Monetary Famine, Paper Money, and International Constraints on Economic Growth: The Case of Colonial Quebec

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Abstract

New France (modern day Quebec), like most European colonies in the New World, suffered from a persistent shortage of metal coins. As Quebec's imports were limited by French mercantilist policies, their standards of living were constrained by their ability to export a few primary products (mostly fur, cod, timber and wheat). Mercantilist restrictions and underdeveloped financial markets limited the ability to use the capital account to import coins and tightened the balance of payments constraint. The introduction of playing card money in New France in 1685, the first use of government paper money in North America, provided a means of relaxing this constraint. It produced a substitute domestic money which allowed scarce metal coins to be used to purchase imports. The balance-of-payments constrained growth models that grew out of Thirlwall's Law is applied to this experience, with discussions of the export constraints of Quebec's reliance on a few primary exports (with furs being the most dominant one) with inelastic demand and facing the vagaries of changing tastes in Europe.

Keywords: Playing Card Money, Balance of Payments Constrained Growth, Colonial New France
JEL Codes: O42, N11, E51

"*Canada had scarcely any other money but paper currency. I hardly ever saw any coin, except French sols, consisting of copper, with a very small admixture of silver. They were quite thin by constant circulation, and were valued at a sol and a half.*" – Peter Kalm, 1749 (in Benson 1966, p. 410)

1 Introduction

In the 16th and 17th centuries European countries started establishing colonies in the New World. The colonial would be subservient to the mother country as they were meant only to provide raw materials rather than compete in the production of manufactured goods (Ekelund and Tollison 1997; Clément 2006). Unlike in the Spanish colonies where extensive deposits of silver were used to mint coins, British and French colonies in North America had to import metal coins. While coins from numerous countries circulated (McCullough 1984, p. 53), they could only be imported through merchants in the home country or acquired illegally through smuggling. Moreover, once acquired through exports, any gold or silver coins was quickly used to pay for imports. From this situation emerged a recurrent complaint of a scarcity of coins for exchange within the colonies (McLachlan 1910; Redish 1984; Powell 2005).[1] This led to multiple experiments with monetary policy by colonial governors constrained by the macroeconomic framework imposed upon them. One such experiment was that of playing card money in New France (modern day Quebec).

The experiment of playing card money in New France, which started in 1685, was the first paper money introduced in the western world (outside of some emergency issuances) – immediately preceding the often cited "first" of Massachusetts' in 1690 (Goldberg 2009).[2] The colonial administration decided, in order to fund the pay of quartered soldiers, writing monetary values on the back of playing cards that carried the official stamp of approval of the authorities. As the import of playing card stock was taxed and regulated as part of the French mercantilist system, this made counterfeiting more difficult than it might seem (though not impossible). The governor promised to redeem them with future shipments of gold and silver coins. The experiment was repeated more than

[1] Coin shortages did not originate in the colonies of course and also emerged periodically in the European context (Sargent and Velde (2014, Chapter 8).

[2] See Sargent and Velde (2014, p. 220-222) for examples of paper money being used in emergency cases as "siege money". During sieges, the defending soldiers needed to be paid but no outside access to specie or other monies was available, and so alternate monies were used, often token or simple coins of base metal, but in some cases, paper was used as siege money. The Canadian example was the first case of a non-emergency paper money in the West.

a dozen times between 1685 and 1760. Many historians and economists argue that there were periods (notably 1685-1705 and 1729-1740) in which, when it was not overissued (Cutsinger et al. 2021), playing cards helped alleviate the scarcity of coins for trade within the colony without causing inflation (Breckenridge 1893; Heaton 1928; McIvor 1958; Armstrong 1984; Cutsinger et al. 2021).

The colony labored under heavy constraints: mercantilist policies limiting foreign demand, a limited access to capital accounts and strong limitations on private monies.[3] These constraints, given development in the colony and in France, entail there should have been *negative* growth in the colony. However, as figure 1 illustrates, this is not what the data suggest. There was rapid growth both in aggregate and per capita terms over the long run. We argue that playing card money, under certain conditions, eased the problems posed by the institutional constraints affecting the colony's international exchanges. This is because playing card money reduced the cost of domestic exchange, increased output and liberated specie for use in international transactions. In other words, under the constraint of mercantilist policy, issues of playing card money could help stimulate economic activity by facilitating commerce. We argue, using new works by Cutsinger et al. (2021) and Bernier (2020), that there were two periods in which playing card money had such an effect: 1685 to 1705 and 1729 to 1740 (which are highlighted in figure 1). In those two periods, there was either a weak legal tender that allowed people to simply refuse to accept the playing cards at par or/and the issues were limited in size so that they did not generate inflation.

Figure 1 below illustrates, with these two episodes shaded, the behavior of the price level on the left y-axis and the evolution of GDP per capita on the right y-axis. As can be seen, both episodes suggest economic growth and/or stable price levels. The GDP data for the first period covers 1688 to 1706 (dictated by the census sources) and shows that there was a 10% increase – a noticeable increase which occurred in spite of a major invasion and the siege of Quebec City in 1690. Then, from 1705 to 1719, the legal tender laws were tightened and the supply of playing card money increased rapidly. Growth halted as a result and it returned only after the experiment ended. The playing card money returned in relatively limited issues from 1729 to 1740 (after which point grew in size). We tie this interpretation to the backing theory of money and examples from the American colonies where

[3] In theory, the constraint engendered by mercantilist policies and excess demand for coins could have been resolved by private banks issuing banknotes backed by bank assets (Selgin and Lastrapes 2012). However, this requires a banking system, and no banks existed in Canada before 1817. All private media of exchanges before then were limited to bills of exchange drawn against merchants which did not circulate far away from the main cities (Geloso and Bédard 2018). Thus, our case is one where the playing card money was the best available solution within a strongly limiting institutional environment.

paper money sometimes stimulated real economic activity (Celia and Grubb 2016; Grubb 2005; 2012; 2016a,b; 2018; 2019; Rousseau and Stroup 2011).

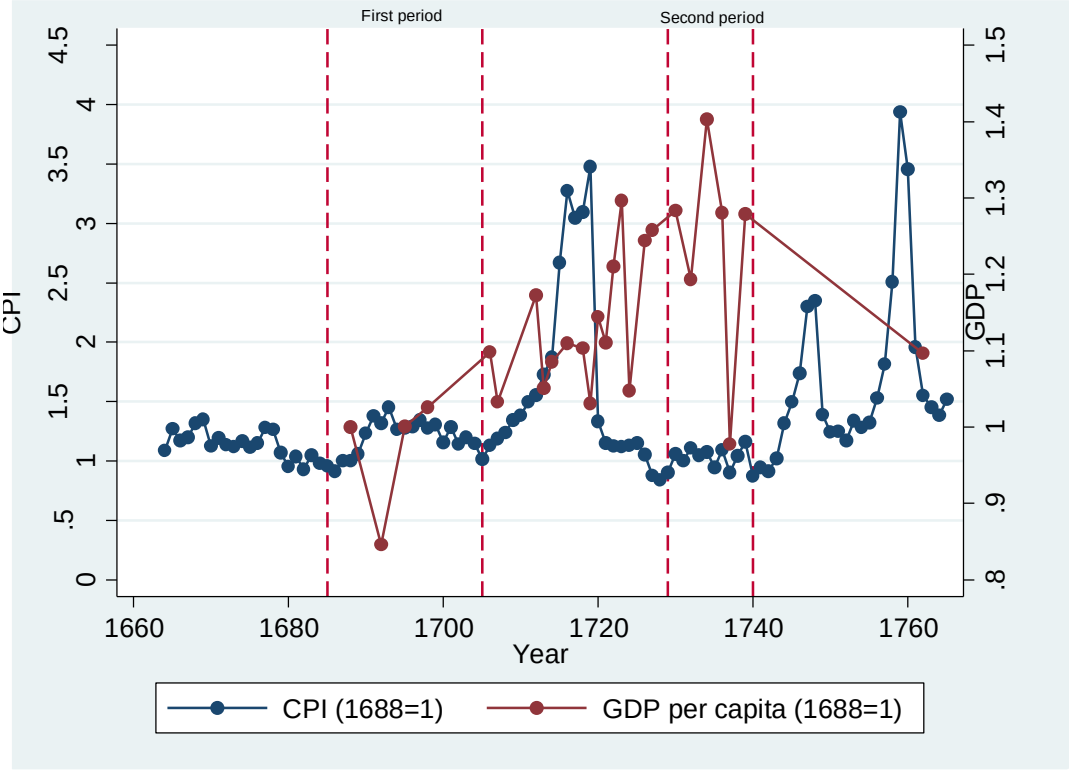

Figure 1: CPI and GDP per capita (indexed to 1688=1) of New France from 1664 to 1765
Source: Rousseau (1983) for price index from 1664 to 1688; Geloso (2019a) for price index from 1688 to 1760; Geloso (2016) for GDP per capita. Note: The large dip in 1737 for GDP per capita is known to be exaggerated due to the quality of the census. Moreover, the census data used by Geloso (2016) to create GDP figures requires numerous fixed assumptions that may reduce the year-to-year quality. As such, Geloso (2019b) produced a complementary work where he used a demand-side model (that included wage rates) of the economy to estimate output. He found higher levels in the 1730s than in the 1720s by 6% which is similar with the growth pace from 1688 to 1706 in the figure with the census data. That estimation also yielded similar growth rates across both methods for 1688 to 1706.

We divide our paper as follows: in section 2, we explain New France's economy and model its monetary environment. In section 3, we model the role of the constraints imposed by mercantilism and the international trading environment that colonial Quebec found itself in and also discuss how limited issues of playing card money would have been beneficial to real economic activity. In section

4, we discuss the two episodes when playing card money did have such a beneficial effect and provide econometric evidence. Section 5 concludes.

2 New France's Economy and Money

The general depiction of New France in the traditional economic history literature has two recurring themes: that it was poor and stagnant and that it was dominated by furs (see notably Innis 1930 [1999]; Lunn 1942; Hamelin 1960; Dechêne 1974; 1994; 2008). More recent work by both cliometricians and historians has largely overturned this view. First, wage and price evidence suggest that New France was mildly richer than France and Spanish American colonies but poorer than the British colonies (Geloso 2019b). Second, probates suggest that wealth per capita was increasing (Dépatie 1988; Desloges 1993). Third, real hourly wage rates were stable in the long-run but working hours increased so that income per capita did increase (Geloso 2016; 2019b). Fourth, estimates of GDP per capita suggest that incomes grew by roughly 20% between the late 17th century and the eve of the conquest of New France by the British in 1760 (Geloso 2016).[4]

As for the dominance of the fur sector, while it is true that furs were a primary economic activity, their dominance has often been exaggerated. In fact, the sector's importance in total output was continually falling. Geloso (2016) found that, on average from 1688 to 1762, furs represented between 5.3% and 10.3% of total output while Altman (1988) found that it represented 12.4% of total output over the shorter period from 1695 to 1739 and with less comprehensive estimates of total output. Moreover, both Geloso and Altman find that furs as a proportion of the economy fell from the end of the 17th century to the end of the 18th century.[5]

Nevertheless, all sources agree that the majority of export volumes was constituted by furs followed distantly (and variably depending on the years) by cod, timber and flour (even though these other export goods did gain some ground over time relative to furs). Thus, furs were the main mechanism for acquiring coins without relying on fiscal transfers from France to the colony, which is important for our story. Specie was generally used to import manufactured goods (clothing items), key inputs (salt for meat preservation, nails for construction etc.), luxuries (alcohol, spices, sugar, rice) and

[4] The conquest generated important physical destruction and a large occupying force that requested quartering and provisions (Land and Geloso 2020).

[5] There were extensive attempts by colonial administrators (especially Colbert) to diversify the colonies exports. However, many products cost more to produce locally than elsewhere, due to a shortage of skilled labor and the harsh climate. For example, while New England exported much tar and many ships to England, these were much expensive to produce in Canada than other sources for France (Eccles 1964, p. 51).

capital goods (farming implements, sawing equipment). It is also clear from historical sources that throughout the 18th and 19th centuries, the colony rarely exhibited (if ever) a trade balance surplus (McCann 1983; Redish 1984; Vallières and Desloges 2008).[6] However, the numbers available suggest that the deficit was roughly constant as the ratio of imports to exports was also constant (Vallières and Desloges 2008). The elements above suggest that the vast majority of transactions were *within* the colony. This is important because the medium of exchange used within the colony differed from those used in international transactions. Just as in the case of the American colonies (Wright 2001), domestic exchanges relied on a mixture of barter (wheat, firewood, labor, furs), book credit[7], securities drawn against local merchants, and coins (Geloso 2016). International transactions relied more heavily on coins.

This suggests that we can break all the transactions into two types (domestic and international) in order to make a parsimonious model of the economy. This will allow us to illustrate the effect of introducing playing card money. Let's assume a simple form for consumption (C) where the share of foreign purchases (I) is α, with domestic purchases (H) having a share of (1- α). For a given agent j (we'll suppress this notation for now) then consumption is given by

$$C = (1 - \alpha)\mathrm{C} + \alpha\mathrm{C} = \mathrm{H} + \mathrm{I}$$

Since domestic money is less scarce than specie, and the terms of trade are unfavorable, the degree of consumption possible from imports is reduced before playing card money is introduced. Imports must be purchased with specie that was available when boats arrive (G_0), such that

$$G_0 \geq I$$

All manufactured goods had to be imported and, due to mercantilist policies, this meant French goods. Exports were primarily furs (mostly beaver), but could also involve other products, so we will refer to the other exports as O, such that

$$X = O + B$$

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[6] Normally, this is not a problem – trade deficits/surpluses have no inherent virtues/vices when capital accounts exist. The problem we highlight here is that capital markets were quite limited so that international exchange had to occur in specie. Playing card money, we will argue, created a form of credit that indirectly mimicked a capital account by liberating coins for use in international trade rather than domestic trade.

[7] There is of course also the possibility of simply using bookkeeping to conduct transactions without money but without also resorting to barter and the issues with the double coincidence of wants. Something of value is exchanged in terms of a unit of account in exchange for a notional credit, in terms of the unit-of-account, which then can be used by the seller to obtain something of value in the future. As long as this bookkeeping is credible, and especially if it is enforced as a formal property right by the state, then this system can function just as effectively as any other monetary institution. Indeed, this institution is still very common, in the form of trade credit, so we will refer to this kind of bookkeeping credit as trade credit, as this terminology will be more familiar to the modern reader.

Similar to imports, we will assume that exports are purchased with specie brought in from the boats G_1, such that

$$X \geq G_1$$

The overall change in the money stock in specie terms is:

$$\Delta G = G_1 - G_0$$

However, it is important to point out that beaver skins were frequently used as a medium of exchange especially in trade with First Nations. Indeed, the "made beaver" was a unit of account used by fur traders (Carlos and Lewis 2010).[8] The multiple goods involved in the fur trade (e.g. clothing, weapons, silverware, alcohol etc.) made such a unit of account useful. Just as how gold and silver are commodities that were used as monetary devices, furs played the role of a commodity money.[9] As a result, the overall money stock is composed of all the monetary media in international transactions – we consider trade with the First Nations as a form of international trade – which here includes specie and beaver pelts. Thus, the overall change in the money stock then is the change in specie holdings and change in the stock of beaver pelts (B) in the colony.

$$\Delta M = \Delta G + \Delta B$$

At this point, we can introduce the role of playing card money and detail its history briefly in order to explain how the above equation would change in its presence. In 1685, the intendant of the colony, Jacques de Meulles was strapped for liquidities to pay for his administration's expenditures. The previous years had seen a costly war with the Iroquois which had disrupted the beaver trade, and competition with their English allies hadn't helped. Exports from the colony fell from 95,489 livres in 1683 to 23,568 livres in 1685 (Shortt 1925b, p. 2). de Meulles tried to borrow from local merchants but they would only lend at a rate of interest that exceeded 30%. Relying on the King's promises to send specie in the following year, de Meulles assigned values to different ranks of cards and signing

[8] The work of Carlos and Lewis (2010), while of interest to general economic history, is peripheral to our case however as they were concerned largely with the British Hudson Bay Company (HBC) and gave only limited attention to the French traders who operated in a very different environment (Northern Quebec, Southwestern Ontario, Great Lakes). The numerous works, in French, on that section of the North American fur trade suggest that while similar units of account were used, there were sizable differences in goods traded (see notably Vallières et al. 2008 for a discussion of relevance to New France and Roy 2019 for a discussion of the institutional features that differ between English and French traders pre-1760).

[9] Often the use of beaver as a means of exchange is considered as barter as it is an exchange of a good for other goods, like wheat. However, gold and silver are also commodities, and only their tradition as money makes the exchange of a good like gold for other goods to be intuitively a monetary and not a barter exchange. However, there is no reason why we should call the exchange of a commodity for another good to be barter when it is not a traditional money like gold and not a monetary transaction, and so we will refer to this institution as commodity money, in contrast with the use of gold or silver coins which will be referred to as specie. It is also important to point out that the colonial government also prohibited the use of coin in the fur trade (Shortt 1925a, p. 67).

the backs of the playing cards. These cards then became promissory notes that would redeem bearers for their value in coin and were the first paper monies in the West. Once the coins arrived, that first issue of playing cards was rapidly redeemed. The intendant soon repeated the experiment after its success became obvious. The size of the first issue is unknown, but we know that it was redeemed in full at the promised date.[10] The issues, however, grew larger and more frequent to 1719. We have limited data for the 1690s but the available evidence suggests that the issues were much smaller than those that followed from *circa* 1705 to 1719[11]. Figure 2 below shows the data collected by Cutsinger et al. (2021) that estimates the money supply in the colony during that latter period. Their estimates for 1702 suggests that there were less than 8 *livres* per person in circulation. In contrast, the supply on the eve of the government's announcement in 1714 that it would stop the experiment stood at close to 85 *livres* per capita (Cutsinger et al. 2021, fn19). To place things in perspective, income per capita stood at roughly 100 to 120 *livres*. The notes were retired from 1714 to 1719. They were reintroduced in 1729, but the permanent increase in the money supply from then to 1740 must have remained small (10 *livres* per capita in permanent injections) because redemptions promises were fulfilled and the cards were reintroduced (McCullough 1984, p. 46). Only after 1740, because of the War of Austrian Succession and the Seven Years War, was there a rapid expansion of the government's paper money injections (well above 100 *livres* per capita) (McCullough 1984, pp. 48—52).

[10] However, royal correspondence suggests that the number cannot be in excess of 80,000 *livres* (total expenditures of the colonial government) which amounts to roughly 7.04 *livres* per person (Shortt 1925, p. 83). This is at a time when average incomes hovered between 100 and 120 *livres* per annum (see data in figure 1 for sources).

[11] We know, for example, that the issue for 1691 cannot have been in excess of 87,000 *livres* which would have been a net addition of that amount given that the previous issues had been redeemed in full (Shortt 1925, p. 95). We also know that issues later in the 1690s were also moderately larger (Shortt 1925, p. 109). We also know that there was partial redemption so that the permanent injections – while increasing and greater than those of the 1680s – remained smaller than those of the 1702 to 1719 period.

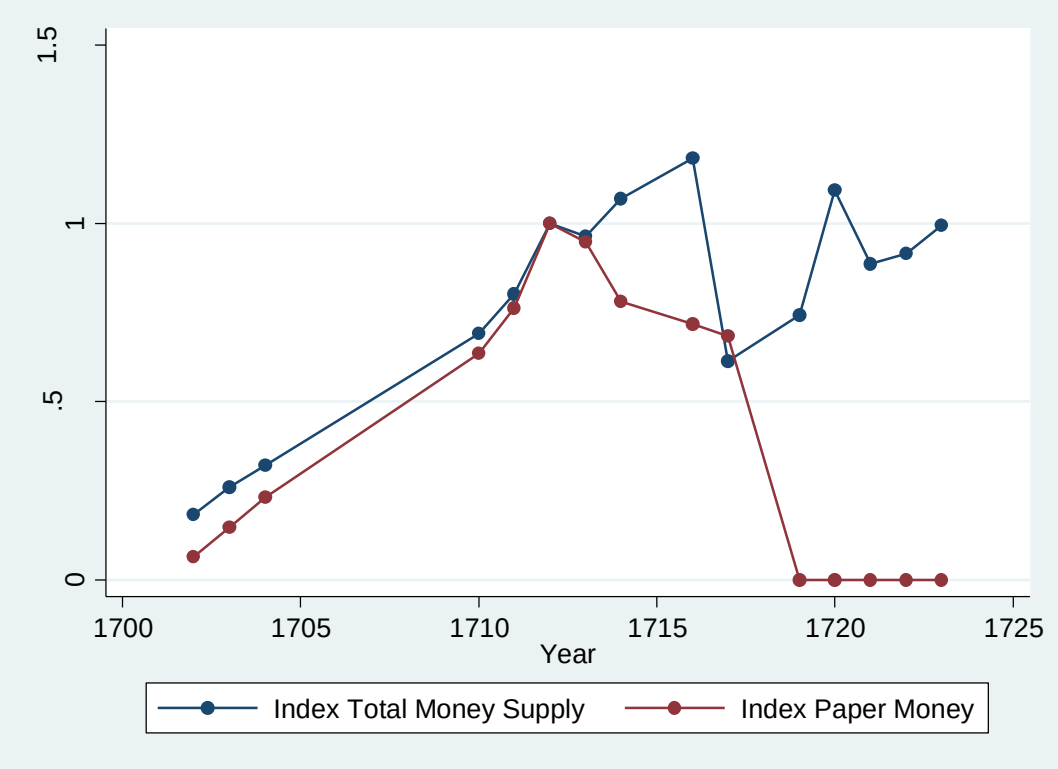

Figure 2: Estimate of the Money Supply (Indexed at 1712=1), 1702 to 1723

Source: Cutsinger et al. (2021)

A key element to note is that, until 1705, the metropolitan government refused to have these notes circulate as legal tender and thus this money was legal tender only in the colony itself (Cutsinger et al. 2021).[12] The King rejected legal tender notably because it meant that it was the treasury in Versailles that would have to cover the additional expenses that the colonial administrators might indulge in. Moreover, and this is quite important to our argument, the legal tender *within* the colony was only weakly enforced largely because the administration had little means (except in the period from 1714 to 1719 and after the 1730s as we will discuss below) to enforce it. Thus, when notes were overissued during weak legal tender periods, merchants could simply refuse to accept these monies unless they were discounted to reflect their market value. And as Cutsinger et al. (2021) note, this was a frequent occurrence. Naturally this would reduce the use of paper money among buyers and other media would be used instead, blunting the inflationary effect of these issues of paper money. Assuming

[12] Moreover, the tax system of New France was relatively simple and no direct taxes were levied on the overall population so that the tax system could not be used for the purposes of enforcing legal tender (Goldberg 2012).

that PC represents playing card money (at market value), changes in money stock are expressed as such

$$\Delta M = \Delta G + \Delta B + \Delta PC$$

Which we can rearrange to obtain:

$$\Delta PC = \Delta M - \Delta B - \Delta G$$

It should be clear intuitively how the introduction of paper money would reduce monetary hoarding, as now there is a plentiful domestic money that will not return to France, so there is reason to be as worried about being caught with too little money. In essence, the demand for holding coins would have fallen. Moreover, readers should bear in mind that the playing cards were claims upon future specie inflows. Accepting them as payment for a domestic transaction meant that specie could be liberated to purchase capital goods from Europe which in turn would increase output and the ability to export in the future. Given that playing card money provided a domestic monetary substitute, specie could flow out while simultaneously increasing the amount of money circulating in the colony. Moreover, what beaver skins were used as monetary vehicles could be exported rather than circulating as money, providing additional export revenues.

Now, it should be pointed out that private banks *could* have acted to provide PC. The playing cards acted as promissory notes – i.e. claims against the colonial's assets. Banks or private merchants frequently did provide such vehicles (see White 1984; 1992; Selgin 1988; 2008; Goodspeed 2016; Horwitz 2019) throughout economic history as banknotes were essentially claims upon bank assets. The problem in the case of New France is that there were no attempts to found a bank until 1792 (McIvor 1958, p. 15) and the first successful attempt was in 1817 (McIvor 1958, p. 25). Moreover, because of interdictions against private minting (which appears to have fallen under the rubric of counterfeiting), the problem of small denominational shortages (Short 1925a, p.469) could not be answered by private tokens issued by merchants (Shortt 1925a, p. 137).[13] As such, while PC could normally be meant to include any monetary medium that liberates specie (private or public), all PC was government money.

[13] Canadian minting was frequently discouraged by the metropolitan government and the sole attempt that was made, in 1721, was a failure (Shortt 1925a, p.11; McIvor 1958, p. 3). Private minting of copper coins by merchants was observed in England by Selgin (2008) who documented its effectiveness in relieving small denominational shortages. Royal attempts at creating copper coins special to the colonies but these proposals did not go far (Shortt 1925a, p.365).

3 International setting

Now that we have developed the relationship between the domestic monetary situation and the international setting for New France, we should describe the international setting in more detail. We do so by pointing out that without additional monetary media and in the presence of a limited and informal capital account, the Canadian economy could not have grown as we indicated at the beginning of the previous section.

To simplify our exposition, we will first assume that all international exchange had to occur in specie. We will also assume that there was no capital account. In other words, in a world with only specie, exports have to equal imports. We know full well that this is *not* true for Canada as it sustained a constant trade deficit throughout the 17th and 18th centuries (see also footnote 3). However, this assumption allows us to show, by contrast, the importance of card money, as a means to substitute specie in domestic transactions for international transactions. More importantly, it allows us to see that there *should* have been very strong barriers to economic growth both in aggregate and per capita terms (this remains true even once we ease the no capital account assumption at the end of the present section). Given that the data suggest that there *was* economic growth, this allows us to highlight the role of playing card money.

We begin with a simple model of the balance of payments, based on the balance of payments constraint to growth model presented in Lavoie (2014) and Blecker and Setterfield (2019). This is the general form of the equations, and we will outline the specifics for the colonial Canadian case. Imports are given by:

$$I = \left(\frac{p_m}{p_d}\right)^h Y^a$$

where *I* is total imports, p_m is the exchange-rate price index of imports minus transport costs, p_d is the price index of domestic goods, *h* is the price elasticity of demand, Y is domestic income, and a is the income elasticity of imports. Exports are given by:

$$X = \left(\frac{p_x}{p_f}\right)^w Z^b,$$

where X is total exports, p_x is the export price index plus transport costs, p_f is the foreign price level adjusted for exchange rate, w is the price elasticity of exports. Z is the income for the relevant export market, which in this case is the major Europe export markets and b is the income

elasticity of demand on foreign export markets. Taking natural logarithms and differentiating with respect to time yields:

$$\hat{I} = h(\widehat{e} + \widehat{p_m} - \widehat{p_d}) + a(\hat{Y})$$
$$\hat{X} = w(\widehat{p_x} - \hat{e} - \widehat{p_f}) + b(\hat{Z})$$

h would be low, as imports were necessary, as there were few products that could be produced locally in the cold climate of Quebec. Defining the exchange rate is a bit complicated given the multiplicity of currencies and types of money. International transactions must take place in specie defined in metropolitan France, while domestic transactions can take place in beaver pelts, credit, playing card money, paper money, etc.).

France and Canada, despite being part of the same empire, were not in a currency union. In the 1630s, the colonial administration decreed that all coins circulating in the colony, denominated in *monnoye du Canada* (unit of account of Canada), would be rated 25% above their value in *monnoye de France* (unit of account of France). This change was made to try to alleviate the monetary shortage in the colony. This rate was changed to 33% later in the 17th century. However, due to the forces of arbitrage, the real exchange rate rarely deviated from 1, which made a real devaluation impossible. Each devaluation effort, according to historians, quickly led to upward adjustments of the price level which essentially brought back the real exchange rate (minus transportation costs) to 1 (see McIvor 1958, p. 3). Thus, the exchange rate would be fixed, but would increase by 1/3 in 1680 and then return to parity in 1717.[14]

In a model where only specie circulate internationally and there is no capital account, the economic conditions of Canada would have entailed *negative* growth rates rather than the positive growth rates on both per capita and total terms mentioned above. Given the real exchange rate equaled 1, and assuming export and import prices changed little over short time horizons, a strong form of Thirlwall's Law would result. This implies that that the growth rate of income would be the growth rate of world income ($\hat{Z}$) multiplied by the ratio of the world income elasticity of demand for exports and the elasticity of the income elasticity of demand for imports, or

$$\hat{Y} = \hat{Z}\left({}^{b}/_{a}\right)$$

[14] It may strike the reader as strange that, given these monetary shortages and balance of payments imbalances, why prices didn't fall. The discussion in McCloskey and Zecher (1985) is informative here. Arbitrage kept the real exchange rate at 1 and meant that prices wouldn't fall. After all, why would French merchants sell goods more cheaply in Canada than they could in France?

The price of imports was increased by the French system of licensing merchants The elasticity of domestic income to imports was high, as the range of goods produced domestically was relatively small, with restrictions imposed by the Colbertiste state to limit local production and ensure a market for French products. There was also a 10 percent tax that began on all imported goods, and then applied to wines, spirits, and tobacco (Eccles 1964, 15-16). Mercantilist policies would also tax exports in order to fund the maintenance of the colony, to not divert resources from metropolitan France. For example, the earliest trading companies imposed a 25 percent levy on the export of beaver (Dechêne 1992, p. 67). Given that Quebec could only export to certain French ports, the burden of the tax was primarily borne by the local *habitants* (the nickname given to the local settler population). When the merchants at La Rochelle obtained the monopoly of trade with Canada, they raised freight rates from 50 to 120 livres per ton and hiked insurance rates to 20% (Eccles 1964, 209).

There were also monopoloies on selling liquor to the indigenous as well as a monopoly on the beaver trade and a licencsing scheme for engaging in the trade. As the beaver trade was the primary economic activity of the colony, the colonies authrorities were interested in regulating it tightly, but this was more often the exception rather than the rule. As the western beaver trade was done deep in the interior, and so Quebecois woodmen called *coureurs des bois* would set out to trade with the indigenous for beaver skins. The colonial authorities couldn't control the *coureurs* at all. In 1693, only 25 canoes were officially licensed, but somehow 187 arrived with goods (Rich 1966, p. 22).[15] Moreover, the First Nations people would not accept locally made products that they already had access to, and instead preferred goods from Europe. This meant that the trade goods used to barter with the First Nations people were all imported, and so the net gain in terms of imports was only the markup of the value of beaverskin exports over these trade goods.[16]

The population growth of New France also should have acted to limit economic growth in this modelized discussion.[17] New France was a sparsely populated area with plenty of land per person

[15] There was a significant controversy over the sale of alcohol to the indigenous. Secular authorities and the *coureurs* wanted alcohol sales as this was the product that Native Canadians were most interested in and so a ban would severely impact the beaver trade. Religious authorities did not want to encourage alcohol consumption by the indigenous as it led to drunkenness and other social ills. Eventually economic concerns win out in 1678 and the beaver trade developed as a swap of alcohol for furs (Rich1966, p. 22). In any case, alcohol diminished in importance (at least in the British areas of trade) (Carlos and Lewis 2010).

[16] These trade goods included brandy, most importantly, as well as knives, pots, kettles, textiles, mirrors, beads, guns, and ammunition, (Eccles 1964, 60).

[17] One could retort that trade was not bilateral but rather triangular to include the French colony of Saint-Domingue. However, the scale of that inclusion is limited. By 1789, Saint-Domingue had a population of 556,000. This is contrast to close to 30 million in France. Including the French West Indies does not alter our contention significantly and thus we abstract from them to simplify the conversation.

and a tendency to have large families than elsewhere in North America and Europe (the modal family size was 6 – see Dechêne 1974). The result was that the roughly 10,000 permanent settlers to New France between 1608 and 1760 had made the colony's population reach 70,000 by the end of the era of French rule (see figure 3). The average population growth rate was 3.27% suggesting a doubling every 22 years. This rapid population growth combined with mild increases in per capita income (see figure 1) meant that aggregate income would have risen rapidly.[18] At the same time, living standards were low in Europe and population growth was much slower, limiting the growth in exports. French income per capita over the period from 1665 to 1760 either fell or stagnated (Allen 2001; Geloso 2016, 2019; Ridolfi 2019; Ridolfi and Nuovalari 2020). Population growth of roughly 0.23% per annum in France (McEvedy and Jones 1978; Henry and Blayo 1975), provided little support to aggregate income growth there. Imports could not grow faster than exports without seeing specie outflows, and so imports per person in New France would have been squeezed. Moreover, even if the amount of metal coins per person was constant, growing population growth would require specie imports just to keep imports per capita the same. Given this imbalance, no change in the trade balance would require either a shrinking import share of income in Quebec or a rising export share of expenditures abroad.

[18] The figures for Canada by Altman (1988) and Geloso (2018a; 2019) suggest aggregate income (not per capita) growth rates of 3.24% to 3.30% per annum.

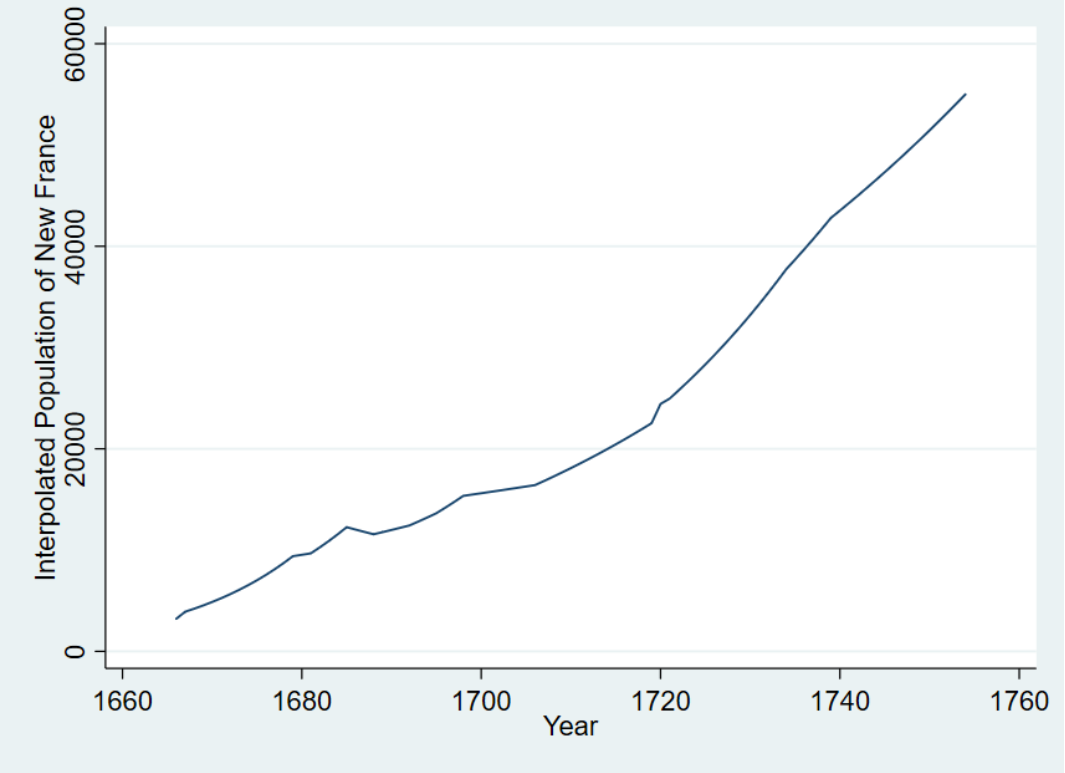

Figure 3: Population of New France, 1665 to 1754

Source: Statistics Canada, Censuses of Canada, 1665-1871

Consider what happens to per capita imports if trade is balanced. Define the population to be A and its growth rate as $\hat{A}$. Now we rewrite the balance of payments equation to be $\frac{X}{A} = \frac{I}{A}$. Define the European population consuming beaver skins (the main exports) to be E and the growth rate of that population to be $\hat{E}$. European beaver pelt consumption is $\beta = \frac{X}{E}$ so that and its change is denoted by $\hat{\beta}$., assuming that beaver is the vast majority of Canadian exports and the rest is trivial, we obtain $\beta \frac{X}{E} \approx \frac{I}{A}$. Expressed in terms of growth rates, the change in imports ($\hat{\imath}$) per capita is given by ($\hat{\beta} + \hat{E} - \hat{A}$). This formulation suggests that when beaver skins were popular, and β rising, more imports could be obtained. However, reductions in demand generated the opposite effect. Given the stagnation of income per capita in France and the evolution of population, $\hat{\beta}$ relative to $\hat{A}$ (as $\hat{A} > \hat{\beta}$) should imply a *negative* growth rate. Indeed, faster Canadian population growth than European population growth also squeezed imports per capita, lowering living standards in terms of import consumption. While Canadians could consume the small variety of domestic goods (if they have the money and can find a willing seller) but their imports of European goods were severely curtailed.

Normally, under a non-mercantilist system, Canadians could have been able to export furs to wherever terms of trade were most favorable which would have limited that problem. However, under the obligation to trade solely with France, this was not an option.

Moreover, the price elasticity of Canadian fur exports was relatively low and French consumers could shift to other sources. While the price of furs did fall rapidly during the 17th century, which would have promoted export growth regardless of French income growth, prices in the 18th century rebounded (see figure 4). Tastes were already changing in Europe, but rising prices after the 1720s further spurred European importers to switch to alternative materials for hats, further reducing demand for Quebec's exports (Crean 1962, p. 383). Combined with the aforementioned proportions for French income growth, this made growth through imports harder. And this can be well seen in figure 5 where the growth of the value of fur trade is depicted. This limitation is clearly depicted as the five-fold increase in volume between 1659 and 1760 is well inferior to the twenty-fold increase in the population of New France (see figure 3).

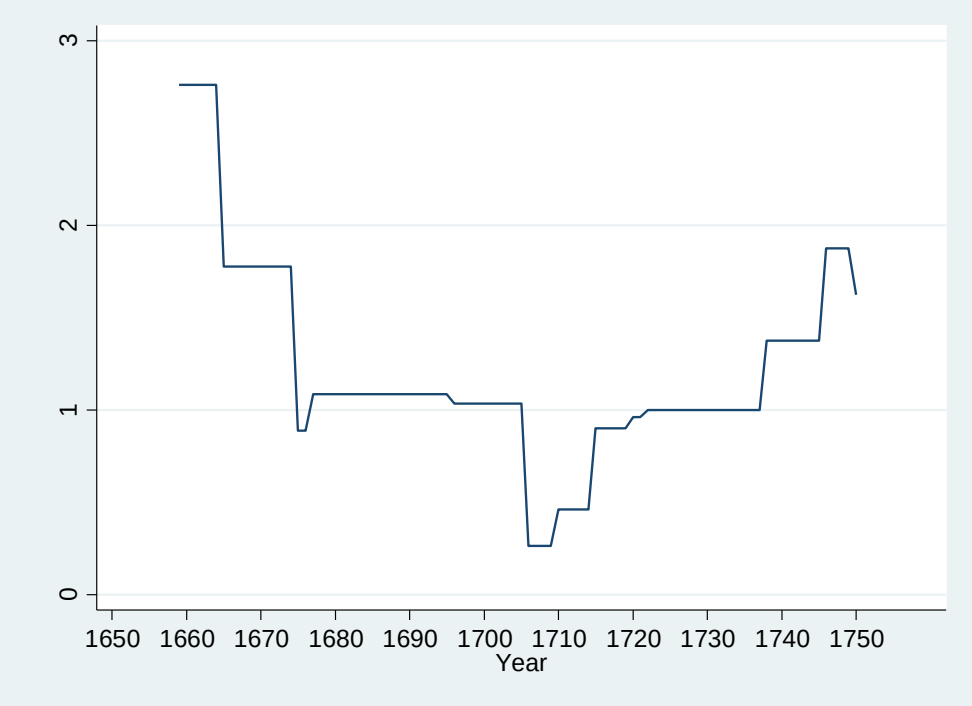

Figure 4: Price of beaver products, index of different goods (1725=1)

Source: Dechêne (1992, p. 73) and Lunn (1942).

The price elasticity of the primary Canadian exports of beaverpelts, inputs for high-end clothing goods manufactured in France, would also be relatively low. In the mid-18th century, the price of beaverskins rose significantly: from under 4 livres in 1739, the price doubled by 1753. Tastes were already changing in Europe, but rising prices further spurred European importers to switch to alternative materials for hats, further reducing demand for Quebec's exports (Crean 1962, p. 383). The price of exports was also reduced by the French trading preferences, with market power operating to depress the terms of trade on this side of the market as well. Income in relevant export markets did grow, but much more slowly that the potential for Canadian growth, and so the slow growth in pre-industrial European export markets limited Canadian growth. The income elasticity for these luxury goods would have been relatively low, as these were luxury goods.[19] However, prices did improve after 1740, so price trends were favorable in the later period.

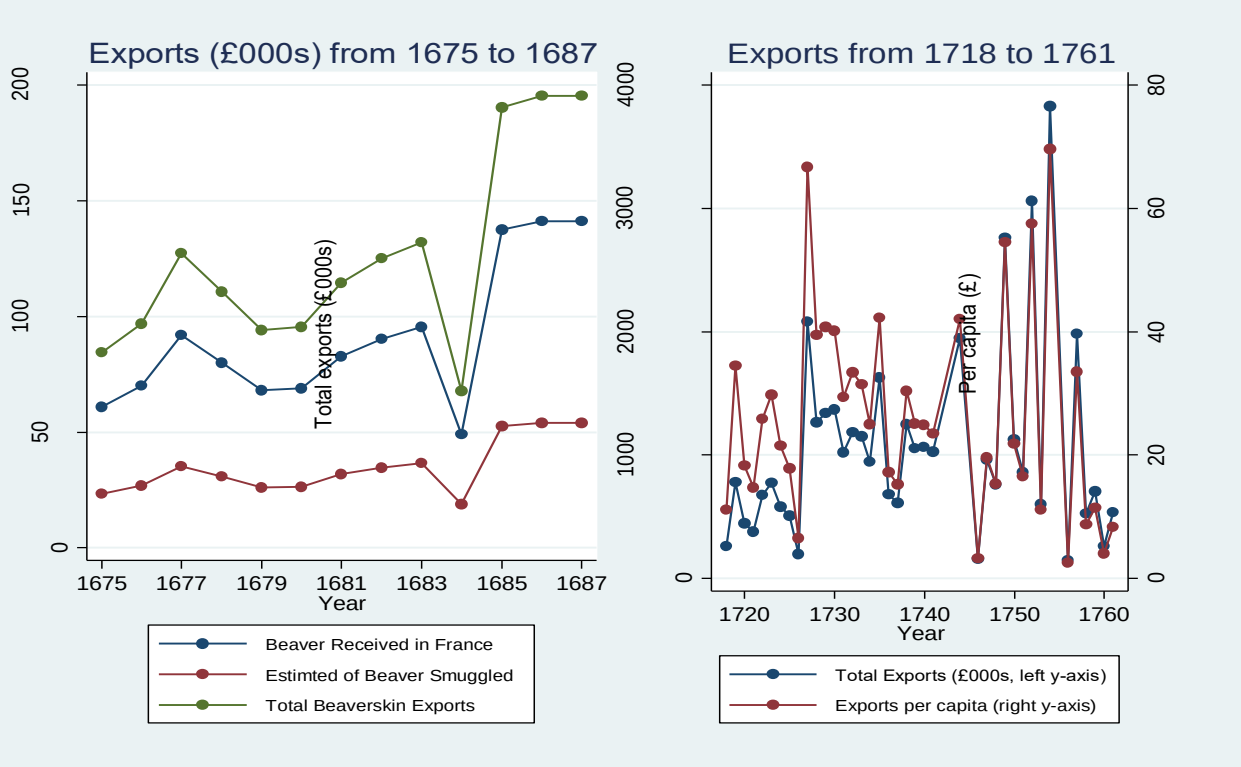

Figure 5: Fur Exports in Canada

Source: Lunn(1942), Murphy (1986) and Canadian Census (various years),

[19] Discussions by Allaire (1999), Bergeron (2006) and Roy (2019) suggest relative low elasticities even if they do not present direct evidence to that effect. Roy (2019) particularly makes it clear that authorities suspected low elasticities.

We can see exports of beaverskins from 1674-1687 in panel A from Figure 5. The quantity exported is increasing slightly. A surge in exports is observed in 1685. While this may be coincidental, it is consistent with an increase in production corresponding to the relaxation of the monetary shortage, such that sales were more likely and so production was more profitable. After this surge, issues of low export demand elasticities from Europe materialized: while 150,000 pounds were produced in 1696, French hatters only demanded 60,000 pounds. Exports of beaver furs can be seen in panel B of figure 5 above, and they rose steadily over time. As the reader will recall, the *coureurs de bois* easily evaded the trading monopolies, so even if attempts had been made to restrict supply, a glut of beaverpelts probably would have resulted anyway (Rich, 1966, p. 20). While the coureurs were overproducing, attempts to ban them from trade would have been economic suicide, so instead licenses to trade were freely given in 1699. This worsened the oversupply issue, and the warehouses were bursting with rotting beaverskins. A satisfactory resolution was difficult however, as restriction was clearly necessary, but this would cede more of the trade to the rival English (Rich, 1966, p. 27).

These factors combined to force the balance of trade to be structurally in deficit and for specie to be structurally scarce. This is assuming that there were no capital markets, and so there was no way to finance capital through a formal capital account. Instead, the balance of payments had a structural deficit that couldn't exist in equilibrium. The deficit in the balance of payments meant that specie flowed out. However, this couldn't continue forever, and indeed, these outward flows meant that monetary conditions were tight, and expenditure on non-local goods was restricted as money was insufficient to satisfy all desired transactions at prevailing prices. This reduction in expenditure eventually reduced income and also reduced imports, as a component of expenditure. The reduction in imports then eventually brought the balance of payments into balance at a very low level of income. Yet, this is not what happened. Incomes were higher than in France and they were increasing faster than in France. We must thus ask what assumptions from the model above should be eased to reconcile the observed empirical facts with the theory. Given the trade deficit, something else must have been happening behind the scenes, otherwise the colony would have run out of coins.

There are four possibilities. The first is that there was a capital account that was not recorded but was present, providing a source for foreign exchange to be obtained. A capital account would have allowed Canada to import consistently more than it exported because foreign merchants were willing to acquire IOUs in exchange for future Canadian production. To be sure, there *was* a capital account – but capital account transactions were relatively limited in scale and number. A large share of those capital account transactions came from the expenditures of the colonial government that were paid

by the government in the home country. However, the numbers for government expenditures amount to slightly more than half a percent of GDP (Cutsinger et al. 2021) while the 1730s (the decade for which we have complete trade data thanks to Lunn 1942, p.477) suggest a trade deficit of 3.61% of GDP (Geloso 2018).[20] Thus, the capital account is not large enough to explain things. The second possibility is that there was smuggling, especially with the colonists in British and Dutch colonies. There is substantial evidence of smuggling (Lunn 1939, Roy 2019) and colonial governors frequently stated the importance of the illicit trade between Quebec and New England (Shortt 1925a, p 157). However, those exchanges did rely on specie as well so that the same constraints as described above apply with the exception that foreign demand is now modestly larger.

The third and fourth possibilities are interrelated and much more significant. If a substantial share of exchange remained in a separate monetary channel – such as barter – then growth is possible as long as the non-internationally traded sector kept growing. The problem, and this is where card money comes into play, is that barter is costly especially as the economy's complexity increases.[21] As indicated earlier, merchants in the cities used either local bills of exchange that would circulate within the colony or book credit with their customers to manage payments. These are non-specie media that reduce the cost of exchange relative to barter. However, they are contingent on the reputation of the parties issuing promises. This limits their circulation. Normally, private banks could have stepped in by issuing their own banknotes backed against assets owned by the banks (Schuler 1992) and of clearinghouses emerging to ensure redemption at face value between private banks (Mullineaux 1987; Salter and Young 2018; Geloso and Bédard 2018). These notes, as they are claims to productive assets, can serve to create a capital account (if accepted internationally) and/or – if they circulate only locally – a separate monetary channel. For example, private banknotes could have been sent to France in exchange for current imports in exchange for future (exported) production or used for local commerce rather than specie money. However, in Canada under French rule there were no private banks – the first bank emerged in 1817. The issue of private tokens, as was observed by Selgin (2008) for 19th

[20] However, that is very likely an overestimation. First, there is the issue that imports used in the smuggling of furs would have entered the imports part of the ledger. Smugglers frequently bought legally the goods to trade with the indigenous. However, the export of smuggled furs would not. Thus, the illicit nature of the fur trade causes that number to biased upward. Second, there is the issue of invisible earnings – the value of shipping services which are a sizable issue to the trade balance calculations in historical questions (Shepherd and Walot 1969). The trade deficit is estimated based on commodities being exchanged without accounting for services in the form of shipping. No estimates exist for the New France, but we know that for the British-era period of 1768-1772, invisible earnings shrunk the deficit by 19% (McCann 1983, p. 119). Thus, the proportion is likely noticeably smaller than this.

[21] One workaround was an ancient one: fixing the price of goods and then making them legal tender in the payments of taxes. This status was granted to wheat in the 1660s and moose skins in 1674 (Shortt 1925a, 11, 17). However, this provision seems to have been rarely used and was repealed soon after.

century Britain, was impossible as well as the crown had a monopoly on copper coinage (Shortt 1925a, p. 9-11). True, some merchants acted as quasi-banks by issuing their own bills of exchange (McCullough 1984). In so doing, they created the limited capital account that we discussed above. The problem is that their bills circulated very narrowly within the colony (generally near the city they occupied) and with great discounts as distance increased. Their bills also were accepted at discount in France so that there were barriers to these bills becoming solutions to the constraints imposed by the institutional settings.

Given these limitations, there remains one option – playing card money acting as a separate monetary channel.[22] If government promises to future assets (either incoming gold coins or bills of exchange drawn against the royal government in France) were deemed credible, these promises could circulate as money in the colony. Thus, they would economize on transaction costs relative to barter and reputation-based media. This would be growth-enhancing. In other words, even if we ease the assumptions made in our modelized discussion, a balance of payments deficit would still result in an external drain of specie given the institutional constraints. With playing card money, domestic transactions rely more heavily on non-specie media which liberates specie for international trade. In addition, by economizing on costs of transactions, marginal costs fall and so output increases. This increase in output means that there are more goods to exports in order to acquire specie (and imported goods). Non-specie media that circulate only in the colony ease the constraints described above and make growth likelier. Playing card money was an addition to the array of non-specie medium and it stimulated economic activity.

4 When playing card money stimulated economic activity

The mechanism linking card money to greater trade volumes that we proposed in sections 2 and 3 hinges on two conditions. First, the notes must be issued in limited quantities and must be seen as credible promises for payment in future specie inflows. Second, if they are overissued and seen as non-credible promises, legal tender laws must be weakly enforced so that discounts can be applied to the notes. This is necessary to avoid a "hot potato" effect where monetary velocity for legal tender rises since it must be accepted by others at par. These two conditions are necessary to avoid, in a

[22] The French crown did attempt to introduce a copper coinage for Canada on multiple occasions (notably in 1721-1722). However, the Canadian colonists had no interest in using this money. This was not the case for other French colonies in the West Indies and Louisiana where paper money had never been introduced, so it seems the experience of paper money had spoiled the Canadians who found copper coinage inferior (Shortt, 1925c, 4-5).

setting with multiple media of exchange, that playing card money drives other monies from circulation which would lead to all price increasing as all prices would become expressed in that particular medium. These two conditions applied in two periods of the playing card money experiment: 1685 to 1705 and 1729 to 1740. In the first period, playing card money was initially deemed as credible and issues were relatively small. However, during that period, legal tender was also weakly enforced such that when the quantity issued became larger and less reliably redeemed, discounts were applied to the paper notes with little that the authorities could do. In the second period, legal tender was more strictly enforced but the issues were limited in quantities.

4.1. *1685 to 1705*

As explained above, the first issue of playing card money was in 1685. Redeemable against incoming specie sent from France, the cards "circulated freely and evidently at face value and were redeemed in September 1685" (McCullough 1984, p. 35). The subsequent issue, in 1686, was also redeemed according to the terms promised. The notes applied to relatively small denominations (15 and 40 *sols* and 4 *livres*).[23] As such, these first issues were deemed credible.

However, after the Nine Years War broke out in 1688, the colonial resorted to playing cards again but delayed redemption (McCullough 1984, p. 36). Nevertheless, they did not generate much inflation until the 1710s due to the weakness of legal tender. Because of overissues, card money became heavily discounted as merchants insisted on quoting prices that were 40% to 50% higher if payment in card money was offered (Shortt 1925a, pp. 95, 175; Dechêne 1992, p. 70).[24] Technically, this was illegal under legal tender laws as large fines (50 *livres* per refusal) were to apply if face value was not accepted (Shortt 1925a, p. 71). However, this was a *de jure and not a* de facto *restriction* as the government's ability to enforce the law was limited as evidenced by the fact that the discounts were imposed on soldiers who were in a position to enforce the legal tender law through as members of the military. More importantly, until 1705, the King did not give legal tender status to card money despite the colonial administration's claims to that effect and so there existed a confusion regarding the status of legal tender until that point (Heaton 1928, p. 655; McCullough 1984, p. 37). The motivation for the King's rejection was that the Versailles government did not want to be held

[23] To give an idea of these proportions, a bushel of wheat in 1685 sold for 42 *sols* (2.1 *livres*) (Dechêne 1994, p. 198).
[24] The 40-50% proportion applies to 1707 but the first mention of a discount in the primary sources (Shortt 1925a) is from 1691. More importantly as this speaks to the weakness of enforcement, some of the discounts are quoted to soldiers who were paid in card money. That soldiers were unable to enforce legal tender speaks volume about enforcement.

financially liable for colonial decisions it could not easily monitor. Thus, merchants could (and did – see Cutsinger et al. 2021, fn28) invoke, until 1705, the King's refusal to refuse the notes at face value.

Efforts to make legal tender *de facto* as well as *de jure,* were then ramped-up starting in 1705.[25] According to Cutsinger et al. (2021), discounts continued to 1714 but they find econometric evidence supporting an effect from legal tender tightening between 1705 to 1714. This was due to the King recognizing the legal tender. However, they point that it was when the administration announced the final redemption, in 1719, of the notes that the discounts fully disappeared. This is because the plan stated that redemption would be a half the face value of the cards but that the notes had to be brought in by 1719 otherwise, they'd be worthless. This form of wealth tax, Cutsinger et al. (2021) argue, caused economic actors to offer payment *only* in playing cards in order to be rid of them. Because of this ticking wealth tax, noteholders had to rapidly get rid of the cards which meant withholding other media of exchange and offering only cards as payment. The result was *de facto* enforcement of face value (other media circulated at a premium). As a result, the general price level doubled from 1714 to 1716 to reflect the supply of playing card money and stayed at a high plateau until the notes were finally redeemed in 1719 at which prices tumbled back down (see figure 1). The initially limited and credible issues would have been, according to the model outlined in section 2, beneficial to economic activity. Then, even though they became overissued and less credible, the weakness of the legal tender laws made it possible for agents to apply discounts to card money. Thus, in practice, the exchange rate of card money fell so that it could continue to circulate alongside other media rather than being inflationary. As a result, card money had positive effects (or at least no negative effects) from 1685 to 1705 regardless of the quantity issued as long as legal tender was weak.

The best evidence for this comes from the recent work of Emmanuel Bernier (2020). Bernier studied the notarial documents of two hinterland regions in the vicinity of Quebec City to evaluate the circulation of card money. Given that they were further removed from Quebec City, the colonial government's reach in terms of enforcing legal tender would have been weak. Consequently, the popularity of card money in these parishes would have depended largely on their usefulness in terms of reducing specie holdings to be used to purchase imported manufactured and capital goods. Bernier (2020) provides three important findings. The first is that the number of transactions that involved card money increased gradually from their first mention in 1694 in notarial deeds. The second is that, because notarial deeds identify the parties involved and where they came from, we can identify the

[25] Larger fines for refusal appear to have been imposed in 1705 (Shortt 1925a, p.145)

area of circulation of card money. Bernier found that 37% of the notes from 1694 to 1702 circulated within the parishes in these regions. Another 53% circulated between the two regions. The circulation of notes was thus relatively limited to the immediate surroundings of Canadian households. The third is that, during that period, card money is frequently mentioned in transactions that include payment alongside other media of exchange. Taken together, these three findings confirm the relevance of our proposed modeling framework as it seems that card money was more popular, did not crowd-out other media, and was used for local commerce.

Moreover, Bernier also finds that, after 1705, card money is no longer found to be used alongside other media. Once legal tender was enforced, card money crowded-out other media of exchange and hoardings of specie increased. Using the share of all transactions that involved playing card money in the regions studied by Bernier, Cutsinger et al. (2021) find that the tightening of legal tender in 1705 had a significant effect in increasing that share thus confirming Bernier's finding. These latter two findings confirm our claim that playing card money needed to be either issued in small quantities or in presence of a weak legal tender (which would allow overissues to be dealt with by shifts to other media).

The economic contraction that apparently took place between 1714 and 1719 confirms, by contrast, the findings of Cutsinger et al. (2021) and Bernier (2020). Prior to the announcement of the redemption plan in 1714 which acted as a form of *de facto* enforcement, both the GDP data of Geloso (2018) and the primary sources suggest that there was an expansion of output per capita. After 1714, there are "great disturbances" in the "Canadian trade" (Shortt 1925a, p. 325-335) that are matched by an important reduction in output per capita from 1714 to 1719. Ruette d'Auteuil, a colonial administrator, argued that the redemption plan's announcement had caused the inhabitants to halt economic activity "except for their individual subsistence" because they did not want payment in card money (Shortt 1925a, p. 329). Only if a premium was offered would coins circulate due to hoarding.

4.2. *1729 to 1740*

The second episode of card money begins in 1729 at the behest of local merchants (Shortt 1925b, p. 583). The King authorized the issue of card money for the sum of 400,000 *livres* (roughly 12 *livres* per capita). This time, there were no issue of the King's withholding of legal tender status. No legal ambiguity thus existed for merchants to exploit. The dispatch from Versailles ordered that funds had to be devoted "to the retirement each year of all or the greater part of this money, either by the sale of munitions and merchandise (…) or by the bills of exchange which shall be drawn on each

appropriation [funds authorized by Versailles] and which shall be paid regularly in France in cash" at face value (Shortt 1925b, p.583). The King, however, prohibited the intendant to issue the card money backed against bills of exchange drawn on either the 1729 or 1730 appropriations which means that card money could only redeemed in 1731 (Shortt 1925b, p.585). Once returned for bills of exchange, the cards would be reissued so that the 400,000 *livres* were a permanent increase in the money supply.[26] However, the intendant tweaked the directives of the King and allowed certificates drawn against the colonial treasurer (known as *acquits de dépense*) to circulate alongside card money and could be redeemed for bills of exchange. Thus, the increase in the money supply was a bit larger than that permitted under the card money directive. Even though it appears that discounts on card money still existed (Shortt 1925b, p. 611, 627), those discounts appear small in contrast to those of the 1685-1719 period[27] and they appear to have been a popular medium among the public (Shortt 1925b, p. 611). Thus, both playing cards and certificates circulated with a certain degree of public confidence during the 1730s.

Bills of exchange were paid promptly during the 1730s and while there was a hiccup in 1734, it appears that the notes were properly redeemed thereafter and until the beginning of the War of Austrian Succession in 1740 (McCullough 1984, p. 48). It is only after 1742 that events spiraled out of control with large issues to finance the war of the Austrian Succession. Thus, the 1730s constitute a period of limited issues that were deemed as credible.For that decade, Bernier (2020) has similar findings as those for the pre-1705 period: there a small but growing number of transactions involving card money; the notes are used in predominantly local settings and; card money is used alongside other media of exchange in notarized transactions. All these elements suggest that the playing cards did not crowd-out other media during the period.

The evidence on economic activity is also suggestive. The period from 1729 to 1739 marks the peak points in terms of GDP per capita and in terms of real wages (Geloso 2016; 2019b). Moreover, the overissue of card money post-1740 is also associated with a contraction in economic activity. Unfortunately, the GDP data of Geloso (2016) has a gap from 1739 to 1762 and the difference between the two points would include the effects of the war that led to the colony's conquest in 1760. However, Geloso (2019b) has annual wage data from 1688 to 1760 that confirms a pronounced downward trend from 1740 to 1760. This is a period when government expenses surged, especially during the Seven Years War period which resulted in the British conquest of Canada, as can be seen

[26] There was a further increase of 60,000 *livres* in 1731 (Shortt 1925b, p. 623) and another of 200,000 in 1733 (McCullough p. 48) and there were no further issues until 1742.

[27] The discounts probably reflect the fact that resources had to be expended to get the bills of exchange to France for exchange in coins.

in Figure 6 below. The data on the proceeds of seigneurial estates (Rousseau 1988) confirm this downward trend throughout the period. Thus, the overissues are associated with a reversal of the positive effects of modest issues.

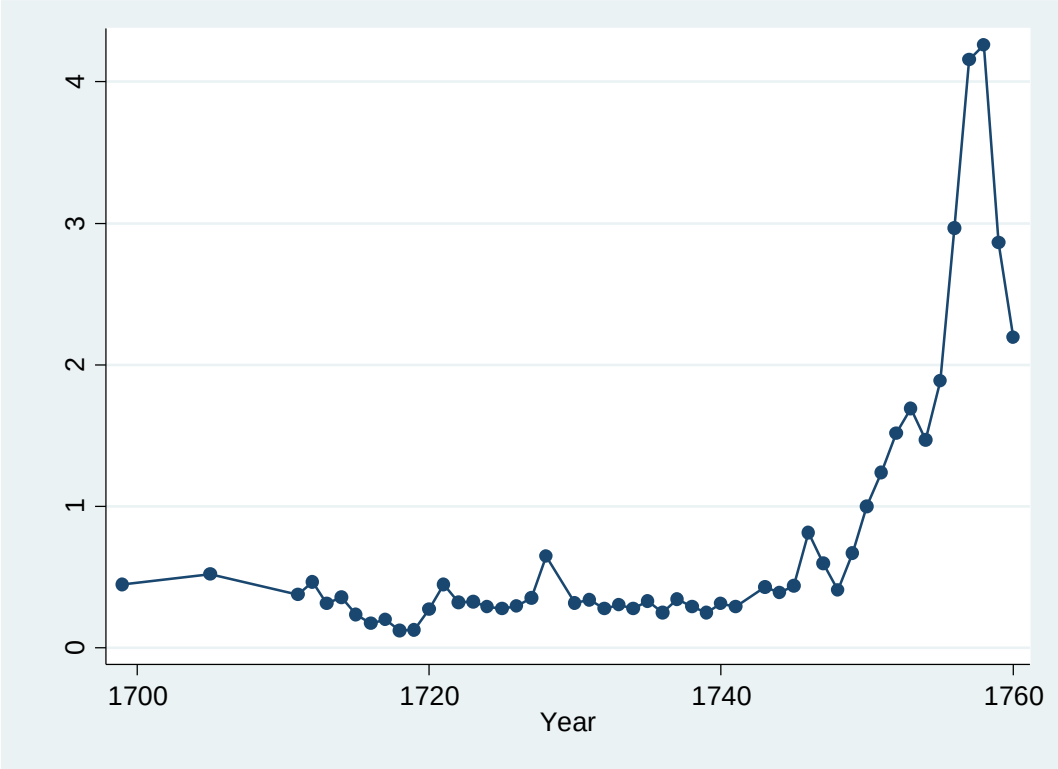

Figure 6: Government expenditure per capita (1750=1, adjusted for inflation), 1699 to 1760
Source: Lunn (1942), Desbarats (1993) and Geloso (2019a).

4.3. *Supporting Evidence*

The evidence provided by Bernier (2020) and Cutsinger et al. (2021) for both periods (1685 to 1705 and 1729 to 1740) is, however, only suggestive of whether card money really did stimulate economic activity as our model posits. To provide a formal test of our hypothesis, we collected data from the same notarial documents as Bernier (2020). Bernier attempted to find only the transactions that involved payments in playing card money and did not collect the total number of economic transactions (sales, obligations, exchanges, labour contracts). Thus, we used the different *Inventaires des Greffes des Notaires* (multiple volumes) to find the notaries in the two regions studied by Bernier. We then tallied all the transactions that we call "economic" so as to exclude transactions like marriage documents and probates. Essentially, we concentrate on exchanges between parties. This tally allows

us to compute the number of transactions in the region which then acts as a proxy of economic activity. That proxy for economic activity can in turn be used to see the effects of the different monetary episodes from 1665 to 1740. Essentially, we will test whether transactions per capita increased during the periods of 1685 to 1705 and 1729 to 1740. If we are correct, dummy variables for these two periods should show a statistically significant increase in transactions per capita. This approach is admittedly simplistic but it is the best that the data afford us. It takes the following econometric form

$$Y_t = \beta_0 + \beta_1 LimitedIssues_t + \beta_2 Overissues_t + \beta_3 InversePop_t + \beta_4 War_t + \varepsilon_t$$

Where Y_t is one of two possible variables, the total number of transactions and the total number of transactions per capita.[28] $LimitedIssues$ and $Overissues$ are our main independent variables of interest testing the role of the different monetary episodes. $InversePop$ is included to capture the network effects of a larger domestic population with more counterparties to transact with using playing card money. Moreover, additional population allows for additional specialization and economies of scale, à la Adam Smith. War is included in order to capture additional wartime spending, which was a primary reason for an increase in paper money issuance in North American colonies. Table 1 below illustrates our descriptive statistics.

Table 2 shows our results. As can be seen, regardless of the definition of the dependent variable that we use, the years with limited issues of card money were associated with greater volumes of transactions. The effects are statistically significant above the 5% level when total transactions are used and above the 1% level when total transactions per capita are used. The pitfalls of paper money are well known, but given the constraints of the period, paper money was beneficial when well backed.

Table 1: Descriptive Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Total Transactions	76	34.05	25.74	8	104
Total Transactions Per Capita	76	12.44	5.346	4.013	30.90
Inverse Population	76	0.000542	0.000363	0.000136	0.00142
Dummy Limited Issue	76	0.408	0.495	0	1

[28] The population estimates are derived from intercensal interpolation. The census information contained in the Public Archives of Canada (1874) and Laberge et al. (1993).

Dummy Overissue	76	0.197	0.401	0	1
War	76	0.434	0.499	0	1

Table 2: OLS Results

VARIABLES	(1) Total Transactions Per Capita	(2) Total Transactions
Inverse Population	9,813**	-39,872**
	(1,816)	(7,222)
Dummy Limited Issue	3.136**	11.46*
	(1.116)	(5.484)
Dummy Overissue	3.027	-0.923
	(1.550)	(6.709)
War	-1.613	-9.015
	(1.310)	(4.786)
Constant	5.951**	55.07**
	(0.955)	(6.202)
Observations	76	76
R-squared	0.290	0.492

Robust standard errors in parentheses

** p<0.01, * p<0.05

5 Conclusion

We have seen how monetary shortages constrained the Economy of New France, and how the introduction of paper money relaxed many of these constraints. It seems that the introduction of paper money substituted for other forms of money that were less convenient, such as commodity money or trade credit, or and in rare cases, barter itself. Scarce specie could be used to purchase imported goods from Europe rather than being hoarded for the needs of domestic commerce. This substitution of paper money for other monies meant that the effective quantity of monetary transactions did not measurably increase, consistent with a stable price level

Our contribution here is that a government-created medium had this effect under two key conditions: a) that it was created when the economy operated under the pressures of a mercantilist system; b) that the promises of redemption be deemed credible. We also add a conditional statement that overissues can fail to create complications if legal tender laws were weakly enforced because this

meant that people could simply shun the unstable medium. However, our paper suggests that a new line of research should be pursued by scholars. The conditions we outline above concern causes of breakdown of the positive effects we document. Such breakdowns did occur in our case (from 1705 to 1719 and from 1740 to 1760). In both cases, the colonial government began to more rigorously enforce legal tender and/or issue larger quantities of paper money. In those cases, the positive effects were reversed.

This, we believe connects to the literature on monetary constitution. More precisely, it suggests that government money *can* be beneficial if there is monetary competition. In the presence of monetary competition (which is proxied by weak legal tender laws), overissues are dealt with by simply shunning the unstable medium.[29] The ability to shift to other media acted as a constraint on the ability of governments to use monetary policy to extract wealth from the population. In the presence of such a constraint – which is a form of constitutional restraint according to Buchanan and Brennan (1980), a government-issued currency could be beneficial. This is an important insight which, we believe, should be integrated in the economic history literature that discusses the connection between new monies and economic growth (Celia and Grubb 2016; Grubb 2005; 2012; 2016a,b; 2018; 2019; Michener 1988; 2015; 2019). Given the institutional setup of Quebec during the colonial era, our results suggest that there were episodes during which playing card money promoted economic activity. This confirms some work that has been done for the American colonies (Lester 1939, Rousseau and Stroup 2011). Essentially, this connects with the existing literature that argues that new monetary media can serve to promote economic growth (Selgin 2008; Cuadras-Morato, 2009; Maixé-Altés and Iglesias 2009; Selgin and Lastrapes 2012; Voutilainen et al. 2020) by reducing transaction costs and economizing on money holdings.

A large aspect of the monetary shortage was related to the constraints on international trade. Without the ability to sell claims on future output through the capital account, exports were essentially the only source of specie to import goods from Europe. Rapid population growth meant that specie per capita would fall without steady specie inflow from France. Without formal capital markets and a capital account, investment could not be funded through foreign investment as would occur in Canada in later centuries. Mercantilist restrictions and export taxes worsened the terms of trade, worsening the balance of payments situation. Price for exports from New France were falling for long periods,

[29] Pecquet and Thies (2010) examined the example of New Orleans when it was occupied by federal troops during the Civil War. Municipal notes circulated as money but were not subject to legal tender laws. They find that these notes only circulated at face value as long as the supply was sufficiently limited. When overissued, these notes lost favor with the public who shifted to other media of exchange.

reducing export earnings. Most goods had to be imports at high prices, and import substitution was impossible for many products. A rigid form of the balance of payments constrained growth model applied to the economy of New France. This paper has shown a historical case where the applicability of Thirlwall's Law is unavoidable, and has shown how a colony like New France, dependent on a single primary export, was constrained in many ways. Indeed, Quebec's growth was uneven in the colonial period, with little progress and frequent declines in income per capita, consistent with the predictions of the balance-of-payments constrained growth model. This paper has relevance both for those interested in issues facing developing countries, often former colonies, as well as those interested in the monetary economics of paper money, which helped relax the balance-of-payments constraints on the economy of New France.

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