made an effort to substantiate his opinions upon the facts and statistics available at the time. His understanding of the economic burden of the seigniorial system, is worthy of quotation. Evans wrote: [5]

> "...almost all the seigniorial lands are raised to ten dollars rent annually for 100 arpents, or six pence the arpent, together with corvée day, etc. These lands are in all cases subject also to lods et ventes, or a $\frac{1}{12th}$ part of the purchase money at every sale, must be paid to the seignior. There is another privilege which the latter has, the droit de retrait, which entitles him to take the property sold at the price sold for, within 40 days after the sale. The seignior receives part of the fish caught, has the privilege to fall timber for erecting mills, repairing roads, or other works of general utility. He has the exclusive right of erecting mills, and the tenants are bound to grind their grain at his mills, and some other privileges which will be found in the copy of a deed from the seignior to the tenant or censitaire.
>
> From the present high rents charged by the seigniors, for lands that are subject besides to lods et ventes, and other feudal rights, these lands are now much higher priced than any other wild lands in the Lower Province. Six pence annual rent per arpent, is equal to the interest at five per cent of ten shillings the arpent purchase money; and there is scarcely any wild land now selling at that price, except in very favourable situations... and the wild lands of the crown are usually sold at auction for less than half, and doubt very much if the waste seigniorial land could now be sold, if free from lods et ventes, for ten shilling the arpent on an average."

The more meticulous analysis put forth by William Evans casts considerable doubt upon the opinion of John McCallum.

Maurice Séguin stipulates that the rents and other charges imposed by the seignior rose during the first half of the nineteenth century. He argues that "...ces rentes de dix ou douze piastres et ces ventes à quatre piastres l'acre n'étaient pas en general à la portée des paysans canadiens, non pas parce qu'elles étaient trop élevées en elle-mêmes mais parce que les canadiens étaient trop pauvres." [7] Séguin does not examine whether the continuance of poverty amongst the censitaires was a result of the economic burden imposed upon the censitaires by the seigniors. Nevertheless, Séguin nowhere proves that there exists no causal relationship between the poverty of the censitaire and the economic burden of the seigniorial system of land tenure. [8]

As does Séguin, Fernand Ouellet stipulates that rents and other charges imposed by the seignior rose during the first half of the nineteenth century. Ouellet gives a great deal of evidence to support this stipulation. [9] But unlike Séguin, Ouellet argues that the economic burden of the seigniorial system of land tenure imposed a substantial encumbrance upon the censitaire. Ouellet writes: "Le fléchissement du revenue paysan, les dettes, les nouvelles taxes rendent les droits seignioriaux très lourds à assumer." [10] Although Ouellet believes that the seigniorial system was economically burthensome to the censitaire, he does not consider it to have been the cause for the crisis of agricultural production in Lower Canada. As we have already shown [11], Ouellet considers the 'mentalité' of the censitaires to have been the most important factor causing the censitaires not to adopt the more advanced farming technology.

The only well documented study which deduces that the seigniorial

system of land tenure was the primary cause for the poverty and economic stagnation of Lower Canada's agricultural population was The Report of the Commissioners Appointed to Inquire into the State of the Laws and other Circumstances Connected with the Seigniorial Tenure in Lower Canada, of 1843. The Commissioners conclude: [12]

> "We come now to the second branch of the subject of our investigations, namely, as to the present working of the Feudal and Seigniorial Tenure in this Province.
>
> "In stating our views on this branch of the inquiry, we must necessarily proceed on the assumption that the exorbitant pretentions of the Seigniors, at the present day, are just and founded in law as now administered.
>
> "Taking this for granted, it cannot be denied that this system of tenure is in many respects vicious and is productive of extreme injury.
>
> "The dues and services exacted, without considering the more common abuses, are oppressive to the land owner, not only from their variety, but from their nature.
>
> "...Such is the operation of a tenure declared by its apologists to be of surpassing excellence, and suitable to the wants and condition of the inhabitants of this Province; but this not the view entertained by the inhabitants themselves, who are desirous of a change although they differ in opinion respecting the nature of such change. They declare that their burthens are intolerable, and that unless the Legislature come to their relief, inevitable ruin awaits them."

A contemporary opinion which is in accord with the view of the Commissioners is expressed by Lise Pilon-Lê in a recent article (1980), "Le Regime Seigneurial au Québec: Contribution à une Analyse de la Transition au Capitalisme". Although Pilon-Lê puts forth no documentation to substantiate her convictions, she clearly links the economic burden of the seigniorial system of land tenure to the falling productivity in the agricultural sector of Lower Canada.

Pilon-Lê argues that the rising rents deprived the censitaires of a portion of their income thus cutting off the means requisite to improve the soil. With reference to the censitaire Pilon-Lê writes: [13]

> "Il est incapable d'améliorer ses terres parce que l'épargne qu'il pourrait y consacrer est appropriée par le seigneur sous forme de redevances."

To the extent that a sufficient economic surplus remained under the control of the censitaires, after taking into consideration the income taxed away by the seignior and the Church, to adopt the more intensive and available agricultural technology, Ouellet would be correct in attributing the falling productivity of the soil to the 'mentalité' of the censitaires or what we have referred to as irrational behaviour. Otherwise, the Commissioners and Pilon-Lê would be correct in having argued that the economic burden of the seigniorial system of land tenure was the primary cause for the lack of investment in agricultural production and thereby the falling productivity of the soil. In this case our hypothesis would be proven correct. [14]

(ii) Some seigniorial charges and the net economic surplus in a typical family farm

Our estimates of the seigniorial charges take into consideration only the cens et rentes; the banalité; and the tithe. For this reason our estimates must be underestimates of the actual economic burden of the seigniorial system of land tenure upon the censitaire. Of these seigniorial dues, the cens et rentes were the most substantial in all census years but for 1784, when the tithe was the most substantial. This was a result of the increase in the rate of cens et rentes during the period under study. [15]

Taken together, the cens et rentes; the banalité; and the tithe

Table 14

Estimates Of Seigniorial Charges and the Net Economic Surplus per Typical Peasant Family, 1784 to 1851

	1784	1827	1844	1851
1. No. of families Occupying farms:	18,924	70,133	76,440	95,813
2. Arpents of land held per typical peasant family: [1]	82.91	60.00	52.83	84.68
3. Bushels of wheat minus seed requirements per typical peasant family:	58.15	29.99	8.88	25.40
4. Bushels of oats minus seed requirements per typical peasant family:	——	26.46	71.97	69.33
5. Bushels of potatoes minus seed requirements per typical peasant family:	——	81.40	109.00	41.09
6. Value, per family, in pounds currency of the tradable or economic surplus:	L5 0s 6d	L3 0s 11d	7s 5d	L3 10s 6d
7. Cens et rentes per typical peasant family: [2]	15s 2d	15s 6d	16s 9d	L1 6s 10d
8. Banalité per typical peasant family: [3]	18s 8d	9s 8d	2s 10d	8s 2d
9. Tithe per typical peasant family: [4]	16s 7d	8s 10d	6s 8d	10s
10. Value of seigniorial charges per typical peasant family, in pounds currency (7 + 8 + 9):	L2 10s 5d	L1 14s	L1 9s	L2 5s
11. Value of the net economic surplus per typical peasant family(6 - 10):	L2 10s 1d	L1 7s	- L1 1s 7d	L1 5s 6d

Table 14(continued)

Notes

1. Data for land held is provided for in the Census. Information is lacking only for 1827. For this year we presume that the land held per typical peasant family fell between what was held in 1784 and 1844.

2. For information on the cens et rentes refer to Chapter four, section b, (ii). Since the economic surplus is evaluated in 1851 prices, the cens et rentes are converted from the nominal values to their values in terms of the 1851 prices. For example, in the 1790-1799 period the cens et rentes were 2.3 pence per superficial arpent. The average price of wheat for this period was 9.28 per cent greater than the price of wheat in 1851. The cens et rentes for 1784 in terms of the 1851 price of wheat would be 2.2 pence per superficial arpent. The cens et rentes for 1827 and 1844 in terms of the 1851 price of wheat is 3.1 and 3.8 pence respectively per superficial arpents of land. We assume that for 1851 the cens et rentes remained at the 1844 level. No specific information is available for the cens et rentes at that date.

3. The mill banalité constituted a charge of one-fourteenth of all grain to be directed for the consumption of the peasant family that is brought to the banal mill to be ground. We estimate the banalité as one-fourteenth of the wheat minus the seed requirements brought to the banal mill to be ground. Since wheat that is harvested must be ground, our estimate should reflect the cost to the censitaire of having the wheat ground.

4. The tithe is a payment is the Catholic Church of one-twenty-sixth of all grain harvested. We estimate the tithe as one-twenty-sixth of the wheat and oats harvested. Since these were not the only grains grown, our estimate of the tithe is sure to be an underestimate.

Sources: Refer to Tables One and Three and Chapter Four.

comprised the following proportions of the economic surplus: 50 per cent in 1784; 36 per cent in 1827; 280 per cent in 1844; and 64 per cent in 1851.[16] In 1844 the seigniorial charges would have absorbed all of the economic surplus and would have pushed the censitaire into debt. In the other three census years the censitaire would have been left with an economic surplus, but one that was not very substantial. The value of the net economic surplus fluctuated primarily as a result of changes in the value of the economic surplus. The net economic surplus was the greatest in 1784 as a result of the value of the economic surplus. There was no net economic surplus in 1844 as a result of the collapse in the value of the economic surplus given a minimal fall in the value of the seigniorial charges from what they were in 1827. That the value of the net economic surplus in 1851 was at approximately the same level as it was in 1827 was due primarily to the substantial rise in the value of the economic surplus from what it was in 1844, given a 55 per cent rise in the value of the seigniorial charges.[17]

Since our estimates of the seigniorial charges are underestimates, our estimates for the value of the net economic surplus are overestimates. And given that our estimates for the value of the economic surplus are overestimates as well, our estimates of the value of the net economic surplus are considerably inflated.[18] The extent to which our estimates of the net economic surplus have been inflated cannot be ascertained. But one may be certain that the censitaire was in control of less than one pound currency in economic surplus for the 1827 and 1851 census years.

For those years that fall between the census years we can only make educated guesses as to the amount of economic surplus controlled by the censitaire.

By the 1820's output per capita in grain production had fallen. [19] In the 1830's Lower Canada was struck by the wheat fly. In the 1840's the potato crop was devastated by the potato blight. These catastrophies were themselves the result of the poor farming practices of the censitaire. The apparent frequency of poor harvests in the 1830's and 1840's suggests that the 1844 census year was not necessarily the exception to the rule. S.W. Reid, writing with reference to the Seigniory of Mille Isles for the 1820-1850 period argues that the censitaire was getting increasingly into debt in the 1830's and particularly in the 1840's. Reid argues that this was in part due to the increasing amount of seigniorial charges. This point pertaining to the Seigniory of Mille Isles can be generalized to the other seigniories of Lower Canada. [20] These facts suggest that the economic surplus controlled by the censitaire was minimal in the 1820's. In the 1830's and in the 1840's it is probable that the censitaire controlled an economic surplus only infrequently and then only a minimal amount. What we must attempt to acsertain is whether or not the economic surplus under the control of the censitaire was in any way sufficient to permit the adoption of the more intensive techniques of agricultural production.

(iii) Some costs of intensive agriculture

To engage in more intensive agriculture would have required certain implements such as an iron plough at 6 pounds currency; a sub-soil plough at 6 pounds currency; a harrow at 2.5 pounds currency; and a proper facility to collect and store animal manure at at least 10 pounds currency. [21] To properly work the soil the typical censitaire would have required at least one more horse at 15 pounds currency. [22] These are the minimal

of the major investments that were required of the typical censitaire if a more intensive agriculture was to have been adopted. These investments would have amounted to 39.5 pounds currency in terms of 1850 prices. The censitaire would have found it convenient to possess a drill plough as well, but that would have cost 5 pounds sterling. [23]

If the censitaire lacked the proper scythes, sickels and hoes; these could have been purchased for 10 shillings, 15 shillings, and 15 shillings respectively (20 shillings = 1 pound currency). [24] The proper shoeing of the horses (three in number) would have cost about 6 pounds currency per annum in terms of 1850 prices. [25] If the censitaire had the intention to engage in dairy farming, a cheese press would have had to have been purchased at 5 pounds currency; a churn at about 2 pounds currency; and a boiler built in bricks at 5 pounds currency. [26]

Even if we assume that our estimates of the economic surplus are not inflated and that the censitaires did not have to pay any seigniorial dues, it would have been difficult for the typical censitaire to accumulate the savings necessary to adopt a more intensive agricultural practice. The falling productivity in itself seriously constrained the ability of the censitaire to realize an economic surplus in the 1830's and 1840's. The funnelling of a portion of the economic surplus into the hands of the seignior and the Church only made the task more difficult, if not impossible.

The existence of seigniorial charges seriously inhibited the ability of the typical censitaire to adopt a more intensive agricultural technology from the 1820's through the 1840's. Thus, even if the censitaire would have desired to adopt the more advanced farming practice

it would probably not have been possible. In this case Ouellet's claim that it was the 'mentalité' of the censitaire which inhibited the adoption of more intensive agricultural practice would be proven to be incorrect. The facts lead us to agree with the following observations of a G.A. Marchand who presented evidence to the 1850 Legislative Assembly of the Province of Canada Special Committee on the State of Agriculture in Lower Canada: [27]

> "It is quite erroneous to suppose that bad cultivation always proceeds from the ignorance or negligence of the farmers; poverty is frequently its cause: the most intelligent require means to enable them properly to cultivate - intelligence and taste are worthless gifts when unaccompanied by means - the intelligent but indigent man frequently sees what it becomes his duty to do, but cannot accomplish it; compelled to economize where he should not, he acts against his principles and opinions, becomes discouraged and disgusted, his cultivation is neglected, and finally he finds himself identified with the ignorant and negligent who labour without system. The Seigniorial charges, swelled to an unlimited extent, greatly contribute towards this evil.

(iv) Agricultural investments by the seignior and the Church

To the extent that the seignior and the Church utilized their income generated by the seigniorial charges to invest in agriculture, the seignior and the Church would have contributed to increasing the productivity of the soil. The available evidence suggests that whatever use the seignior and Church made of their respective incomes, agricultural improvement was not typically one of the beneficiaries.

The seignior had the resposibility of constructing and maintaining the banal mills and roads within the seigniory. The most reliable information on the seigniors' investment in the banal mills is contained in The Report of the Commissioners of 1843. In responding to a questionaire

submitted to the censitaire on behalf of the Commissioners, in ten of the fourteen regions where the censitaire responded to questions related to the state of the banal mills, complaints were recorded with reference to the lack of and/or poor quality of the banal mills. [28] The seignior neglected their resposibility towards the construction and maintenance of the banal mills. The situation was no different with reference to the construction of roads within the seigniory. [29]

The Church did not use the revenues which it collected from the censitaire so as to assist the censitaire in improving the state of agriculture. The Church could have invested its income in educational institutions designed to promote the more advanced agricultural technology. But the Church did not do this. Its view of the raison d'être for the poor state of Lower Canadian agriculture is reflected in the opinion of a curé of Ste. Anne-de-Mascouche (1812): [30]

> "Vos grains sont mangés par les insectes, inconnues jusqu'à ces derniers temps, et envoyées sans doute par l'ordre de Dieu pour éxécuter ses desseins. Que faut-il de plus pour vous ouvrir les yeux? pour vous faire voir que toute cette conduite de la Providence ne tend qu'à vous punir de vos péchés, et conséquement à vous en éloigner et à vous en détacher?"

Thus the Church ignored technically oriented education as it viewed the state of agriculture as being beyond human control.

The Church invested in luxuriés; in the construction of grandiose and extravagant ecclesiastical edifices. [31] It was only by 1838 that the Church thought seriously of investing in educational facilities. [32] This was at a time when the censitaires were increasingly protesting the Church's use of its income for luxuries. [33]

Both the seignior and the Church could have indirectly invested in agriculture by reducing the seigniorial charges on the censitaire. This

would have made more resources available to the censitaire with which to invest. But the seigniorial charges were inflexible downwards. In the face of declining productivity both the seignior and the Church attempted to maintain their traditional income. But this was at the expense of the economic surplus under the control of the censitaire. By reducing the economic surplus under the control of the censitaire, the seignior and the Church contributed to the falling productivity of the soil by inhibiting the ability of the censitaire to invest in the more intensive techniques of agricultural production. [34]

(v) The Townships and the Seigniories

Theoretically the Townships were regions wherein the economic constraits of the seigniories did not prevail. Thus, one would expect that those peasants who settled in the Townships had control over a greater portion of their economic surplus than did the censitaires of the seigniories. If this were true the peasants of the Townships would have been more able to invest in the more intensive techniques of agricultural production. But if the Townships of Lower Canada were organized in such a manner that its cost to the peasant were as great or greater than that faced by the censitaire, the peasants of the Townships would have found it just as difficult to adopt the more intensive techniques of agricultural production than the censitaires. One would then expect the Townships to have been faced with similiar problems of declining soil productivity as were encountered in the seigniories. To the extent that the Townships imposed a lesser constraint upon the peasants' ability to invest than did the seigniories, a comparison between the two systems would indicate the extent to which the availability of economic surplus to the peasant farmer affects the productivity of the soil, or more generally, output per unit of input.

John McCallum claims that in the Townships, where the freehold system of land tenure prevailed, the costs to the peasant farmer were greater than under the seigniorial system. [35] If McCallum is correct one would be forced to conclude that the peasant farmer of Lower Canada was faced with substantial economic constraints upon his/her ability to invest in the two systems of land tenure prevalent in Lower Canada. Thus, both the seigniorial charges and the economic burden of the freehold system would have been cause for the declining productivity of the soil as they would have prevented the peasant in seigniory and Township from investing in the land.

By 1822 the Townships contained 26,705 individuals or only 6.25 per cent of the population of Lower Canada. [36] We estimate that the Townships contained 4,450 families in 1822. [37] By 1836 the population of the Townships had grown to 81,660 individuals or 13,610 families. [38] And by 1851 the population of the Townships was 136,284 individuals or 22,714 families. [39] The population of the Townships grew considerably from the 1820's. For this reason it is most relevant to determine the economic burden of the freehold system from this period on.

One very important difference in the location of the seigniories and the Townships was that the seigniories were located on some of the most fertile and accessible land in Lower Canada. In contrast to this, Macdonald writes that the Eastern Townships contained 2.5 million acres, only one-third of which was of good quality. Communication with the older settlements on the St. Lawrence was intercepted by a wide belt of granted land which was unoccupied. [40] But this was not the only obstacle to settlement faced by the potential peasant farmer. As Macdonald found: [41]

> "In Lower Canada, not only were grants made, but in some cases quit rents were imposed, while by the township system, blocks averaging about 40 thousand acres were given to individuals. By 1825, outside the seigniories which totalled almost 8 and a half million acres, the Government had granted 3,356,000 acres, leaving about 5 and a half million acres at the disposal of the Crown in surveyed or projected townships. Of this total, 19/20ths of which remained undeveloped, almost 1/2 a million acres had been given to militiamen, 72 thousand to Executive Councillors, 48 thousand to Governor Milnes, 100 thousand to Cushing and others, 200 thousand to officers and soldiers, 1,457,209 acres to leaders of townships. Thus a colony of 19 million acres [had] about 3 million acres available for immediate settlement."

The large grants of land were made primarily to what Ray Allan Billington refers to as 'amateur speculators'. [42] These individuals did not engage in improving the land for settlement. They did not construct any good roads. Thus settlements were isolated from each other and from the older settlements in the St. Lawrence valley. [43] The 'amateur speculators' faced no or little cost in holding their grants of land. Thus these individuals could afford to hold on to large tracts of land "merely in the hope of being able at some future day to sell them at a profit, without any intention of improving them in the mean time...". [44] Apart from this, the Clergy and Crown reserves acted as a serious impediment to settlement until the late 1820's when the government made a decision to sell this land. These reserves were distributed throughout each Township, each encompassing 1/7th of the land granted. They effectively cut off one part of the Township from another. [45]

Since the burden of developing the Townships lay entirely in the hands of the settlers - it was required of them to clear the forests and construct the roads - they required a considerable starting capital. [46]

It was only in the 1830's that the government got seriously involved in the construction of roads in the Townships. The difficulty of initial settlement and the relative infertility of the soil made the Townships less attractive than land in Upper Canada and the U.S.A. [47] Apart from the heavy starting costs of settlement there were the costs of obtaining land.

According to the Treasury instructions of November 1826 all the available land in Lower Canada was to be disposed of by sale by way of a public auction. The purchase money was to be paid in four equal annual instalment with the provision that all sales made to 'poor' settlers could be paid for in terms of a quit-rent, which was a payment of 5 per cent on the value of the land. This payment was redeemable on the payment of that value. The land was put up for public auction at an upset price. Both the amount of land to be put up for auction and the upset price was determined by the government. [48] From 1828 to 1837, 750,281 acres of land was disposed of in such a manner. Of this, 277,882 acres or 37 per cent of the land sold was settled. [49] Of the 750,281 acres of land sold, 450,469.75 acres were Crown lands. The average price at which the Crown lands sold for was 3s 5d (1 shilling = 12 pence). The remaining 299,811.5 acres sold were from the Clergy Reserves. The average price for which these lands were sold for was 4s 10d. [50]

If the peasant farmer paid out the purchase price in for equal annual instalments the cost per acre of land would have been 10d per annum for the Crown lands and 1s 2d per annum for the Clergy Reserves. The 'poor settler' would have had to pay only 2d per acre per annum for Crown lands and 3d per acre per annum for the Clergy reserves.

The British American Land Company secured control over 847,661 acres

in 1831 at a total cost of 120,000 pounds currency payable in ten years with an interest of 4 per cent. The Company was to sell the land in terms of 1/5th of the purchase money being payed immediately, the rest being payed on instalment. The Company invested 176,636 in improving the land for settlement. [51] If anything, the terms of settlement offered by the British American Land Company were no more burthensome than those imposed by the government.

It would be safe to argue that the nominal price for Township land in Lower Canada was 3s 6d per acre. [52] If the peasant farmer paid this amount out in four equal annual payments, the cost of an acre of land would be 10.5d per acre per annum. But once the four years were up, the peasant farmer would not be burdened by anyeconomic charges due to the system of land tenure. A 'poor settler' would have had to pay 2.1 d per annum.

If we compare the cost of acquiring land under the freehold system with the cens et rentes of the seigniorial system , the immediate cost per acre would have been slightly greater under the Township system. In the 1820's the cens et rentes per acre was 4d. In the 1830's the cens et rentes per acre was 5.5d. [53] When the peasant farmer paid for the Township land in four equal annual instalments, payments were about double the cens et rentes. But after four years the peasant farmer would not have to make any further payments, whereas the censitaire would have to pay cens et rentes for the rest of his life. The 'poor settler' acquiring Township land would have had to make a per annum payment which was about one-half that paid by the censitaire in terms of cens et rentes.

If we include the tithe and the banalité in the per acre payments of the censitaire, they would amount to 8d an acre. [54] In this case the

immediate cost of an acre of land would have been approximately the same in the freehold system, when the cost of the land was paid out in four equal annual payments, as under the seigniorial system. And after four years, when the settler in the Townships would no longer be making any payments for his/her land, the censitaire would be paying his/her 8d per acre per annum to the seignior and the Church. It becomes even clearer, the extent to which the cost of land under the freehold system was much cheaper than under the seigniorial system, once we appreciate that the economic charges implied under the freehold system were short term whereas those implicit under the seigniorial system were a lifetime obligation. Apart from this, we have underestimated the amount of seigniorial charges. [55]

It is very doubtful that the mere cost of Township land inhibited its settlement and economic development. Ouellet finds that "En l'absence d'un réseau routier et de coûts de transport adéquats, le développement économique des cantons se fait d'une façon inégale et lente. Là où l'exploitation des produits de la forêt est possible, où surtout les communications avec les marchés sont plus avantageuses, la croissance économique est suffisament rapide...Malgré cette tendance vers une agriculture plus commercialisée, les cantons présentent un spectacle extrêmement varié. L'isolement et la pauvreté sont le lot de la masse dans un grand nombre de cantons." [56] The typical settler of the Townships was forced to build an agricultural community from the forests. This required time and capital. Even by 1849 the precarious position of the settler of the Townships had not changed by much. [57]

By 1851 the Townships, in general, were not yet economically developed and prosperous. One would expect that the relatively diminutive nature of the charges for the acquisition of Township land permitted the typical

settler to adopt new agricultural technology when required and to utilize any surplus output to trade with other settlers. One would expect a region or regions where the peasantry were in control of their surplus output to develop a market. [58] But this would take time. Thus one would expect the more established Townships to be relatively prosperous. In fact, this is what Macdonald finds to be the case: [59]

> "It may in fact be safely said that whatever improvements were visible, were largely due to the influx of American settlers and capitalists- more familiar with clearing waste lands- who settled, often unceremoniously, during the early years of the 19th century on the south side of the St. Lawrence, on townships bordering the frontier line, where their enterprise improved the country more in one generation than the habitants in a century."

Moreover, one would expect the settlers in the Townships of French-Canadian origin to be the most unproductive and impoverished. This would not be a result of any cultural obstacle to technical innovation in agriculture on the part of the French-Canadian peasant. Rather, it would be the result of the impoverished state of these individuals emmigrating from the seigniories, where falling productivity and high seigniorial due left them in debt or at best with little or no capital to start up a new farmstead in the Townships.

Using the 1851 census material Frank Lewis and Marvin McInnis attempt to determine whether the English-speaking farmers were more efficient than their French-speaking counterparts, in terms of total factor productivity. Strictly speaking, what Lewis and McInnis are asking is, were the English-speaking farmers producing a greater value of output per unit of input than were their French-speaking counterparts?

By itself, this question is irrelevant to an understanding of the problems in Lower Canadian agriculture in the first half of the nine-

teenth century. But Lewis and McInnis claim that the leading analysts of Québec economic history attribute the crisis that engulfed the agricultural sector of nineteenth century Québec to the utilization, by the typical French-Canadian peasant, of primitive agricultural technology. This technology was used as a result of the "...self-protective, inwardlooking nature of French-Canadian culture, in the esprit paysan of the habitant on which Séguin places so much stress." [61] Lewis and McInnis argue that the leading analysts have suggested that if the French-Canadian peasant learned from the "patently better practice of the English" there would have been no agricultural crisis. [62] Thus, if it were found that the English-speaking farmers were no more 'efficient' than the French-speaking farmers, the culture of the French-speaking farmer would be shown to have been irrelevent to the evolution of an agricultural crisis in Québec. [63]

As we have already demonstrated, only Fernand Ouellet attributes the crisis of Québec agriculture to the 'mentalité' of the French-speaking farmer. Maurice Séguin certainly does not.[64] Curiously enough, Lewis and McInnis offer no documentation to back up their claim that Séguin supports the cultural interpretation of the agricultural crisis. [65] By showing that the English-speaking farmers are as 'efficient' as their French-speaking counterparts, Lewis and McInnis cannot refute the cultural interpretation. For one may then argue that the English-speaking farmers had the same backward 'mentalité' as did the French-Canadian farmers.

We have already demonstrated, in this essay, that the censitaire could not have adopted the more intensive agricultural technology even if he/she desired to do so.[66] The settlers of the Townships did not face economic payments which were as burthensome as those faced by the censitaires.

But it is clear that the more recent settlers, who were the majority, required much capital and effort to establish a prosperous agricultural operation. The earlier settlers had already achieved this task.[67] So, although if it can be shown that the English-speaking farmer was no more 'efficient' than the French-speaking farmer one cannot thereby refute the cultural interpretation of the agricultural crisis of Québec, one can argue that the English-speaking farmers were in the same predicament as the French-speaking farmers. This would suggest that the manner in which the Townships were organized contributed to the initial poverty of the mass of the settlers in the Townships.

Lewis and McInnis estimate 'efficiency' using a production in 'Cobb-Douglas' form. They begin with the general form equation:

(1) $Q = AL^{\alpha} K^{\beta} T^{\gamma}$ where $\alpha + \beta + \gamma = 1$

The symbols Q, L, K, T, and A represent output, labour, capital, land, and total factor productivity respectively. The superscripts alpha (α), beta (β), and gamma (γ) represent the share of labour, capital and land in output. Since these superscripts sum to 1, the assumption of constant returns to scale is being made: a proportionate increase in factor inputs give rise to a proportionate increase in output. All inputs and outputs of the model are estimates, and are estimates made in terms of estimated prices.[68]

The model used to estimate relative efficiency is given the following form:[69]

(2) $$\frac{A_f}{A_e} = \frac{Q_f}{Q_e} \left[\left(\frac{L_f}{L_e} \right)^{\alpha} \left(\frac{K_f}{K_e} \right)^{\beta} \left(\frac{T_f}{T_e} \right)^{\gamma} \right]^{-1}$$

The subscripts f and e represent French and English-speaking districts respectively. Equation 2 is derived from equation 1 above. Both French

and English-speaking districts are assumed to have the same values for the subscripts alpha, beta and gamma: the share of labour, capital and land in output respectively. The $\frac{A_f}{A_e}$ component of the equation is the measure of relative total factor productivity or relative efficiency of French and English-speaking districts. When the $\frac{A_f}{A_e}$ coefficient equals 1, it is assumed that the French-speaking districts are as efficient as the English-speaking districts. When the coefficient is equal to a number greater than 1, it is assumed that the French-speaking districts are more efficient than the English-speaking districts. Finally, when the coefficient is less than 1, it is assumed that the French-speaking districts are less efficient than the English-speaking districts.

The estimates which Lewis and McInnis calculate for the $\frac{A_f}{A_e}$ coefficient indicate that the French-speaking districts were only slightly less efficient than were the English-speaking districts.[70] Lewis and McInnis also find that outputs per unit of land were higher in the French-speaking districts than in the English-speaking districts.[71] These results suggest that the Townships were no more able to provide the means for the farmer to break out of the agricultural crisis than were the seigniories.

For the purpose of this essay it would be more meaningful if we examined the relative 'efficiency' between Townships and seigniories, French-speaking and English-speaking districts within the Townships and within the seigniories and the English-speaking districts within the Townships and the seigniories in general. In this manner we can determine whether a relationship exists between economic institutions (Townships

versus seigniories) and economic 'efficiency' and between English and French-speaking districts independent of economic institutions, exempli gratia, whether there exists a difference in economic 'efficiency' between English and French-speaking districts within the Townships.

In place of attempting the above utilizing the econometric device employed by Lewis and McInnis, which requires careful 'massaging' of the data, we will make our estimates directly from the available data. This will preclude otherwise possible and unavoidable biases in our estimates. Our estimates should be even more accurate than those derived by Lewis McInnis.

Lewis and McInnis modify the data given by the census in a manner which considerably biases their estimates in favour of a relatively higher output per unit of land in the French-speaking districts. They argue that in most French districts the census has listed, what was originally recorded as arpents and minots, as acres and bushels. This point is made without any documentation. [72] Lewis and McInnis argue that since 1 minot equals 1.107 bushels and 1 arpent equals 0.845 of an acre, "1 minot per arpent is more than 30 percent greater than 1 bushel per acre." [73] For this reason all data on the output of the land, in French-speaking districts, are modified so that output per unit of land, as calculated by Lewis and McInnis for the French-speaking districts, are more than 30 per cent greater than when calculated directly from the census material.

Lewis and McInnis are correct in arguing that an arpent is equal to about 0.845 acres. I calculate an arpent to be equal to 0.848 acres. [74] But Lewis and McInnis are incorrect in arguing that one minot equals 1.107 bushels. They must be referring to the French minot as opposed to the minot Canadien which equals 1.0052 bushels. [75]

All estimates which we make that pertain to output per unit of land are presented in two series: one with the data as presented in the census, the other, with the data modified to take into consideration the downward bias against the French-speaking districts' productivity per unit of land made by the census authorities by recording arpents as acres.

The data available in the census of 1851 permits us to make estimates of output per unit of land for wheat, peas, oats and potatoes. We can also estimate the productivity of the milch cows using the data on the number of milch cows and the amount of butter and cheese produced.[76] These estimates are presented in Table 15.

Lewis and McInnis made an attempt to estimate the value of output per unit of input. Since it is not possible to obtain data on the value of inputs we have estimated the value of output per typical family farm. Included in the value of output are only the value of wheat produced and the value of butter and cheese produced. We assume that other outputs, such as oats, peas, potatoes, clover and hay etcetera, were produced to feed members of the peasant family and livestock. The wheat and dairy produce we assume were produced primarily for the market.[77] We assume the price of wheat to have been $1.00 per bushel and the price of butter and cheese to have averaged 25¢ per pound in the 1850's.[78] These estimates are presented in Table 16.

Productivity per unit of land is higher in the English-speaking districts than in the French-speaking districts[79] in the production of wheat, by 41 per cent; peas, 15 per cent; and oats, by 31 per cent. The English-speaking districts were less productive in the production of potatoes by 7 per cent. And this, after revising the data so as to compensate the French-speaking districts for the bias contained in the

Table 15

Productivity in Lower Canada (1851), all counties [1]

A

1 Output		2 English districts	3 French districts	3a [2] revised data	4 % difference: columns 2 & 3 ((2-3) ÷ 3)	4a % difference: columns 2 & 3a ((2-3) ÷ 3a)	5 Townships	6 Seigniories	6a revised data
(i) wheat	(bu. per acre)	11.3	06.8	08.0	66.1 %	41.3 %	10.5	06.3	07.4
(ii) peas	" " "	11.1	08.2	09.7	35.4	14.8	09.7	09.0	10.6
(iii) oats	" " "	21.9	14.2	16.7	54.2	30.9	20.2	14.5	17.1
(iv) potatoes	" " "	63.9	58.0	68.4	10.2	-07.0	62.7	58.3	68.7
(v) butter & cheese	(lbs. per milch cow)	69.8	27.7	——	152.0	——	58.8	28.5	——

		7 % difference: columns 5 & 6 ((5 - 6) ÷ 6)	% difference: columns 5 & 6a ((5 - 6a) ÷ 6a)
(i) wheat	(bu. per acre)	66.7 %	41.5 %
(ii) peas	" " "	07.8	-08.5
(iii) oats	" " "	39.3	18.2
(iv) potatoes	" " "	07.5	-10.3
(v) butter & cheese	(lbs. per milch cow)	106.0	——

B

1		2 Townships: English districts	3 Townships: French districts	4 % difference: columns 2 & 3 ((2 - 3) ÷ 3)	5 [3] Seigniories: English districts	5a revised data	6 Seigniories: French districts	6a revised data
(i) wheat	(bu. per acre)	12.1	08.5	42.3 %	09.5	11.2	06.2	07.3
(ii) peas	" " "	11.3	06.8	66.2	07.9	09.3	07.3	08.6
(iii) oats	" " "	25.0	15.7	59.2	19.6	23.1	13.7	16.1
(iv) potatoes	" " "	72.7	48.4	50.2	64.4	75.9	54.4	64.1
(v) butter & cheese	(lbs. per milch cow)	72.6	19.6	270.0	43.9	——	28.3	——

Table 15 (continued)

C 1 Output		2 % difference: columns 5B & 6B ((5 - 6) ÷ 6)	3 % difference: columns 2B & 5B ((2 - 5) ÷ 5)	3a % difference: Columns 2B & 5aB ((2 - 5) ÷ 5)	3b % difference: columns 2B & 6A ((2 - 6) ÷ 6)	4 % difference: columns 3B & 6B ((3 - 6) ÷ 6)
(i) wheat	(bu. per acre)	52.6 %	27.4 %	08.0 %	63.5 %	37.1 %
(ii) peas	" " "	08.3	43.0	24.4	06.6	-06.8
(iii) oats	" " "	43.1	27.5	08.2	46.2	14.6
(iv) potatoes	" " "	18.3	12.9	04.2	05.7	-11.0
(v) butter & cheese	(lbs. per milch cow)	55.1	65.4	——	154.7	-30.1

Output		4a % difference: columns 3B & 6aB ((3 - 6) ÷ 6)
(i) wheat	(bu. per acre)	16.3 %
(ii) peas	" " "	-21.0
(iii) oats	" " "	-02.8
(iv) potatoes	" " "	-24.5
(v) butter & cheese	(lbs. per milch cow)	——

Notes

1. There are 38 counties listed in the 1851 census. We exclude from our calculations the county of St. Maurice, which contains 14 of the 478 counties listed in the 1851 census. This county was excluded since the data for it were unreliable.

2. In the 1851 census all datum is listed in terms of acre(s) and bushel(s). But, the original datum is recorded in terms of arpent(s) and minot(s) in many of the seigniories and in terms of acre(s) and bushel(s) in the Townships, without the arpent and minot figures being converted into acre and bushel terms. Since one acre equals 1.17869 arpents and one minot Canadienne equals 1.00052 Imperial bushels, the listing of arpent(s) and minot(s) as acre(s) and bushel(s) serve to underestimate by approximately 18 per cent any bushel(s) per acre calculation for seigniories and thus for the French-speaking districts. The revised data is inclusive of the conversion of arpents into acres. The minot figures are left as is.

Table 15 (continued)

3. The only counties where English-speaking seigniorial districts were found are: Ottawa, Québec, Rouville and Two Mountains. The English-speaking and French-speaking districts of columns 5B and 6B are taken from these counties. The production calculations made for the seigniories of column 6B are consistent with the production calculations made for the seigniories of Lower Canada as a whole (column 6, panel A).

Sources: (i) Bélisle, Dictionnaire Générale de la Langue Française au Canada, Bélisle Editeur Inc., Québec, 1971; (ii) 'Census of Origins', Census of the Canadas, vol. 1, 1851-52, Québec 1853; (iii) 'Census of Agricultural Produce', Census of the Canadas, vol. 1, 1851-52, Québec 1853; (iv) William D. Johnstone, For Good Measure; (v) 'Appendix to the Report on the Affairs of British North America', document nos. 3, 8, 9 and 10. These list the Townships of Lower Canada. Found in Report on the Affairs of British North America from the Earl of Durham with Appendices, 1839; (vi) Report of the Commissioners Appointed to Inquire into the State of the Laws and other Circumstances Connected with the Seigniorial Tenure in Lower Canada, appendix F, 1844. Contains a list of the seigniories granted in Lower Canada; (vii) Edward Zapko, A Dictionary of English Weights and Measures.

census material.[80] In the production of butter and cheese per milch cow the English-speaking districts of Lower Canada were 152 per cent more productive than the French-speaking districts. These results contradict the estimates arrived at by Lewis and McInnis. It is clear that output per unit of land was higher in the English-speaking districts than in the French-speaking districts.[81] And our estimates are more comprehensive than Lewis' and McInnis' in that they derive their estimates from a sample region consisting of 212 of the 478 districts listed in the census, whereas we derive our estimates from all the districts listed in the census but for those districts in the county of St. Maurice for which the data is unreliable. This county contains only 14 districts.

Using the revised census material it is clear that the Townships were more productive than the seigniories in the production of wheat, by 41 per cent, and in the production of oats, by 18 per cent. In the production of peas and potatoes the seigniories were more productive than the Townships by 8 and 10 per cent respectively. But in the production of butter and cheese the Townships were more productive than the seigniories by 106 per cent. It is clear that there existed a greater productivity differential between linguistic groups (the English and the French), than between landholding systems (the seigniorial and freehold).

But if we divide the Townships into English-speaking and French-speaking districts we come upon two very important facts. The first is that the English-speaking districts within the Townships were much more productive than the French-speaking districts within the Townships. The English-speaking districts were more productive by 42 per cent for wheat, 66 per cent for peas, 59 per cent for oats, 50 per cent for potatoes and 270 per cent for butter and milk. The second fact is that the English-

speaking districts within the Townships were considerably more productive than the seigniories than were the Townships per se. They were more productive by 64 per cent for wheat, 6.6 per cent for peas, 46 per cent for oats, 6 per cent for potatoes and 155 per cent for butter and cheese. Apart from this, the English-speaking districts in the Townships were even more productive than the English-speaking districts per se. It appears, that by 1851, the freehold system of land tenure had a positive effect only upon the English-speaking farmers. Whereas the French-speaking districts within the Townships were even less productive than the seigniories.

Within the seigniories we find that the English-speaking districts were more productive than the French-speaking districts. On the other hand, the English-speaking districts within the Townships were more productive than the English-speaking districts within the seigniories, but only slightly so. [82]

In terms of the 'marketable' value produced per typical peasant farm, the English-speaking districts produced a value of output 31 per cent greater than that produced in the French-speaking districts.(Table 16). The Townships, on the other hand, produced a value of output per typical farm that was 5 per cent less than that which was produced in the seigniories. But if we compare the value of output produced in the English-speaking districts of the Townships to that produced in the seigniories, we find that the English-speaking districts of the Townships produced 25 per cent more in terms of value than did the seigniories. The English-speaking districts of the Townships were more productive, in terms of value, than their French-speaking counterparts by 351 per cent.

Within the seigniories, the English-speaking districts were more productive, in terms of value, than the French-speaking districts by 22

Table 16

Prosperity in Lower Canada (1851): [1]
with reference to the production of wheat, butter and cheese

1 District or Region	2 Value of output per typical farm [2]	3 No. of family farms	4 % difference between the value of output in district or region (i) and (ii)
A			
(i) English	$81.46 or L17 12s 11.9d [3]	11,369	31 %
(ii) French	$62.15 or L13 9s 4d	65,626	
B			
(i) Townships	$61.12 or L13 4s 10d	22,714	- 4.7 %
(ii) Seogniories	$64.16 or L13 18s 3d	69,809	
C			
(i) English Townships	$79.99 or L17 6s 7d	10,020	351 %
(ii) French Townships	$17.74 or L3 16s 10d	4,956	
D			
(i) English Seigniories	$82.06 or L17 15s 7d	1,639	22 %
(ii) French Seigniories [4]	$67.06 or L14 10s 7d	5,901	
E			
(i) English Townships	$79.99 or L17 6s 7d	10,020	25 %
(ii) Seigniories	$64.16 or L13 18s 3d	69,809	
F			
(i) English Townships	$79.99 or L17 6s 7d	10,020	- 2.5 %
(ii) English Seigniories	$82.06 or L17 15s 7d	1,639	

Table 16 (continued)

Notes

1. For the purpose of our calculations wheat was evaluated at 1 dollar or 4s 6d or 6 livres per bushel. Butter and cheese was evaluated at 25 cents or 1s 1.5d or 30 sols a pound. Refer to Jacques Letarte and Fernand Ouellet for sources. We assume that oats is an input in the production of butter and cheese, it being used as a cattle feed.
2. We assume that what the census of 1851 refers to as occupiers of the land can be taken to indicate the number of family farms.
3. $1.00 = 4s 6d; L1 = 20s, 12d = 1s.
4. Only those seigniories are included here which are located in the districts where English-speaking seigniories are found. These are the districts of Ottawa, Québec, Rouville and Two Mountains.

Sources: (i) Refer to Table 15; (ii) Jacques Letarte, Atlas D'Histoire Economique et Sociale du Québec, p. 7; (iii) Fernand Ouellet, Histoire Economique et Sociale du Québec, 1760-1850, pp. 603 and 606.

per cent. The English-speaking districts within the seigniories were even as productive, in terms of the value of output produced, as were the English-speaking districts within the Townships.

The English-speaking districts per se and the English-speaking districts within the Townships were more productive than the French-speaking districts, both in the seigniories and in the Townships. They were more productive in terms of output per unit of land, output per milch cow and the 'marketable' value per typical family farm. Our estimates are in no way consistent with those deduced by Lewis and McInnis. It is quite possible that the 'massaging' of the data, required by their use of econometrics and their assumption that a minot equals 1.107 bushels biased their estimates.

It is not surprising that the English-speaking districts were more productive than the French-speaking districts. Most English-speaking farmers were settled in the Townships where the cost of acquiring land was much less than in the seigniories. For the same reason it is not surprising that the English-speaking districts within the Townships were the most productive of the districts in Lower Canada, although in terms of the value of output produced per typical farm the English-speaking districts within the seigniories were as productive.

In this essay we have shown that the censitaires did not have the economic surplus to invest in more intensive agricultural technology as a result of the seigniorial charges. Why then were the French-speaking districts within the Townships the least productive of the districts in Lower Canada? As opposed to many of the English-speaking settlers of the Townships, the French-speaking settlers came from the seigniories with little or no savings. In fact, most of the French-speaking settlers

in the Townships were heavily in debt.[83] Apart from this, the Townships were without a proper system of communications. The French-speaking settler had to overcome both of these factors if he/she was to establish a productive and prosperous farm. One would expect that this would have required many years of hard work. But by 1851 the French-speaking settler would still have been considered as a recently established settler in the Townships. Possibly not enough time had yet passed for the French-speaking settler to overcome the problems faced in settling the Townships. But more important, it is probable that not enough time had passsed for the French-speaking settler to overcome the shortage of capital inherited from life under the seigniorial system of land tenure.[84]

Many of the English-speaking districts were settled since the early nineteenth century. Many of the English speaking districts were settled by individuals with some capital and with knowledge of the more advanced techniques of agricultural production. These settlers had an advantage over their French-speaking counterparts. What Theo L. Hill writes with relation to the Townships of the Stanstead Plain, settled by Americans, pertains to the more established English-speaking districts of the Townships in 1851:[85]

> "Settlement on Stanstead Plain was about thirty years in advance of settlement in Megantic county so that the log cabin and tree stump cultivation so typical of the pioneer 'front' was not so typical of Stanstead Plain in 1830. On many farms in Stanstead County the greater part of the forest cover had been removed, stumps had already disappeared, permanent pasture had been sown, gardens and orchards developed and farm buildings erected. In Megantic County, particularly along the banks of the Becancour River, a considerable number of recently arrived settlers were sowing their first crops in rough clearings, living in tents and putting in what little spare time they had on the improvement of roughly formed roads."

Our analysis of the 1851 census material corroborates our inferance that the seigniorial system of land tenure severely inhibited the ability of the typical censitaire to adopt the more intensive techniques of agricultural production. The Townships, where the freehold system of land tenure prevailed, we found to be related to a more productive farm. What at first appears to be the exception to the rule: the French-speaking districts in the Townships, proves to be the exception that 'proves' the rule. The French-speaking districts in the Townships were relatively very unproductive, not as a result of the economic constraints imposed by the freehold system of land tenure, but rather, and most probably, as a result of the economic constraints of the seigniorial system of land tenure under which the French settler had previously lived.

In spite of the problems faced by the settler in the Townships, which was in part a result of government policy, the English-speaking districts had become by 1851 the most productive and prosperous in the Lower province. The seigniories, situated for the most part on the most fertile land in the province and along excellent natural lines of communication, had many years to develop economically. But, by 1851 they were relatively unproductive and impoverished.

(vi) The censitaire and the seigniorial tenure

We have argued that the typical censitaire was rational; that it was not the 'mentalité' of the typical censitaire which caused the lack of intensive agriculture and thus the falling productivity of the soil. Rather, we have argued that it was the economic burden imposed by the seigniorial system of land tenure which largely prevented the censitaire from improving the state of agriculture. This would not be consistent with an attitude

on the part of the typical censitaire supportive of the seigniorial system of land tenure as it was then practised. But McCallum and Séguin argue the censitaire preferred the seigniorial system of land tenure. [86] How could the censitaire be rational and at the same time be supportive of a system of land tenure which was an important cause of their poverty?

Frère Marcel-Joseph, analysing the question of whether or not the censitaire desired the continuation of the seigniorial system during the early nineteenth century, concludes that by the 1820's the censitaire was in favour of the seigniorial system, but without any of its economic burdens and obligations. [87]

On the 16th of March 1825, the first petition was presented to the Legislative Assembly of Lower Canada by "divers Censitaires possessors of Land en roture in this Province" protesting the "abuses" of the seigniorial system by the seigniors. The abuses which the censitaires claim consist of the following: (i) the refusal of the seignior to concede woodland to the censitaire; (ii) the selling of wild land by the seignior, in violation of the Arrêts of Marly of 1711; (iii) the granting of more than one deed of concession for a specific lot of wood-land; (iv) the seignior's stripping of wild land of most of its timber prior to the granting of the wild land; (v) the prohibition of the selling, by the censitaire, of timber taken from his/her concession and the requirement that the censitaire get permission from the seignior to make domestic use of the timber found on the conceded land; (vi) the lack and poor quality of banal mills; (vii) the rapid increase in the cens et rentes. The censitaires do not demand the abolition of the seigniorial tenure. But they demand the draconian reform of the system. [88]

By the time of the rebellion in Lower Canada of 1837, there was growing support amongst the censitaire for the abolition of all seigniorial dues.[89] This was in part indicated by the position the leaders of the rebellion were forced to take in relation to the seigniorial tenure. Georges Baillargeon:[90]

> "A St.-Eustache, les chefs révolutionnaires font marcher leurs hommes en leur promettant d'abolir les redevances seigneuriales. Robert Nelson fait même promesse au peuple en 1838. Et quand ces chefs promettent d'abolir les lods et ventes et cens et rentes, ils veulent réellement dire ôter sans donner de compensation, déclarer que cela n'existe plus. La proclamation de Robert Nelson dit que la tenure seigneuriale est abolie comme si elle n'avait jamais existé dans ce pays et que tous ceux qui aideront la cause de la rébellion seront déchargés de leurs arrérages envers leurs seigneurs. Ces promesses d'abolition sans indemnité aux seigneurs flattent le peuple. Ce dernier en vient à rêver d'une vie plus facile où il n'aurait plus rien à payer au seigneur. Il se fait à l'idée que les charges seigneuriales peuvent être supprimées d'un trait de plume de la part du gouvernement et qu'il est possible d'obtenir ce résultat à force de le demander."

But Baillargeon argues that even by 1843 at least half of the censitaires were not dissatified with the seigniors and did not want a change. Baillargeon claims that this is clear if one examines the appendix of The Report of The Commissioners of 1843.[91] However, Baillargeon is incorrect in his assessment of The Report. The commissioners had questions submitted to various seigniories to be answered by the censitaires. Of those who replied, 52.9 per cent desired the end of the seigniorial system at a 'reasonable' rate of commutation; 11.8 per cent demanded a different system of land tenure or the seigniorial system at the 'ancient' rates; and 17.6 per cent preferred the seigniorial tenure, but requested its reform; 5.9 per cent preferred the seigniorial system only

if the seignior conceded wild land as opposed to selling it; another 5.9 per cent did not indicate a preference for any system of land tenure so long as the tenure adopted charged 'reasonable' rates; finally, 5.9 per cent wanted to maintain the seigniorial system, but minus all seigniorial exactions. [92]

Although it is quite possible that most censitaires preferred to abolish all seigniorial exactions without any 'compensation' to the seigniors, [93] it appears that most censitaires were willing to make some payment to the seigniors, but only a very minimal one. [94] The censitaires formed an association in 1848 to fight for the the abolition or reform of seigniorial dues. In 1848, this association presented a petition to the Legislative Assembly which demanded "soit une réforme soit l'abolition de la tenure seigneuriale." This petition was signed by 32,700 individuals. [95] It was desired to reduce the economic burden of the seigniorial tenure to what it was under French rule according to the perceptions of the censitaires. [96] Apart from this petition, many others were presented to the Legislative Assembly throughout the 1840's. These have been printed in the Journals of the Legislative Assembly. [97]

The government tried to stall on reforming the seigniorial system. Finally, in 1854, the election was fought over the issue of the abolition of seigniorial dues. The party promising the abolition of seigniorial dues won. The seigniorial system was abolished, but the seigniors were granted an indemnity for their lost privileges. [98] The censitaire were obliged to pay the seignior a per annum rent of $212,795 in place of all seigniorial charges. [99] This rented constituted 6 per cent of the estimated value of the censitaires holdings. By paying the value of the land to the seignior the censitaire would be free from paying any rent. The per

annum rent per typical farm, we estimate to have been $2.24 or 9s 8d. To commute the rent would have cost the typical censitaire $37.71 or L8 3s 5d. [100]

Although some censitaires desired the abolition of the seigniorial system, while others demanded 'only' the abolition of seigniorial exactions, and still others demanded the reduction of seigniorial exactions to the point where they no longer found them to be an economic burden, the vast majority of censitaires were not satisfied with the manner in which the seigniorial system of land tenure functioned. From an economic point of view it is irrelevant whether or not the censitaires desired to maintain the seigniorial tenure, if the maintenance of that tenure was inclusive of the elimination of seigniorial exactions to the extent necessary, from the censitaires' point of view, to permit the development of a productive farm. The censitaires acted in a rational fashion in pressuring for the abolition or substansive reformation of the seigniorial system of land tenure. Some censitaires may have preferred the seigniorial tenure, but one which bore no relationship to the seigniorial tenure of nineteenth century Québec.

(vii) Summary

We have found that the seigniorial exactions upon the income of the typical censitaire to have been sufficiently burthensome to have seriously impeded the censitaire from adopting the more intensive techniques of agricultural production. By the late 1820's the censitaire would have found it quite difficult to alter the farming technology in use. Thus even if the censitaire desired to engage in a more intensive agricultural practice, it would not have been possible for him/her to do so.

Ouellet's cultural explanation for the falling productivity of

Québec's agricultural sector is challenged in another manner by Lewis and McInnis who argue that using econometric techniques they have found that the English-speaking farmers were only insignificantly more 'efficient' than their French-speaking counterparts. If Lewis' and McInnis' estimates had been accurate, all they would have indicated is that the English-speaking farmers were victims of the same backward 'mentalité' which Ouellet claims to have been the monopoly of the French-speaking farmers. However, we found their estimates to be inaccurate. We found that the English-speaking farmers were more productive and prosperous than the French-speaking farmers. Evidence strongly suggests that the seigniorial tenure served to lessen the productivity of the French-speaking districts, whereas the the freehold system had the opposite affect upon the English-speaking districts. The French-speaking farmers in the Townships registered a relatively low productivity as a result of these settlers emigrating from the seigniories without capital.

The censitaires reacted against the economic oppression of the seigniorial tenure as employed in nineteenth century Québec by working towards its substansive reform or abolition without compensation to the seignior. Their efforts were made good in 1854 when the seigniorial tenure was finally abolished. But the censitaires ended up with an abolition not to their satisfaction. They were forced to compensate the seigniors for their loss of privileges. But the compensation paid to the seigniors, in terms of an annual rent, was much less burthensome than what they were previously obliged to cede to the seigniors.

FOOTNOTES

1. For a discussion of the seigniorial dues refer to Chapter Four.

2. McCallum, John C.P., Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1870, p. 133.

3. Ibid.

4. Ibid.

5. Evans, William, Supplementary Volume to a Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture, pp. 45 and 65.

6. We have shown that Séguin was incorrect to argue that real rents did not rise since prices rose at about the same rate as the rents. In fact, prices did not follow the same pattern as did the rents. Refer to Chapter Four, section on cens et rentes.

7. Séguin, Maurice, Le Nation "Canadienne" et l'Agriculture (1760-1850), p. 181.

8. Ibid., p. 141. Séguin had argued that the lack of sufficient markets was the fundamental cause for the poverty of agricultural technology in use in nineteenth century Québec.

9. Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, pp. 275, 276, 278, and 354.

10. Ibid., p. 465. Refer also to p. 277.

11. Refer to Chapter One, section (i) for details on Ouellet's interpretation.

12. The Report of the Commissioners Appointed to Inquire into the State of the Laws and Other Circumstances Connected with the Seigniorial Tenure in Lower Canada, 10th page of the report.

13. Pilon-Lê, Lise, "Le Régime Seigneurial au Québec: Contribution à une Analyse de la Transition au Capitalisme", p. 147. Refer also to p. 161. Pilon-Lê, generalizing what she claims to be the case in one seigniory, claims that the seigniorial rent increased fourteen fold from the eighteenth to the nineteenth century. No source is quoted for this finding, p. 146.

14. An argument similiar to the one made by Pilon-Lê is put forth by Paul Phillips in "Land Tenure and Economic Development: A Comparison of Upper and Lower Canada". Phillips argues that the agricultural collapse in Lower Canada was occasioned by "both the special circumstances of the crop failures combined with the lack of alternative cash markets, and a form of land

of land tenure which provided little incentive for accumulation of capital or the improvement of land or methods by the Habitants." Phillips' argument differs from Pilon-Lê's largely because he places emphasis on factors other than the seigniorial system of land tenure as well.

15. For details refer to Chapter Four, the section on the cens et rentes.

16. Table 14, Lines 6 and 10.

17. Table 14, Lines 6, 10 and 11.

18. Our estimate of economic surplus is inflated since it is inclusive of the grains required as livestock feed.

19. Refer to Chapter Six, Table 2.

20. Reid, Stanford W., "The Habitant's Standard of Living on the Seigneurie des Mille Isles, 1820-50", pp.227-228.

21. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside; The Plan of John Neilson, Appendix A of Appendix R of the Appendix to the Journals of the Legislative Assembly of Lower Canada, Vol. 33, 1823-24.

22. Evans, William, Supplementary Volume to a Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture, p. 156. Evans finds that on a farm of 100 acres it is sufficient to keep three horses to work the land. But this was only when the soil was not of a heavy sort, which typified the soil of the seigniories. Where there was a heavy soil, Evans suggests that a yoke of oxen or more replace one the horses. For the price of horses refer to, Report of the Special Committee on the State of Agriculture in Lower Canada of 1850. Report of David Handyside.

23. Ibid., David Handyside.

24. Ibid.

25. Ibid.

26. Ibid. All of the prices quoted from Handyside are 1850 prices.

27. Report of the Special Committee on the State of Agriculture in Lower Canada of 1850, Appendix TT, letter from G.A. Marchand.

28. The Report of the Commissioners Appointed to Inquire into the State of the Laws and other Circumstances Connected with the Seigniorial Tenure in Lower Canada, Appendix F, 1843.

29. Letters From the Curates of the Respective Parishes of Lower Canada, printed by order of the House of Assembly of Lower Canada, 1823. For an opinion of the seigniors' treatment of the question of road construction refer to: Macdonald, Norman, Canada: Immigration and Colonization, 1841-1903, p. 21.

30. Chabot, Richard, Le Curé de Campagne et la Contestation Locale au Québec de 1791 aux Troubles de 1837-38, p. 48

31. Ibid., pp. 65, 67 and 68.

32. Ibid., p. 69.

33. Ibid., pp. 80-81.

34. Duby, Georges, The Early Growth of the European Economy, p. 211. Duby argues that the seignior could invest indirectly by reducing the seigniorial exactions upon the censitaire. This would make more resources available to the censitaire for the purpose of investment.

35. McCallum, John C.P., Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1870, p. 33

36. The Canadian Census, 1870-71, Vol. 4, p. 83.

37. We assume that the size of the typical peasant family was six individuals.

38. For the Township population in 1836 refer to the First Report of the Standing Committee on Lands and Seigniorial Rights, testimony of Amury Girod, Appendix EEE.

39. Census of the Canada, Vol. 1, 1851-52, p. 101.

40. Macdonald, Norman, Canada, 1763-1841, Immigration and Settlement: The Administration of the Imperial Land Regulations, p. 294.

41. Ibid., p. 313. Macdonald is quoting from a report of Mr. John Richards of January 1831.

42. Billington, Ray Allen, "The Origin of the Land Speculator as a Frontier Type", p. 211.

43. Macdonald, Norman, Canada, 1763-1841, Immigration and Settlement: The Administration of the Imperial Land Regulations, pp. 485 and 502.

44. Lucas, C.P., Lord Durham's Report on the Affairs of British North America, Vol. 3, Appendix B, p. 93.

45. Macdonald, Norman, Canada, 1763-1841, Immigration and Settlement:

The Administration of the Imperial Land Regulations, p. 485.

46. Ibid., p. 294; Macdonald, Norman, Canada: Immigration and Colonization, 1841-1903, p. 22; Lucas, C.P., Lord Durham's Report on the Affairs of British North America, Vol. 3, Appendix B, p. 74.

47. Macdonald, Norman, Canada, 1763-1841, Immigration and Settlement: The Administration of the Imperial Land Regulations, pp. 521-523. Of the 39,163 families who came to the City of Québec between 1817 and 1820, only 100 settled in Lower Canada. Two-thirds of all immigrants to Québec, between 1818 and 1826, eventually went to the U.S.A. And of the 500,000 British who emigrated to British North America between 1830 and 1840, three quarters ended up in the U.S.A. Of all immigrants who first came to British North America found their way to the U.S.A. Refer also to Paterson, Gilbert C., Land Settlement in Upper Canada, 1783-1840, p. 181.

48. Report on the Affairs of British North America From the Earl of Durham with Appendices, The Colonies, Canada, Vol. 2, Appendix B, Minutes of Evidence Taken Before Assistant Commissioner of Crown Lands and Emigration, the testimony of John Davidson, p. 46.

49. Ibid., p. 47 and p. 176 Tables nos. 5 and 6.

50. Ibid., p. 176 Tables nos. 5 and 6. The price of land is determined from the data presented in these tables.

51. Report on the Affairs of British North America From the Earl of Durham with Appendices, The Colonies, Canada, Vol. 2, Appendix B, Minutes of Evidence Taken Before Assistant Commissioner of Crown Lands and Emigration, the testimony of John Davidson, p. 47. Davidson argues that the British North American Company was sold "a great extent of the best land in the country." For a more detailed discussion of the operation of the British North American Land Company refer to Macdonald, Norman, Canada, 1763-1841, Immigration and Settlement: The Administration of the Imperial Land Regulations, pp. 295-97.

52. Ibid., Macdonald, p. 513. William Evans states that Crown land sold at auction for less than five shillings an acre. Refer to his Supplementary Volume to a Treatise on the Theory and Practice of Agriculture, Adopted to the Cultivation and Economy of the Animal and Vegetable Productions of Agriculture, p. 165.

53. Data for the cens et rentes taken from Chapter Four, the section on cens et rentes.

54. Calculations are derived from the data presented in Table 14.

55. We have overlooked the entry fee charged to the censitaire for wild land; the lods et ventes; commutations fines for various

seigniorial exactions, such as the corvée; fines on the censitaire's use of timber on the roture, etcetera.

56. Ouellet, Fernand, Le Bas-Canada, 1791-1840, pp. 241 and 242.

57. Report of the Select Committee Appointed to Inquire into the Causes and Importance of the Emigration which takes place annually from Lower Canada to the United States, Appendix AAAAA, 1849. This committee concludes that settlers in the new Townships emigrate as a result of, "Want of means of communication, or when such do exist, the bad state of repair and keeping up of the roads, the insufficiency of road laws. The insurmountable difficulties resulting therefrom."

58. The Townships were predominantly, although not exclusively, closed off from a market. But there is no reason why a market could not have developed within the Townships. Since the settlers of the Townships were not burdened by seigniorial dues -they only had to pay for the land- the surplus produced could have stimulated demand for non-agricultural goods within the Townships. A portion of the growing population could have then engaged in non-agricultural pursuits. In this way a market for agricultural and non-agricultural goods within the Townships could have been generated. We have noted that Boserup argues that population pressure forces the peasant to adopt more intensive means of agricultural production and that this would require of the peasant more capital and labour time. We have noted that Hymer and Resnick argue that an increase in the time devoted to agricultural production would result in a reduction in the time that the peasant could devote to the production of necessary non-agricultural goods, which they denote as "Z" goods. Once a peasant found that the more primitive agricultural techniques no longer sufficed to maintain the desired level of utility, more intensive agricultural techniques would be adopted (this would typify the behaviour of a peasant free from excessive economic demands from landlord, state or some other 'outside' party). Agricultural production would be increased but the production of essential "Z" goods would decline. This would encourage the peasant to use any surplus of agricultural goods to exchange for "Z" goods. This inturn may encourage the development of specialized producers of "Z" goods. There is no evidence to suggest that the Townships' settlers were not gradually falling into this path of development.

59. Macdonald, Norman, Canada, 1763-1841, Immigration and Settlement: The Administration of the Imperial Land Regulations, p. 498.

60. Lewis, Frank and McInnis, Marvin, "The Efficiency of the French-Canadian Farmer in the Nineteenth Century", refer to p. 498, footnote 3 for their definition of English-speaking.

61. Ibid., p. 498.

62. Ibid.

63. Ibid., p. 513.

64. For details refer to Chapters One and Seven, introductions.

65. Lewis, Frank and McInnis, Marvin, "The Efficiency of the French-Canadian Farmer in the Nineteenth Century", p. 498, footnote 5. Lewis and McInnis quote Ouellet to support their claim that Séguin adheres to the cultural interpretation of the agricultural crisis in Lower Canada. We have found nothing within Séguin's own work to support Lewis' and McInnis' claim.

66. Refer to Chapter Six, summary.

67. This is the argument of both Norman Macdonald and Fernand Ouellet.

68. Lewis, Frank and McInnis, Marvin, "The Efficiency of the French-Canadian Farmer in the Nineteenth Century", refer to pp. 503-505 for details.

69. The equation used by Lewis and McInnis is taken from that presented by Fogel, Robert W. and Engerman, Stanely L., "The Relative Efficiency of Slavery: A Comparison of Northern and Southern Agriculture in 1860", p. 356.

70. Lewis, Frank and McInnis, Marvin, "The Efficiency of the French-Canadian Farmer in the Nineteenth Century", p. 513.

71. Ibid.

72. Ibid., p. 499, footnote 7.

73. Ibid.

74. From Zapko, Edward, A Dictionary of English Weights and Measures.

75. Bélisle, Dictionnaire Générale de la Langue Française au Canada.

76. Although the census does not indicate the amount of liquid milk produced this should not bias our productivity estimates of milch cows in favour of either the French-speaking or the English-speaking districts of Lower Canada since the relevent data is not provided for either group. Only if one group produces more liquid milk than the other will our results be biased.

77. It is obvious that wheat and dairy produce were also consumed on the farm. But comparing the value of wheat and butter and cheese produced in different regions and/or groups permits one to appreciate the extent to which one region and/or group was more prosperous than another.

78. Letarte, Jacques, Atlas d'Histoire Economique et Sociale du Québec,

p. 7; Ouellet, Fernand, Histoire Economique et Sociale du Québec, 1760-1850, pp. 603 and 606.

79. We define English-speaking districts as those where individuals of French-speaking origin compose 20 per cent of the districts' population. French-speaking districts are defined as those where individuals of French-speaking origin compose 80 per cent or more of the districts' population. It appears that Lewis and McInnis use a 10 and 90 per cent boundary respectively. If the English-speaking farmers were more productive than the French-speaking farmers our definition of French-speaking and English-speaking districts, as opposed to Lewis' and McInnis' definition, would bias our estimates for output in the French-speaking districts upwards and for the English-speaking districts downwards. Thus, our productivity calculations are weighted so as to be in line with the estimates made by Lewis and McInnis. For the data refer to: 'Census of Origins', Census of the Canadas, Vol. 2, 1851-52.

80. Refer to Table 15, column four.

81. The main crops in Lower Canada, in 1851, according to the proportion of land under cultivation planted with them were: oats, 16.4 per cent; wheat, 11.4 per cent; peas, 4.5 per cent; and potatoes, 2 per cent.

82. Refer to Table 15, revised data.

83. Blanchard, Raoul, Le Centre du Canada Français, p. 263.

84. Ouellet, Fernand, Le Bas-Canada, 1791-1840, p. 239. Ouellet finds that the French-speaking population of the Townships composed 20 per cent of the total Township population in 1831 and 30 per cent in 1844.

85. Hill, Theo L., "The St. Francis to the Chaudière, 1830 - A Study in the Historical Geography of Southeastern Québec", p. 31.

86. McCallum, John C.P., Unequal Beginnings: Agriculture and Economic Development in Québec and Ontario Until 1870, p. 33.

87. Frère Marcel-Joseph, "Les Canadiens Veulent Conserver le Régime Seigneurial", pp. 503-504. The auther argues elsewhere (p. 498) that the seignior should have been controlled in relation to what they could have demanded of the censitaires; Baillargeon, Georges, "A Propos de l'Abolition du Régime Seigneurial", p. 347. This author claims that prior to 1830 the censitaires preferred the seigniorial tenure.

88. This petition was printed in Journals of the Legislative Assembly of Lower Canada in 1825.

89. Baillargeon, Georges, "A Propos de l'Abolition du Régime Seigniorial", pp. 387-388.

90. Baillargeon, Georges, "La Tenure Seigneuriale A-T-Elle Abolie par Suite des Plaintes des Censitaires?", pp. 66-67.

91. Baillargeon, Georges, "A Propos de l'Abolition du Régime Seigneurial", p. 381.

92. The Report of the Commissioners Appointed Inquire into the State of the Laws and other Circumstances Connected with the Seigniorial Tenure in Lower Canada, Appendix F.

93. Baillargeon, Georges, "La Tenure Seigneuriale A-T-Elle Abolie par Suite des Plaintes des Censitaires?, p. 70; Baillargeon, Georges, "A Propos se l'Abolition du Régime Seigneurial", p. 382.

94. This what we conclude from The Report of the Commissioners of 1843.

95. Baillargeon, Georges, "La Tenure Seigneuriale A-T-Elle Abolie par Suite des Plaintes des Censitaires?", p. 70; Baillargeon, Georges, "A Propos de l'Abolition du Régime Seigniorial", p. 382.

96. Baillargeon, Georges, "La Tenure Seigneuriale A-T-Elle Abolie par Suite des Plaintes des Censitaires?", p. 71.

97. From 1841 to 1851 thirty-seven petitions were presented to the Legilative Assembly of the Province of Canada, the vast majority of which concerned the abolition or reform of the seigniorial tenure. These petitions were printed in the Journals of the Legislative Assembly.

98. Baillargeon, Georges, "La Tenure Seigneuriale A-T-Elle Abolie par Suite des Plaintes des Censitaires?", pp. 72-75; In another work Baillargeon discusses the process by which the seigniorial tenure was abolished in the lands controlled by the Seminanry of Saint-Sulpice in Montréal. The seigniorial tenure was not abolished here until the twentieth century. But this was an exceptional case. Refer to: La Survivance du Régime Seigneurial à Montréal: Un Régime qui ne Veut pas Mourir.

99. Morin, Victor, Seigneurs et Censitaires, Castes Disparues, p. 69.

100. These estimates are made using the data presented in Morin and our estimates for the number of family farms in 1851.

CHAPTER NINE

CONCLUSION

Ouellet would have been correct in concluding that it was the mental outlook of the censitaire which was responsible for the inability of Québec agriculture to break out of its state of decline, if the censitaire had willingly resisted opting for intensive agricultural technology at a time when the censitaire regarded intensive agriculture as the most efficient mode of culture. In such a scenario, the social values of the censitaire would have prevented the censitaire from altering the traditional manner of farming. Here one must assume the existence of a peasantry who would permit their cultural mores to allow the core of their economic existence (agriculture) to collapse.

If we assume that it takes time for people to change the manner in which production takes place: to become convinced that the new way is better for themselves than the old way; the typical censitaire could not have been expected to have altered his/her mode of agricultural production without a time-lag. Poor harvests in one year need not indicate that harvests in future years must be as dismal. In agriculture, ups and downs in production were to be expected. The decline in the productivity of the soil must become evident in the eyes of the censitaire for him/her to alter the mode of culture utilized.

So as to prevent the productivity of the soil from falling or to increase it, would have required the censitaire investing more labour time into the process of agricultural production. More labour would be required to care for the soil and produce the needed agricultural implements. In place of producing the implements on the farm the censitaire could purchase such implements on the market. In this case the censitaire

would be exchanging surplus agricultural output for the agricultural implements which would be produced by relatively skilled workers at a much lower cost than the censitaire could produce them at. In any case, the censitaire requires a surplus of labour time if a more intensive agriculture is to be adopted. If implements and other inputs are to be purchased a surplus of labour time and output would be required.

But, by the time the censitaire becomes aware that change is a necessity the economic surplus produced may have fallen. And if the economic surplus produced does not decline, the economic surplus under the control of the censitaire may have declined. In Lower Canada the typical peasant family had control over an economic surplus probably up to the early 1820's. From this time on it is probable that the censitaire had control over little, and later, no economic surplus.

While the economic surplus produced by the typical peasant family was falling, as a result of the falling productivity of the soil, seigniorial dues consumed an increasing portion of the economic surplus. The seigniorial dues were inelastic downwards. The seigniors took advantage of the rapidly rising population to siphon off as much of the censitaires' income as possible. The colonial authorities did not in any way obviate the actions of the seigniors. This situation differed from that which prevailed under French rule in that although the French colonial authorities did not prevent the seigniors from increasing their exactions from the censitaires, the scarcity of population in combination with censitaires' legal ability to take advantage of the favourable market conditions, served the same end.

It is probable that once the typical censitaire realized that he/she had to invest in new technology, investment became an impossibility as a

result of the seignior's appropriation of the economic surplus. It follows that if the economic surplus was not appropriated, the censitaire would have had the funds with which to invest.

In this context, the absence of seigniorial dues (or at least a substantial reduction in these dues) would have made it possible for a rational censitaire to invest towards the improvement of the state of agriculture. In fact, the censitaires of Lower Canada were demanding either the abolition without compensation or the complete overhaul of the seigniorial tenure. In other words, the economic surplus which went into the construction of mansions for the seignior and ecclesiastical edifices for the Church could have gone into renovating a decaying system of agricultural production. In this sense, our hypothesis that the burden of seigniorial dues and tithe were the significant causal factor in the evolution of a degenerative state of agricultural production in Lower Canada, would be correct.

In Lower Canada we had a situation which resembles somewhat that which existed in other societies, where those who controlled the process of production did not necessarily control the revenue generated through the process of production. Under such circumstances, those controlling the work process may be deprived of the means to maintain the work process in working order. This would result in a breakdown of the process of production. By transferring the economic surplus produced into the hands of those who will not necessarily invest into the work process, production may be stymied. This appears to have been the case in Lower Canada.

We have found that the absence of substantial markets, in itself, cannot be a cause for the degeneration of agricultural production through the falling productivity of the soil. The extent of market can determine

the degree of commercialization of the agricultural sector. It can also determine, to a certain extent, the mix of products produced on the farm. But a less commercialized agricultural sector need not experience falling productivity.

If no market exists(which was certainly not the case in Lower Canada) a purely subsistence agriculture would be generated. In such an extreme case, the productivity of the soil could be kept from falling with the introduction of crop rotation, the ploughing in of green manure (legumes) and the utilization of well preserved barn-yard manure generated by the livestock kept for family needs, all within the confines of subsistence agriculture.

Growing markets existed for Lower Canadian wheat and flour in the first half of the nineteenth century. Internal markets for dairy produce existed, although these were not substantial. Nevertheless, sufficient markets existed to permit the accumulation of capital on the part of the censitaire. This capital, if under the control of the censitaire (which it was not) could have been invested in restoring or increasing the fertility of the soil.

Since the availability of a market or an expanding market are not prerequisites for maintaining or restoring the fertility of the soil, we must conclude that Maurice Séguin's attribution of Lower Canada's agricultural crisis to the lack of markets is seriously flawed. His argument is found to be wanting in factual and logical foundation.

Given the facts at hand, the hypothesis we proposed must be of greater causal significance than the interpretation of events put forth by Ouellet and Séguin. Given that the censitaire was deprived of the economic means with which to regenerate the system of agricultural

production, it was to be expected that the productivity of the soil would eventually fall, no matter how rational or how cultured the censitaire was. For this reason we argue that the seigniorial system of land tenure, as it functioned in the period under study, was a significant causal factor of the decay of agricultural productivity in the first half of the nineteenth century in Lower Canada.

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