

Why was flour of poor quality?

The impact of seigneurial laws and price controls on flour in Quebec during the colonial era*

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Abstract

The literature on Quebec's economic history often portrays its agriculture during the pre-Confederation era as poor. One recurrent problem mentioned in the literature is that the flour produced in the colony was of very poor quality. This judgment was only extended towards flour consumed within the colony and not that exported to foreign markets (where Canadian flour seems to have enjoyed a slightly better reputation even if exports were quite small in terms of volume). This paper tackles the sources of this problem of quality on the domestic market and argues that it arose from a combination of land tenure regulations under the system of seigneurial tenure and of price regulations.

From its settlement in the early seventeenth century to the early days of the Canadian confederation, the predominantly French-speaking province of Quebec was primarily an agricultural society. One recurrent complaint in the colony concerned the quality of locally produced flour, which was held to be of very poor quality. But this concerned only flour found *within* the colony. On foreign markets, the flour produced in Quebec actually had a strong reputation. No papers have addressed the question of why this should have been so despite the importance of this issue to the agricultural economy. The answer that we suggest is of interest to both economists concerned with regulatory issues as well as scholars concerned with early Canadian history.

Micro-economic theory can shed light on the issue. The government of New France, in order to stimulate settlements across the colony, awarded a monopoly over milling to the *seigneurs* of the colony (the landlord who possessed an estate or *seigneurie* granted to him by the crown). In short, only landlords could own mills. Moreover, peasants on a *seigneur's* estate were not permitted to take their grain to a mill other than the landlord's. Moreover, the colonial administration also enacted important price controls both on the milling tolls and on the price of bread. It is argued here that the regulation of the price of bread was an attempt to offset the effects of granting monopoly power to the landlords.

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It is commonly held in micro-economics that firms with market power will distort quality.¹ To extract the most out of consumers, monopolists cannot provide consumers with their individual efficient level of quality even if pricing is non-linear. Quality for all consumers, except those with the most expensive tastes, will be driven downwards. In such cases, regulation, either by setting quality standards or imposing price caps will reduce distortion. For example Crawford and Shum found that, for cable television in the United States, the imposition of local oversight over cable companies with market power led to an increase in the quality of the service.² However, this may not always be the case. In some instances, it is possible for regulation to worsen the situation and increase the size of welfare losses (defined as the as defined by the forsaken gains from too little production). Our analysis of the market for flour in the colony of New France fits such a possibility.

The root of the answer lies in the fact that seigneurial laws forced landlords (who were the only ones allowed to own a mill) to cope with fixed low prices for the transformation of wheat into flour. The monopoly power awarded to them would have created a quality problem, but the enforcement of price controls worsened the situation. Thanks to the possibility of exporting flour at unregulated prices, the landlords of Quebec were incentivized to segment their markets. Peasants would bring their grain to the mill and would receive back very coarse flour. Finer flour would be exported to foreign markets. In the process of producing this higher-quality flour for export, landlords extensively sifted their flour to extract the bran and germ. Since obtaining bran and germ could only occur through proper sifting at the mill, the landlords had a virtual monopoly over these products. These latter two by-products of milling were not subject to price controls and so the landlords gained important profits by increasing the price of both products, which tended to be used as feed for livestock. The production of fine flour being tied to the production of residues, landlords had incentives to produce some fine flour for export, but not in great quantities since they would otherwise eat into their profits from residues. As a result, there were no incentives to produce better-quality flour. More than anything, the high prices and poor quality that peasants complained about were the result of perverse incentives created by the regulatory framework. The root of the problem was in the local monopoly granted to mill-owners, but it was worsened by the price cap.

I

Most of the initial *seigneuries* had *moulins rustiques* (grist mills), which produced flour of very poor quality.³ Guy Frégault points out that in the early 1710s, discontent in the colony was high as a result of both the scarcity of bread and the poor quality of the available bread. He adds that in 1714, 'a delegation of Québécoises [female inhabitants of Quebec City] protested to the Conseil Supérieur against the excessive price and poor quality of bread'.⁴ In 1720, the colonial

¹ Michael Mussa and Sherwin Rosen, 'Monopoly and product quality', *J. Economic Theory* 18 (1978), pp. 301–17.

² Gregory Crawford and Matthew Shum, 'Monopoly quality degradation and regulation in cable television', *J. Law and Economics* 50 (2007), pp. 181–219.

³ Jean-Éric Labignette, 'La farine dans la Nouvelle-France', *Revue d'histoire de l'Amérique française* 17 (1964), p. 492.

⁴ Guy Frégault, *La civilisation de la Nouvelle-France, 1713–1744* (1969), p. 64.

administration complained that flour from the colony was of poor quality because it was often mixed with the residues from milling in order to give it more weight.⁵ This problem still existed in the early nineteenth century when observers complained about the quality of wheat and flour from Canada.⁶ In 1830, Pierre de Sales La Terrière pointed out that while the 'American (that is, United States) flour is fine and white, that of Canada is rather coarse and dark'.⁷ The owner of the *seigneurie* of Terrebonne from 1814 to 1824 and member of the Legislative Council of Lower Canada from 1817 to 1838, Roderick MacKenzie, pointed out in the 1826 appendix to the Journals of the Legislative Council that 'the Canadian farmer of this Province seldom cleans his wheat for his own use, the immense quantity of dirt consequently ground with it, added to the bad yeast employed in baking, make the Canadian country bread dark, heavy and sour, and must render it dietetically injurious'.⁸

Dissatisfaction with the quality of the flour available within the colony forced both the French and British colonial administrations to intervene. Whilst individual markets regulated weights, the first weights and measures laws date from 1730. Clerks were mandated to inspect flour sold in markets designated by the colony – the sole areas where grain could be sold. To ensure the monitoring of quality, itinerant buyers of grain were prohibited under French rule, and the British later made it illegal for the peasants to sell their grain on their way to the city or straight off their boats.⁹ In 1808, the colonial assembly appointed inspectors who would be paid 4*d.* per barrel to scrutinize flour produced outside the colony and 3*d.* per barrel for flour produced in the colony. These fees were later reduced to 2*d.* per barrel regardless of the flour's origin in the 1820s. This led to discontent on the part of merchants and inspectors who felt that a decline in flour exports was partially due to this reduction in the wages of inspectors who could no longer monitor quality properly. In a petition of 1824 directed to the colonial assembly, some merchants requested an increase in the rates offered to inspectors.¹⁰ During the same session of the assembly (a mere four months later), some peasants presented a similar complaint in a petition of their own, where they discussed the 'insufficiency of [...] *banal* mills (with a few exceptions) to manufacture flour fit for exportation'.¹¹ The problem was obviously a large and costly one for merchants. A distinction must be drawn between flour intended for domestic market and flour intended for foreign markets. The descriptions of flour sold *within* Canada paint it as being of poor quality. The flour exported tended to be of better quality although the quantities were never very important.

The literature on this subject has so far not provided convincing explanations for the poor quality of flour *within* Canada. Historians like Fernand Ouellet blame poor farming methods

⁵ Labignette, 'La farine dans la Nouvelle-France', p. 496.

⁶ Pierre de Sales La Terrière. *A political and historical account of Lower Canada: with remarks on the present situation of the people, as regards their manners, character, religion &c &c.* (1830), p. 128.

⁷ Ibid., p. 128. Note that this darkness to the flour would be the result of the incomplete removal of the dirt attached to grains before they were milled.

⁸ Appendix II to the Journals of Legislative Council

of Lower Canada (1826 edn), unpaginated.

⁹ Corrine Beutler, 'Le rôle du blé à Montréal sous le régime seigneurial', *Revue d'histoire de l'Amérique française* 36 (1982), p. 246.

¹⁰ Legislative Assembly of Lower Canada, *Journal of the House of Assembly of Lower Canada, 1st session of the 12th provincial parliament of this province* (1825), pp. 19–20.

¹¹ Ibid., p. 353.

on the part of the peasants.¹² Meanwhile, historians such as Gérald Bernier and Daniel Salée have suggested that the seigneurial system of land tenure incited landlords to hike prices and reduce quality to gouge their tenants.¹³ That being said, the latter authors did not develop their argument, which was understandable given that their concern was not with the functioning of the market.

However, before proceeding to milling, it is proper to point out that the quality of wheat is not at fault. The quality of the flour depends on both the quality of wheat milled and the quality of the milling process. These factors were not perceived as problematic. In report to the House of Assembly in 1816 concerning the state of Quebec's agriculture, a merchant, David Anderson, reported that the 'quality of wheat is perhaps better than the average quality of what is produced in Great Britain: it is not however by any means so good as that cultivated in some counties of England, but superior to that produced in many other parts of the United Kingdom'.¹⁴

II

Any explanation of the poor quality of flour requires a discussion of the legal framework regulating its production. The key element is the system of land tenure. The seigneurial system of Quebec was brought from France in the late 1620s. It was a feudal system whereby a peasant (*censitaire*) had to pay a rent and undertake duties for his landlord (*seigneur*) for a given plot of land. For his part, the *seigneur* also had numerous obligations toward his *censitaires*. The most importance of these was the *banalité* – the obligation to provide milling services for a fixed proportion of the grain brought to the mill. He would own a monopoly right on milling services whereby no one could compete with his mill. He was legally obliged to offer this service, in return for which for which he had a monopoly within his *seigneurie*.¹⁵ Peasants were prohibited from visiting the mills of other *seigneurs*. This led to numerous court cases where *seigneurs* sued their *censitaires* from areas as far apart as Sorel (1730), Demoure (1716), Argenteay (1736) and Rivière du Sud (1742). In general *seigneurs* were very active in the preservation of their monopoly rights.¹⁶ In some instances, the *seigneur* could licence private individuals to build their own mills – but this was rarely done.¹⁷

In any case, this monopoly was a de facto monopoly in another sense: that the great distances between the different *seigneuries* did not allow farmers to travel to exploit lower prices elsewhere.¹⁸ There were also de jure restrictions that would have reinforced this monopoly. Itinerant sellers and buyers were legally prohibited. Itinerant dealers in grain were prohibited

¹² Fernand Ouellet, *Histoire Économique et Sociale du Québec, 1760–1850* (1971).

¹³ Gérald Bernier and Daniel Salée, *Entre l'ordre et la liberté: colonialisme, pouvoir et transition vers le capitalisme dans le Québec du XIXe siècle* (1994).

¹⁴ Legislative Assembly of Lower Canada, *Appendix to the Journal of the House of Assembly, 1816* (1816).

¹⁵ Peasants could buy flour from other *seigneuries*, but they could not take their grain to any mill other than that of their *seigneurie*.

¹⁶ Québec City Archives, Archives du Séminaire de Québec, document series Seigneuries 2, document number 2, 'Observations sur l'opinion énoncé par le juge en chef, en appel, en janvier 1824 au sujet du droit de banalité'; Louise Dechêne, *Le partage des subsistances au Canada sous le régime français* (1994), p. 217.

¹⁷ Gilles Deschênes, *Quand le vent faisait tourner les moulins: trois siècles de meunerie banale et marchande au Québec* (2009), p. 146.

under French rule and the British reinforced them – the end result being curtailments on the ability of individuals to exploit arbitrage opportunities by buying where prices were lower to sell where they were higher.¹⁹

So, in law, landlords were the sole source of milling services in New France and the milling of grain within households was prohibited. Peasants were mandated to bring their grain to their *seigneur's* mill (and not to any other).

In New France, mills were very expensive to build. Correspondence between colonial officials and the royal administration in Paris reveals that the cost of building, repairing and operating a mill in New France was 'double or triple of those in France'.²⁰ This led landlords in Quebec to defer building mills for as long a period as possible. In turn, this compelled the colonial administration to issue edicts to force landlords either to construct mills or forfeit their *seigneurie*.²¹ Unfortunately, the edicts, issued in France, were not officially promulgated until 1707 when the intendant, Jacques Raudot, noticed that the *procureur général* had never issued the promulgation of them, no doubt due to the fact that numerous *seigneurs* were members of the colonial administrative body known as the Conseil Souverain.²² Although the edicts were initially ignored, the proportion of estates without a mill declined progressively. As Morris Altman emphasized, this was the result of a growing population, which allowed the landlords to cover their initial capital outlays. However, we must not overlook the fact that there was still a ceiling on the price that landlords could charge to peasants who brought their grain to their mills. In New France, a miller could only take one out of every 14 units (7.14 per cent) of wheat as his toll.²³

Prices for the same service were much greater in France, where the rate ranged from somewhere between one in 10 and one in 12 units of wheat during the late middle ages (meaning between 8.33 per cent and 10 per cent).²⁴ Later in the eighteenth century, the rates in Upper Normandy were reported as varying between 6 per cent and 10 per cent and 9 per cent in the neighbourhood of Rouen.²⁵ In the late eighteenth century, the colony of Upper Canada legally fixed the rate at one in 12 units (8.33 per cent) while the rate in Quebec remained at one in 14 (7.14 per cent).²⁶ With regard to Colonial America, the rate is reported at 15 per cent, which was considerably higher.²⁷ This is quite important since the American colonies and New

¹⁸ Benoît Grenier, *Seigneurs Campagnards de la Nouvelle-France: Présence seigneuriale et sociabilité rurale dans la vallée du Saint-Laurent à l'époque préindustrielle* (2007).

¹⁹ Beutler, 'Le rôle du blé à Montréal', p. 246; Adam Shortt, 'The colony in its economic relations', in Adam Shortt and Arthur G. Doughty (eds), *Canada and its provinces: a history of the Canadian people and their institutions by one hundred associates* (23 vols, 1913–17), II, p. 480.

²⁰ Labigette. 'La farine dans la Nouvelle-France', pp. 491–2.

²¹ R. C. Harris, *The seigneurial system in early Canada* (1966), p. 72. The most important edict was the edict of 1686, which warned landlords that they had to

build a mill within a year or lose their title and rights.

²² Deschênes, *Quand le vent faisait tourner les moulins*, p. 153.

²³ Harris, *Seigneurial system*, p. 72.

²⁴ Roger Grand and Raymond Delatouche, *L'agriculture au moyen-âge, de la fin de l'Empire romain au XVI^e siècle* (1950), p. 634.

²⁵ Judith A. Miller, *Mastering the market: The state and the grain trade in northern France, 1700–1860* (1999), p. 32.

²⁶ Deschênes, *Quand le vent faisait tourner les moulins*, p. 158.

²⁷ Thomas L. Purvis, *Colonial America to 1763* (1999), p. 171.

France were faced with similar situations when settlement began to take place and we would not expect such a large gap in pricing practices. The 'scarcity of mills was a real handicap to small grain production during much of the colonial period'.²⁸ This led to heavy charges for individuals in the American colonies, which was reflected in prices. Virginia millers could not charge more than one sixth (16.67 per cent) of the amount of corn brought in, while Canadian mill owners could not charge more than one fourteenth of a crop.²⁹

There was a second set of price controls in place – for bread – which must be outlined. In the late seventeenth century, the Conseil Souverain of New France ordered that bakers had to sell bread at a price based on the price of wheat.³⁰ Such regulations were still in place in 1845: commissioners were mandated to fix the price of bread in relation to the price of wheat on the first Monday of each month and publish it in the *Gazette de Québec*.³¹ One might assume that the bakers bought flour that was already suitable for consumption, but this was not the case.³² Bakers often bought the coarse flour directly, which they could (but did not always) improve by removing the bran, middling and dirt. But that was very rare. More often, they bought the wheat that the *seigneurs* retained and milled it themselves. Bakers tended to be very enterprising merchants who went beyond the simplicity of their craft.³³

Having said all this, there were important exceptions to the price controls. First of all (and most importantly), the price of flour exported outside the colony was unregulated. Second, the price of bran (*son*) and middlings (*gru*) – which could be sold to feed animals – was not subject to any form of price controls. Thirdly, bakers were not obliged to mill any grain they bought at the mill of the *seigneurie* in which they bought it: they were subjected to the fixed price, but unlike the peasantry, they could take their wheat to a mill of their choice.³⁴ Taken together, these three regulatory exceptions explain, in our opinion, the poor quality of flour available within the colony.

²⁸ Arthur G. Peterson, 'Flour and grist milling in Virginia: a brief history', *Virginia Magazine of History and Biography* 43 (1935), p. 100.

²⁹ *Ibid.*, p. 100.

³⁰ *Jugements et délibérations du Conseil souverain en la Nouvelle-France*, III, (1883), p. 869.

³¹ 'Commissaires pour la revision des dits actes et ordonnances', *Les Actes et Ordonnances Révisées du Bas-Canada* (1845), pp. 623–5.

³² They could also buy wheat directly from the peasants. In that case, they would have to incur the *banalité* when they wanted to have it transformed in flour. This was a generalized situation, but it could happen as Solange de Blois pointed out. 'Possibilités et limites d'une entreprise seigneuriale: les Moulins

de Terrebonne, 1720–75' (Masters' Thesis, University of Montreal, 1995).

³³ Robert Lamonde, 'Les boulangers de Montréal, de la foundation à 1750: Étude d'histoire socio-économique' (Masters' Thesis, University of Montreal, 1996), p. 81. Note that out of 59 individuals *repertoriés* as bakers in Montreal between 1642 and 1750, 19 are also named as merchants.

³⁴ Corinne Beutler, 'Les fonctions du blé dans un système colonial: l'approvisionnement de Montréal jusqu'en 1840', in Marceau Gast, François Sigaut, Corinne Beutler and Olivier Buchsensschutz (eds), *Les techniques de conservation des grains à long terme: leur rôle dans la dynamique des systèmes de cultures et des sociétés*, fascicule 2 (1985), p. 454.

III

In the previous section, we outlined several elements that can explain why flour was of poor quality. To understand the reasoning behind them, it is necessary to break down the situation according to the types of individuals involved.

Seigneurs had a monopoly, but they also had clear incentives to cut down on quality in order to extract a higher level of profit. The price controls that compounded the monopoly status worsened the situation. Since the milling rates were fixed, *seigneurs* could not exercise their market power through prices and opted to exercise them through playing on quality. Moreover, they could not recuperate losses by increasing the price of flour since the price of bread was regulated as well. Peasants did have the option to mill their grain by hand, but this was wasteful, time-consuming and inefficient. They could also shift to a diet of oats and peas, which would not need milling and which brought the advantage of avoiding the loss of calories that milling involved (20 per cent of calories would be lost in the milling process in addition to one fourteenth of the wheat retained as the milling fee), but again this was not an option which many would have favoured.³⁵

Seigneurs were often reluctant to make the initial investment in building and, where they did, they tended to build windmills rather than watermills (although the latter were better and had lower marginal costs in the sense that it was cheaper to mill a single unit of flour, but were more expensive in terms of fixed costs³⁶), and use poorer materials (including the millstone). According to Morris Altman, less than 57 per cent of seigneurial estates had grist mills by 1739.³⁷ Louise Dechêne also points out that *seigneurs* tended not to invest in the facilities needed to mellow the endosperm and toughen the bran.³⁸ As they only had the facilities to produce low-grade flour, many *seigneurs* preferred to sell their toll wheat to urban bakers rather than mill it themselves. In a few cases, they met their legal obligations by selling their monopoly rights to millers – at a very dear price.³⁹

However, we argue in this article that they tended to produce coarser flour for consumption within the colony and better flour for export. In short, they could discriminate between

³⁵ This proportion comes from Stephen Broadberry, Bruce Campbell, Alexander Klein, Mark Overton and Bas van Leeuwen, *British Economic Growth, 1270–1870* (2015), p. 282.

³⁶ Gilles Deschênes points out that after the 1790s, when the British allowed all new settlements to be established under freehold tenure (while all previously settled places would remain under *seigneurial* tenure), windmills were disregarded by settlers, who built watermills instead. In areas under freehold tenure, monopoly rights did not exist and farmers were free to choose their mill (Deschênes, *Quand le vent faisait tourner les moulins*, p. 148). The difference in efficiency in favour of watermills is explained by the fact that millers can control water debit to maximize rotations of the millstones while it is impossible to control wind factors. In fact, millers of windmills had to be especially careful in

monitoring the winds because if they were too strong, they could rip the windmill sails.

³⁷ Morris Altman, 'Seigneurial tenure in New France, 1688–1739: An essay on income distribution and retarded economic development', *Historical Reflections/Réflexions historiques* 10 (1983), p. 364.

³⁸ Dechêne, *Le partage des subsistances*, p. 90.

³⁹ Deschênes, *Quand le vent faisait tourner les moulins*, p. 146. Deschênes mentions also that in the densely populated areas of the Richelieu *seigneurie*, the *seigneur* sold the monopoly rights for roughly 1,043 livres per year. In such cases, this would not mean that the *seigneur* legalized competition, merely that he opted to sell his rights to someone else in order to obtain a steady income. Overall, this would only reduce the profitability of the monopoly mill operator (pp. 155–6).

different market segments on the basis of quality. Obviously, the quality of the wheat used to produce flour matters. However, we are only concerned with the incentives to transform the wheat brought to the mill. *Seigneurs* tended to be very active in commercial activities and they could market what they earned through the *banalité* (their take of the grain brought to mill) on foreign markets at unregulated prices. In such a situation, they could segment their production and adopt discriminatory practices. The extra costs of producing finer flour from their toll wheat would thus be compensated through higher selling prices on foreign markets. However, there was an incentive to limit the quantity of high-quality flour produced. Some of the costs of producing the flour for the inhabitants could be recuperated by exporting abroad, but in the process of producing better quality flour, one has to sift through the flour to remove bran and middlings. These two items, which were used as feed for animals, were not subject to price controls and mill-owners could increase their prices to compensate themselves. In short, the 'high-quality' flour would be largely destined for foreign markets while the by-products from it would be resold in the colony as feed at higher prices.⁴⁰ The *seigneurs* who did invest in the technologies (which meant very high-quality equipment and large installations) necessary for such production – and which were active on export markets – tended to come from well-populated estates where large enough volumes gave a return on the initially high costs.⁴¹ If the *seigneurs* were not active in the export market and were content with selling the share of the grain they took from peasants to bakers who would then produce flour for bread in the cities or foreign markets, then it was the bakers who would sell the bran and the middlings. Bakers were very fond of selling the milling residues, as Louise Dechêne noted.⁴²

Examples of *seigneurs* milling grain at the lowest possible level of quality are found mostly in thinly populated *seigneuries*. Small populations meant an insufficient volume of grain to offset initial outlays and thus it was seen as preferable to simply provide poor-quality flour. It was *seigneurs* on larger estates who had the option of producing some fine flour for export markets and then selling the resulting middlings and bran at uncontrolled prices on local markets.

In order to understand this mechanism – which applied largely to densely populated *seigneuries* – it is necessary to digress on the issue of milling grain. The common practice in Canada was that grain would be milled once (creating *grosses farines*). To obtain better-quality flour, it would then have to be sifted with a bolter (a process known as *blutage* undertaken with a *bluteau*).⁴³ In addition, higher-quality flour required the extra step of cleaning with a *crible* (a dressing shoe to clean and sort grains). However, as Louise Dechêne and Gilles Deschênes both point out, mills were not always equipped with these tools and it was the bakers who tended to be the owners of *bluteau*.⁴⁴ Hence, it seems that the rural peasantry – the bulk of the population, as less than 20 per cent of the population was urbanized in the early 1700s – who ended up with poorer-quality flour. In her work, Dechêne mentions in passing that the

⁴⁰ Obviously, we do not claim that the colony would be entirely lacking high-quality flour. It implies that there would be very little available for the bulk of the population.

⁴¹ Solange de Blois, 'Les moulins de Terrebonne (1720–1775) ou les hauts et les bas d'une entreprise

seigneuriale', *Revue d'histoire de l'Amérique française* 51 (1997), pp. 39–70.

⁴² Dechêne, *Le partage des subsistances*, p. 90.

⁴³ *Ibid.*, p. 90.

⁴⁴ *Ibid.*, p. 90; Deschênes, *Quand le vent faisait tourner les moulins*, p. 240.

censitaires often complain about *blés écartelés*.⁴⁵ This was poorly milled wheat in which the bran and germ are still present.⁴⁶ In some instances, there are references to the wheat simply not being cleaned before being milled, resulting in the flour containing dirt.⁴⁷ The flour that was most commonly traded in the colony and consumed by the peasants who brought their wheat to be milled was second-quality flour which was often not properly sifted: this was called *pain du peuple* in France.⁴⁸ The flour consumed by the bulk of the population did not possess properties that would have made it suitable for a wide range of baking options.

The alternative approach to milling implied a more careful grinding and sifting in order to obtain fine flour.⁴⁹ It required the possession of a *bluteau* – which was an expensive piece of equipment. Louise Dechêne mentions a price of 61 livres for a *bluteau*⁵⁰ at the time when per capita annual income did not exceed 150 livres per annum.⁵¹ Later sources suggest that, in 1772, the cost of a *bluteau* stood at 270 livres.⁵² The expense of acquiring the equipment needed to produce fine-quality flour explains why few mills made the necessary investment. The use of a *bluteau* was a *sine qua non* if flour was to be exported in barrels.⁵³ Sifting with a *bluteau* would mean that more germ and bran would be available as a separate product. Given that only a limited number of mills could operate at this level (and in effect operated as a monopoly within a monopoly), there was no incentive to increase the supply of good flour.

We have already seen how the *seigneurs* operated a monopoly. It is also relevant to mention that entry into the baking trade was also regulated. The colonial administration limited the number of bakers that could operate (unless they produced only the *biscuit*) creating some form of market power when bakers were those who sold the residues.⁵⁴ In addition, the *seigneurs* also had quite an impact on the high-quality flour market. Since they were exporting on foreign markets and Quebec was a small economy, they were price-takers of the world price. However, the costs of entry into the export business – financial capital, the necessity to have a social

⁴⁵ Dechêne, *Le partage des subsistances*, p. 33.

⁴⁶ Émile Littré, *Dictionnaire de la langue française*, tome premier, seconde partie (1863), p. 1267.

⁴⁷ See quotation from Roderick MacKenzie earlier in this article.

⁴⁸ *Encyclopédie Méthodique des Arts et Métiers Mécaniques* (1788), p. 63.

⁴⁹ This was not a particularly costly process, but estimates found in the *Journal* of the Séminaire de Québec (Québec City Archives, Archives du Séminaire de Québec, C37, p. 67) suggest that the cost stood at 0.6 *sols* per *minot* in 1788 when the price of wheat per *minot* stood at 93 *sols* (Fernand Ouellet, Jean Hamelin and Richard Chabot, 'Les prix agricoles dans les villes et les campagnes du Québec d'avant 1850: aperçus quantitatifs', *Histoire Sociale/Social History* 15 (1982), pp. 83–128). There was little point in attempting to produce high-quality flour without having properly cleaned the wheat being milled.

⁵⁰ Dechêne, *Le partage des subsistances*, p. 90.

⁵¹ Morris Altman, 'Economic growth, economic

structure and real gross domestic product in early Canada, 1695–1739', *William and Mary Q.*, 45 (1988), pp. 684–711.

⁵² Québec City Archives, Archives du Séminaire du Québec, C35, p. 239.

⁵³ Dechêne, *Le partage des subsistances*, p. 91. This means that the price of the barrel had to be added to the total – a significant cost. Barrels were believed to contain five bushels of wheat (François Aubry, 'Indicators of economic growth for Lower Canada, 1760 to 1850', Master's Thesis, University of Ottawa, 1971, p. 92) and the Archives of the Séminaire de Québec suggest a price per barrel of 7.8 *livres* (Québec City Archives, Archives du Séminaire de Québec, *Brouillard des Recettes et Dépenses*, C25, p. 107) in 1788 which means the addition of 1.56 *livres* per bushel (or 1.73 *livres* per *minot* at the conversion of 1.107 bushels per *minot*) at the time that a *minot* of flour sold at 11 *livres* (Ouellet, Hamelin and Chabot, 'Les prix agricoles dans les villes et les campagnes du Québec d'avant 1850').

⁵⁴ Dechêne, *Le partage des subsistances*, p. 89.

network to obtain information and financial literacy – were prohibitive. These conditions were easier to meet for *seigneurs* – some of whom were active in the wholesale trading business.⁵⁵

IV

At this point, we shall try to depict the *seigneurs'* profit-maximization process (Figure 1). The *seigneur* is required by law to mill all the wheat harvest (H) he receives from the *censitaires* of his *seigneurie*. The mill produces a quantity of flour equivalent to the output function, $M(H)$. Of that total output, the *seigneur* receives a fraction (b) as his fee, although he bears the cost of milling the total harvest, as we will point out shortly. The next step for the *seigneur* is to allocate which proportion (α) of his flour shall be sold as crudely milled flour, previously called *grosses farines*, which we denote F_2 . The remainder will be thoroughly sifted, yielding a proportion (β) of residues sold as animal feeding, which we denote as F_3 , and a proportion $(1 - \beta)$ of high-quality, exportable flour which we denote as F_1 . As cost functions, we will assume there is a cost function associated to milling, $C_M(H)$, and a distinct one for the sifting process, $C_S(F_1 + F_3)$ or $C_S(b(1 - \alpha)M(H))$. We will also make the assumption of fixed costs equal to C_F . Naturally, each flour has its own price, noted p_i where $i = \{1, 2, 3\}$. However, we argue that, due to regulations, the *seigneurs* actually had market power over the residues market. Thus, the price of the residues, p_3 , is actually a function, with F_3 as an input, which we will denote $p_3 = P(F_3)$. The profit can be described as:

$$1) \quad \pi = p_1 F_1 + p_2 F_2 + P(F_3) F_3 - [C_F + C_M(H) + C_S(F_1 + F_3)]$$

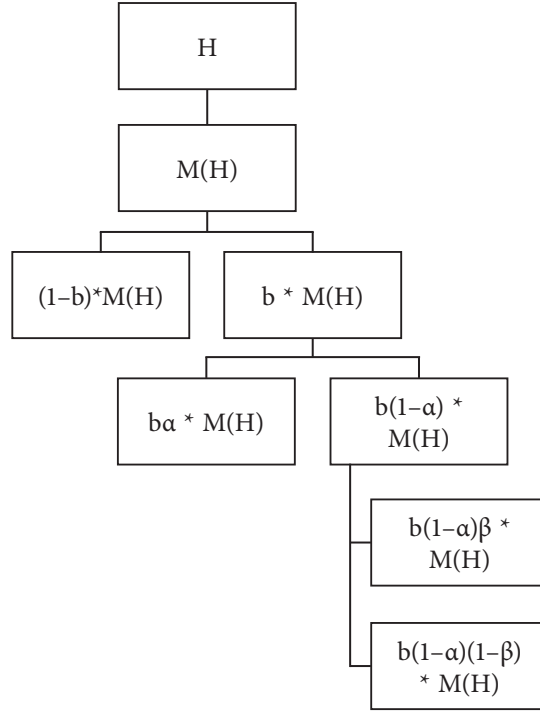
or

$$2) \quad \pi = p_1 [b(1 - \alpha)(1 - \beta)M(H)] + p_2 [b\alpha M(H)] + P(b(1 - \alpha)\beta M(H))b(1 - \alpha)\beta M(H) - [C_F + C_M(H) + C_S(b(1 - \alpha)M(H))]$$

From equation 2), it is easy to see there are actually only two variables determining profit: H and α , the latter being the only one over which control can be exerted. Assuming that the price of high-quality flour exceeds the price of residues ($p_1 > p_3$), it comes naturally that profits would be negatively correlated to the value of β , the proportion of residues extracted from a fixed quantity of low-quality flour through sifting. The parameter b , the fee the *seigneur* can take in return for his providing of the *banalité*, is established by law. Thus, we have to solve two first-order conditions:

$$3) \quad \frac{\delta \pi}{\delta H} = 0 \xrightarrow{\text{yields}} C m_M(H) + b(1 - \alpha) M m(H) C m_S(F_1 + F_3) = M m(H) [\alpha p_2 + (1 - \alpha) ([1 - \beta] p_1 + \beta [p_3 + F_3 P m(F_3)])]$$

⁵⁵ Christian Dessureault, 'L'évolution du régime seigneurial canadien de 1760 à 1854', in Alain Laberge and Benoît Grenier (eds), *Le régime seigneurial au Québec 150 ans après: Bilans et perspectives de recherche à l'occasion de la commémoration du 150^e anniversaire de l'abolition du régime seigneurial* (2004), pp. 22, 28–30, 32. One should be careful not to conflate the fact that a far from negligible number of *seigneurs* were merchants as a statement that *all seigneurs* were merchants.

FIGURE 1: The profit-maximization process of a representative *seigneur*.

$$4) \quad \frac{\delta \pi}{\delta \alpha} = 0 \xrightarrow{\text{yields}} p_2 + C m_s(F_1 + F_3) = [1 - \beta] p_1 + \beta [p_3 + F_3 P m(F_3)]$$

By themselves, equations 3) and 4) give little insight as to how regulation or market power wielded by the *seigneurs* had an impact on the quality and/or quantity of flour both in and outside the colony. That said, we can already see from equation 4) that if the following inequality is true:

$$5) \quad p_2 > [1 - \beta] p_1 + \beta [p_3 + F_3 P m(F_3)]$$

then the *seigneur* is compelled to minimize the total cost of sifting by choosing α equal to 1, thus selling only low-quality flour. The next logical step would be to combine equations 3) and 4), giving us:

$$6) \quad C m_M(H) - M m(H) p_2 = (1 - b)(1 - \alpha) M m(H) C m_s(F_1 + F_3)$$

Under perfect competition between mills, we would expect marginal cost to equal marginal revenue, equivalent here to $M m(H) p_2$. From equation 6), it becomes clear that the *seigneur* may rationally choose to sell low-quality flour above its marginal cost if he can recoup his loss by producing both high-quality flour and residues simultaneously. However, when the *seigneur* chooses to do so, he must consider that the sale of more residues might drive down its price. We can also argue that, given the likely high value of our parameter β , the value of p_3 had to remain relatively high in order to justify milling grain and selling it ‘below cost’. Thus, the

higher the costs, the higher p_3 had to remain in order to maximize profits. Implicitly, this means less sifting activity, providing for less high-quality flour.

Overall, peasants were provided with low-quality flour. High-quality flour would only be produced in areas where production was sufficiently large to bring large quantities of wheat at the mill. The quantity of high-quality flour would however be limited since an increase in high-quality flour – whose international market meant landlords were price-takers – meant an increase in the quantity of residues available – on whose domestic markets landlords had market power – which would reduce the price (and profits) by *seigneurs*.

V

To produce finer flour for exports, mill-owners would have to sift their flour meticulously. In doing so, they would have obtained greater quantities of bran and germ. These could be sold at unregulated prices. Landlords could recuperate losses from the regulated prices of flour by selling the residues at higher prices. This is easily documented. Peasants could buy 6.5 minots of bran for the price of a minot of wheat in 1688, but that ratio followed a downward trend, ending up at 2.83 minots of bran per minot of wheat in 1740. A similar, but less pronounced trend is seen with regard to middlings (Figure 2). More importantly, the downward trend continued after 1740. In the era of intermittent warfare, from 1740 to 1760, numerous real shocks to supply would have forced landlords to carry losses from milling. At controlled prices, they would have been unable to make the profits they desired (or needed to cover their costs). Hence, during those turbulent years, they increased the price of bran and middlings more rapidly than any increase in the price of wheat.

The relative prices of these residues to wheat meet the first condition required in order to explain the poor-quality of grain in the colony. Throughout the era, the production of fine flour seems to increase in line with exports – a greater than fourfold increase in flour exported between 1720 and 1739 – and the exports were mostly of fine flour.⁵⁶ As the production of fine flour increased, so did the production of residues – whose prices increased so as to recuperate losses from the low fixed price for milling services. As the work of Robert Lamonde has suggested, confirming that of Louise Dechêne, the bakers were probably the most active in that line of trade. Lamonde points out that their wealth at time of death was equal (and probably superior)⁵⁷ to that of other trades. Most seigneurial estates preferred to sell the grain directly rather than transform the wheat into flour. However, some religious congregations (the Ursulines, the Augustines, the Séminaire and the Jésuites) – which owned *seigneuries* across the colony – possessed the equipment needed for proper sifting and grinding. These were the estates which delivered ready-made flour to the merchants for sale on foreign markets.⁵⁸ This

⁵⁶ Alice Jean Lunn, 'Economic development in New France, 1713–60' (Ph.D Thesis, Department of History, McGill University, 1942), p. 449.

⁵⁷ Lamonde, '*Les boulangers de Montréal*', p. 59. Lamonde finds a difference of between 6.46% and 12.74%, but his period of interest (which ends in 1750) is associated with considerably lower nominal prices

than the period with which he compares (1740 to 1809 for craftsmen and 1730 to 1780 for blacksmiths). For the comparison of the price levels, see Vincent Geloso, 'Seeds of divergence: The economy of French America, 1688 to 1760', (forthcoming Ph.D thesis, London School of Economics).

⁵⁸ Dechêne, *Le partage des subsistances*, pp. 89–90.

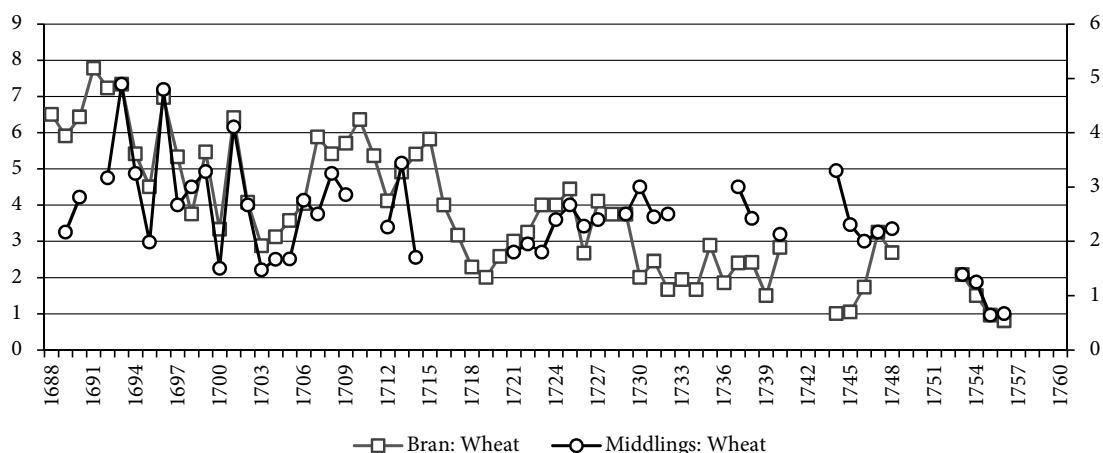


FIGURE 2: How many minots of bran (left axis) and minots of *gru* (middlings on the right axis) could be bought with one minot of wheat, 1688 to 1760.

Source: Vincent Geloso, 'Seeds of divergence: The economy of French America, 1688 to 1760' (forthcoming PhD thesis, London School of Economics).

line of revenue has never been considered by historians in their treatment of the regulations surrounding the grain and flour trade.

As Richard Harris points out, seigneurial mills were not profitable until there were 20 families (roughly 120 individuals) per estate with fully cleared land, as fixed costs stood at close to 500 livres. Before that level, any quantity of wheat milled would imply financial losses for the landlord. However, marginal costs were seen by Harris as being constant.⁵⁹ More plausible is the evidence found by Beutler that marginal costs were increasing modestly.⁶⁰

As the return on the investment in milling depended on the size of the population, below a certain threshold it was impossible to make a profit, forcing *seigneurs* to keep costs down as much as possible by reducing the quality of flour produced and cutting other costs as much as possible. As a result, thinly populated *seigneuries* would have poor-quality flour, made in lower-quality mills (windmills instead of watermills), which might be inaccessible as *seigneurs* also limited their investments in roads to access the mill.⁶¹ Obviously, the *seigneurs* owned the mills, but they did not operate them personally: instead they rented them to millers, who were compelled to assume the majority of the risks. Catherine Objois noted that of 74 contracts she found between millers and the *seigneurie* of the Séminaire in the Montreal area in the eighteenth century, 45 (60.1 per cent) stipulated that less than half of the cost of repairs would be met by the *seigneurie*, and in 19 instances the Séminaire accepted no responsibility for repairs.⁶² Generally, the contracts give the *seigneurs* a fixed share of the total harvest. In

⁵⁹ Harris, *Seigneurial system*, p. 78.

⁶⁰ Corinne Beutler, 'Les moulins à farine du Séminaire de Saint-Sulpice à Montréal (1658–1840) : essai d'analyse économique d'une prérogative du régime seigneurial', *Historical Papers/Communications historiques* 18 (1983), pp. 184–207. Evidence presented by

Catherine Objois also suggests modestly increasing marginal costs. Catherine Objois, 'Les Meuniers dans la seigneurie de l'île de Montréal au XVIIIe siècle' (Master's thesis, Université de Montréal, 1981), pp. 212–18.

⁶¹ Objois, 'Les Meuniers', pp. 28–30.

⁶² *Ibid.*, p. 44.

some instances, the *seigneurs* of small *seigneuries* demanded a fixed quantity of wheat from the millers as rent regardless of the amount brought to the mill.⁶³ Everything above that would be the millers' profit.⁶⁴

In more densely populated areas, *seigneurs* would still produce poor-quality flour for the domestic market and save on the quality of the service. To this set of strategies, they would further segment production by producing some high-quality flour for exports but also limit its quantity in order to maximize profits from bran and middlings. Indeed, the *seigneur* had an incentive not to produce too large a quantity of fine flour since he would increase the supply of bran and middlings. Hence, at the point when it became profitable to mill, it was also profitable to restrain the quantity of fine flour produced.

V

The fact that regional monopolies, artificially created by a government, would use their market power to drive down the quality of their output does not come as a surprise. Applied in an historical perspective, this paper tends to confirm the general conclusion of previous work. As an example, Ajodhia and Hakvoort indicate that 'stricter price regulation is associated with a risk of quality degradation and thus a need for quality regulation', when discussing electricity distribution networks.⁶⁵ In our case, it is not hard to hypothesize that fearing the creation of monopolies would shift the balance of power in favour of millers, the colonial administration created accompanying price regulation to guarantee accessibility to milling services for peasants. However, the price regulation that *banalité* imposed upon millers, gave them an incentive to recoup their losses through lower quality.

When talking about utility services there is also the question of the form the regulation takes. Milling was as important a service in the colony as telecommunications or electricity are today and so a comparison between the two seems appropriate. In the specific case of US telecommunications, the work of Ai and Sappington surveys the landscape of the regulatory environment.⁶⁶ Since 1986, there has been a change of approach on the part of regulators, substituting rate-of-return regulation for other forms of regulation, such as price-cap, earnings-sharing or case-moratoria regulation. The traditional approach of rate-of-return regulation has been considered 'naïve' by some, mainly because it did not provide sufficient incentive for the firm to minimize operating costs.⁶⁷ The example of price regulation we provide here could be qualified as 'price-cap' regulation, where the regulation 'specifies a path for service prices that is independent of realized production costs during the price cap period, and so can provide considerable earnings flexibility'.⁶⁸ Moreover, that regulation would have been considered

⁶³ Deschênes, *Quand le vent faisait tourner les moulins*, p. 234.

⁶⁴ *Ibid.*, p. 240.

⁶⁵ Virendra Ajodhia and Rudi Hakvoort, 'Economic regulation of quality in electricity distribution networks', *Utilities Policy* 13 (2005), pp. 211–21.

⁶⁶ Chunrong Ai and David E. M. Sappington, 'The impact of state incentive regulation on the US

Telecommunications Industry", *J. Regulatory Economics* 22 (2002), pp. 133–160.

⁶⁷ Gary Biglaiser and Michael Riordan, 'Dynamics of price regulation', *The RAND Journal of Economics*, 31 (2000), pp. 744–67.

⁶⁸ Ai and Sappington, 'Impact of state incentive regulation', p. 134.

implemented on an infinite time period, whereas price-cap regulation imposed over limited time horizons have been known to cause perverse incentives where capital replacement is concerned.⁶⁹ Thus, the regulation imposed in the colony might well be considered appropriate, even through the lens of more recent economic analysis. However, our evidence shows that even a price-cap regulation was detrimental to both the quality and quantity of output delivered. Why is that so?

The situation we are depicting here does not relate much to product differentiation or market segmentation: it has more to do with classic oligopoly models. First, we take into account that all millers in the colony act independently. Second, the segmentation we see relates to the characteristics of the product (namely, its quality) and not to who produces the product. Thus, we see a limited number of millers selling something similar, into different, although linked, markets, while competing on price rather than quantity. This is also called Bertrand's competition. However, the classical prediction of Bertrand's competition is an optimum equivalent in price and quantities to what would be observed in perfect competition. Our model and our evidence suggest a different equilibrium on both the low-quality flour market and the residues market. We argue that any discrepancy between these two results can be directly linked to the existence and the extent of regulation.

As in many other occurrences, we might say that industry linkages and product linkages played a part, creating a miller who was both regulated and un-regulated. In return, that duality brought the possibility for the miller of maximizing his profits in the unregulated market, creating a sub-optimal equilibrium overall. Ultimately, we are facing a case of over-regulation. The different layers of regulation could well have resulted in a general equilibrium worse than what would have been observed if those local monopolies would have been left free to impose their own *banalité*, and the peasants, free to choose their mill.

VII

The combination of price controls established under seigneurial law and price controls for the sale of bread incentivized economic actors to curtail quality so as to make maintain profit margins. This tended to keep the price of flour at the low levels mandated by law. However, this also meant that the flour being circulated was of poor quality and that the price of feeds like bran and middlings were higher than they would have otherwise been. The landlords only produced high-quality flour when they could export it and maintained the quantity low enough to maximize profits from the production of bran and middlings (a market in which they could set the price). In short, it was perverse incentives linked to price controls that formed the basis of the inhabitants' complaints about poor flour quality.

⁶⁹ Biglaiser and Riordan. 'Dynamics of price regulation', p. 745.