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The Optimal Supply Of Bank Money: Upper Canada's Experience On And Off The Specie Standard

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THE OPTIMAL SUPPLY OF BANK MONEY:

UPPER CANADA'S EXPERIENCE

ON AND OFF THE SPECIE STANDARD

by
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of the requirements for the degree of
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ABSTRACT

This thesis examines the fluctuations in the money stock of Upper Canada in the 1830s, and in doing so contradicts the existing interpretation of the monetary events, and also sheds further light on the operation of the early specie standard. The model of the monetary system used, incorporates the potential for currency substitution and expectations to affect monetary behaviour.

Banking in Upper Canada is characterized by a system of three colluding, chartered banks, which attempted to maximize profits in a small open economy. These banks were legally constrained by usury laws and the requirement that notes be redeemable in specie on demand. They operated on a demand curve determined by the utility maximizing choices of individual agents, whose decisions reflected the perceived stability of the banking system and the utility obtained from the characteristics offered by bank money, in comparison to those of the competitive money, specie (coins) and the utility obtained from goods.

The model is employed to analyse monetary behaviour in Upper Canada during the financial crises of the late 1830s. The results suggest that the American suspension of specie payments in May 1837 affected the Upper Canadian economy only indirectly, causing expectations of similiar behaviour in Upper Canada, and not, as the literature suggests,

directly through an external drain.

During the subsequent suspension by the Upper Canada banks there was a dramatic increase in the stock of bank money. The model is modified to allow for the issue of temporarily non-redeemable bank money, but predicts only a mild expansion of the bank money stock. The explanation for the doubling of the bank notes in circulation lay not in the suspension of convertibility, but in the coincidental influx of foreign exchange resulting from expenditures by the British Army in 1838/9.

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CHAPTER 1

INTRODUCTION

1836-41 was characterized by significant cyclical fluctuations in economies of the Western world, and the behaviour of monetary variables was particularly erratic, with the banks of the U.S. suspending specie payments in 1837. This thesis analyzes the operation of the specie standard during these years within the context of a re-examination of the monetary system of Upper Canada in the early nineteenth century.

A model of the monetary sector of a small open economy is presented in which there are two types of money, bank notes and specie, circulating concurrently. The determinants of the stock of money are examined for both a regime where the two are required to trade at a fixed price, and a regime where the relative price is market determined. Small open economy constraints imply, in the long run, that the law of one price holds, so that prices and interest rates (denominated in specie) are determined by their international levels. This in turn implies that the balance of payments operates to generate a supply of money equal to the demand at the fixed price level.

The model permits the analysis of the roles of currency substitution and changing expectations in the determination

of the stock of money. Agents substitute between monies if their relative benefits change. Consideration of the historical context suggests that a major cause of changes in the demand for monies was a change in their expected future purchasing power. The role of expectations is examined in (a) the case where an expected suspension of specie payments implies a fall in the demand for bank money, and (b) the case where an expected resumption of specie payments at a known exchange rate constrains monetary expansion under suspension.

This model is used to analyze monetary events in Upper Canada in 1836-41. Figure 1.1 indicates that the amount of bank notes in circulation fell by 56% in 1837, and then almost doubled its initial level during 1838/39, before again falling rapidly in 1839. In the traditional literature, the initial fall in the bank money stock is blamed on the fact that the Upper Canada banks did not suspend specie payments when the rest of North America did, and the subsequent expansion is explained by the later suspension of the banks. Finally, the second fall in the stock of bank money is interpreted as the result of the deflation necessary prior to a resumption of specie payments.

In this re-examination of the period, it is suggested that suspension by the banks would have been unnecessary, and that the majority of the economic distress caused by

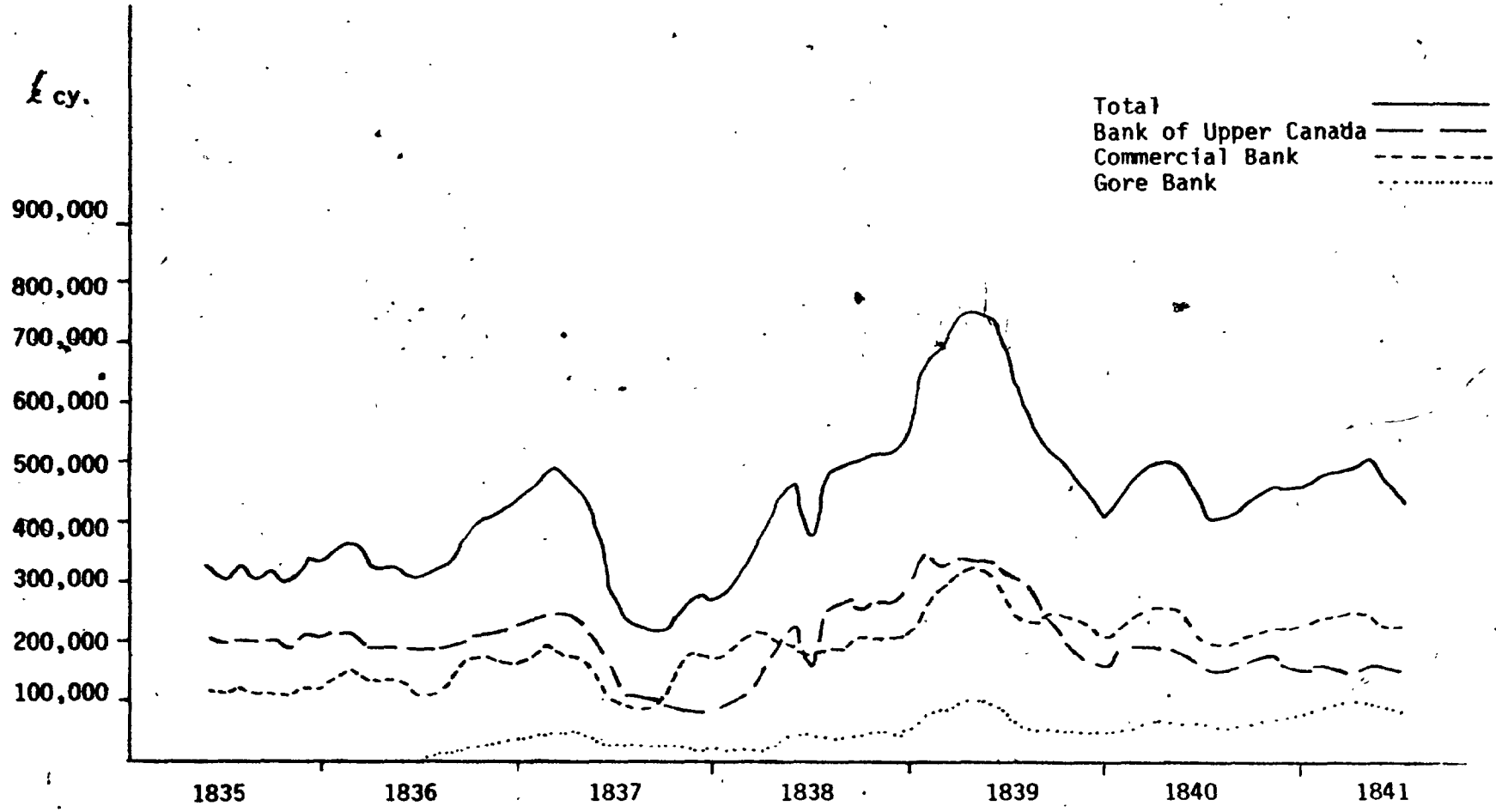


Figure 1.1: The Circulation of Bank Notes in Upper Canada.
Source: Canada, Journals, 1841 App. O

non-suspension, can be attributed to the effects of usury laws. The introduction of expectations of resumption into the model of monetary behaviour under suspension implies that the monetary expansion was not a result of the suspension of specie payments by the banks, and analysis of the history of the period suggests that a sudden very large influx of money from Britain was the cause of both the rise and later fall in the stock of bank notes.

The remainder of this Introduction consists of a brief summary of the literature concerning both Upper Canadian monetary history, and the nineteenth century specie standard, and finally a brief outline of the remainder of the thesis.

1.1 The Canadian Literature

The history of early Canadian financial institutions written by Adam Shortt (Shortt, 1900-1902) was so comprehensive that virtually all subsequent discussions of the subject have relied on his work.[1]. In his discussion of the monetary events of the 1830s he focussed particularly on the behaviour of individual banks, rather than viewing them as components of a national monetary system interacting in the international economy. The result is a very thorough descriptive work, but the lack of a theroretical framework results in incorrect inferences and invalid propositions.

The Panic of May 1837 ended the economic boom that had characterized the U.S. economy for most of the decade. At that time the majority of the American banks suspended specie payments, as did shortly thereafter the Lower Canada banks. The 'suspension of specie payments' by a bank meant that it would no longer pay out a fixed amount of specie per $1 or £1 bank note. The bank would continue to transact all its other usual business, but it would buy and/or sell specie, in exchange for its bank notes, at a rate determined by the market rather than by law. (In Upper Canada such a suspension implied the forfeiture of the bank's charter, unless particular legislation permitting suspension was passed). Suspension of specie payments by the banks of a country or region effectively removed that area from the constraints of the international specie standard and established a flexible exchange rate between domestic and international currency (or specie).

The Upper Canada banks did not follow the example of Lower Canada and the United States, and beginning in May 1837 there was a dramatic fall in the money stock of Upper Canada and a similiar decline in bank lending. Shortt argues that these declines resulted from the policy of non-suspension, which was erroneous and extremely detrimental to the economy of Upper Canada (Shortt, 1902;p. 107). He states that the initial decline in the bank money stock was a result of a run on the banks (Shortt, 1902;p. 105);

subsequently "the urgent need for money prevented the remainder of the notes from returning upon the banks" (Shortt, 1902;p. 106). The impact of the crisis on the stock of money was secondary to its impact on the domestic credit market. Shortt argues that the volume of discounting fell as a result of the increased profitability of foreign exchange speculation, and he continues that this caused the province to suffer commercial distress "more severe than elsewhere on the continent" (Shortt, 1902;p. 111). This distress would have been alleviated, he implies, if the banks had suspended specie payments.

Chapter 4 of this thesis shows that Shortt is mistaken in his discussion of discounting: after May 1837 the share of discounts in the bank's portfolios rose because the money stock fell faster than discounts. Similiarly, there is considerable doubt as to whether the economic condition of Upper Canada was more serious than that of other regions of America, and also whether the causes of the contraction were monetary or real. Finally, while Shortt merely states that suspension would have improved the economy, Chapter 4 argues that the primary reason for the monetary contraction was the fear of a suspension in Upper Canada. The implication of this argument is that it was continued threats and discussions of suspension that increased the severity of the crisis, and that after the initial bank run was over there was no necessity for a suspension of specie payments.

The legislature of Upper Canada passed an Act permitting suspension in June 1837, and the Upper Canada banks took advantage of the Act: the Commercial Bank suspended in September 1837, and the other two chartered banks suspended in March 1838. Shortt argues that the banks did not need to suspend in March 1838 because the U.S. and Lower Canada banks were preparing for resumption. He argues that it was their political power which enabled them to get certain profitable amendments made to the originally strict legislation, amendments which then made it profitable for them to suspend specie payments. Shortt sees the suspension as an exogenous act, because it was caused not by the financial crisis per se, but rather by political maneuverings (Shortt, 1902;p. 112).

Once the banks had suspended specie payments, Shortt argues, they inflated the money supply, and took advantage of their monopoly position to charge exorbitant premia on bills of exchange (Shortt, 1902;p. 116). He states that the banks used their political powers to continue the suspension until the available profits on foreign exchange fell, and that they then reduced the money stock outstanding in order to resume specie payments.

Figure 1.1 shows that while the money supplied by each bank rose after it's suspension, the most rapid expansion did not commence until late in 1838. As will be shown later,

this expansion was not, as most theories of monetary expansion would predict, accompanied by price inflation. Using a model of the monetary sector under a suspension of specie payments, it is shown that the suspension may imply a sudden increase in the money stock, as expectations of suspension are realized; subsequently any excess issue would be of modest proportions, as would the premia on specie and foreign exchange.

1.2 Analyses of the Nineteenth Century Specie Standard

The operation of the specie standard in nineteenth century America, was a subject of considerable debate in the 1960s. This interest stemmed from the work on monetary history done at Chicago, and the structure of analysis introduced by Friedman and Schwartz (1963) has yielded valuable insights into nineteenth century monetary behaviour. Early discussions emphasized the importance of analyzing changes in the proximate determinants of the money stock, and suggested that, in the 1830s, changes in the U.S. money stock resulted from specie flows arising from capital imports. This approach was questioned by Williamson (1961,1964) who argued that a model of macro-equilibrium in a small open economy was a more appropriate tool with which to analyze the 1830s than a model of the monetary sector that assumed exogenous capital inflows. Temin combined the methodological contributions of both these schools of

thought to examine in considerable detail the operation of the Jacksonian economy (Temin, 1969).

Friedman and Schwartz view the temporary suspension of specie payments as an integral part of the specie standard.[2] In the face of an exogenous increase in the currency-deposit ratio which could potentially force a sharp contraction on a fractional reserve banking system, suspension enables the stock of money to fall gradually to a new equilibrium thereby avoiding the sudden contraction that convertibility and fractional reserves would imply. If there were no suspension the attempt by all economic agents to liquify their bank money holdings in a fractional reserve banking system would necessarily result in bank failures, and an unnecessarily sharp monetary contraction. On the other hand, suspension by protecting the bank's reserves from the (impossible in the aggregate) attempt to liquify, would allow a gradual reduction in the money stock, thus minimizing the real effects of the monetary contraction.

Temin's view of suspension is similiar to that of Friedman and Schwartz, except that he argues that during a suspension of specie payments, the removal of convertibility removes the immediate constraint on bank action and there is a tendency for money to be "too easy" (Temin, 1969;p. 117). Both Temin and Friedman and Schwartz suggest that banks will increase their reserve ratios prior to expected resumption, thus reducing the money stock: their motivation being

uncertainty about the demand for bank notes after resumption and the resulting perceived risks of illiquidity.

Neither of these analyses are complete, in that they lack a model of the behaviour of a private profit-maximizing banking system. Without more precise modelling, it is impossible to determine whether or not suspension would result in money being 'too easy', or even whether the bank money stock would fall sharply or gradually at the time of resumption.

1.3 A Revised Model of the Early Specie Standard

The body of this dissertation consists of the examination of the monetary experience of Upper Canada within an analytic framework that extends existing work to incorporate currency substitution and expectations of changes in the relative values of the available currencies both as suspension threatens and once suspension is in effect.

The re-examination starts by modelling the operation of the specie standard as a monetary system in which there are two monies. The stocks of specie and banknotes will depend on asset holders judgement of the attributes of monies and can be easily analyzed in the special case where the exchange rate is fixed, and all expectations are realized. The historical events require that the model be applied to

three types of situations. First, when there is threat of suspension, and the exchange rate remains fixed but is expected to change. Second, during suspension, when the rate of exchange between specie and bank notes is not fixed, but agents expect it to return to par at a future date. Third, a sudden exogenous increase in stocks of foreign exchange occurs conditions of temporary suspension.

The predictions of the model in these situations are applied to the behaviour of monetary variables in Upper Canada. This exercise suggests that the Upper Canadian suspension was not necessary, nor was it particularly inflationary. The economic distress in 1837 was caused largely by poor harvests, but expectations of suspension in Upper Canada, coupled with the effects of usury laws, resulted in a fall in bank commercial lending which had some real effects. The subsequent temporary monetary expansion owed more to British military spending than to the bank suspension.

This analysis of the 1830s results in modification of existing views of Canadian monetary developments in the 1830s. Adam Shortt, in the traditional interpretation, interprets the fluctuations in the Upper Canadian money stock in terms of the monopoly of banking and political power of the Banks (and Bank of Upper Canada in particular), and also emphasizes the close ties between the U.S. and Upper Canada. The analysis reported here, argues that

economic fluctuations in the U.S. were not the sole causes of economic fluctuations in Upper Canada, and that many of the actions of the banks did not depend on their political power.

This thesis begins by discussing the Upper Canada and international economies during the 1830s, which provides the historical and economic background necessary for constructing a model of the monetary sector in that period. Within this context there is a discussion of the literature on the fluctuations in monetary variables in the U.S. in the late 1830s. The core of the thesis is the model of the monetary sector and its behaviour during an anticipated and during a realized suspension of specie payments, and the application of this model to the case of Upper Canada.

FOOTNOTES

[1]See, for example, Creighton (1970), Craig (1963) Neufeld (1972) McIvor (1961).

[2]They use the term "restriction of specie payments' to describe the phenomenon that I have called a suspension of specie payments.

CHAPTER 2

UPPER CANADA IN THE 1830S

Modelling the monetary behaviour of Upper Canada in the early nineteenth century requires knowledge of the economic institutions of the period. This chapter presents a brief description of the political and administrative structure of the province, followed by a discussion of the Upper Canada economy in the 1830s. The economy is shown to approximate a small open economy which exports one staple product, and operates in a specie standard world. This economy, if frictions in the operation of markets are abstracted from will have a price level, interest rate and money stock, determined by their international counterparts. The description of the monetary institutions - banks, coins, and monetary legislation - shows that the banking system of Upper Canada was well established by the mid-1830s, and that bank notes and specie were both significant components of the money stock. Finally, there is a short discussion of the causes of political unrest in the 1830s, and its culmination in the Upper Canada Rebellion. These political events by leading to a significant increase in the British military involvement in the Province are shown (later in the thesis) to have had a significant impact on the economy.

2.1 Sketch of the History of Upper Canada

Economic policy is determined both by the structure of government and by the politics of the Parties involved. In Upper Canada both of those factors were basically determined in the late eighteenth century by Lord Simcoe, the first Lieutenant Governor of the Province. The Canada Act (1791) divided the existing colony of Quebec into Upper and Lower Canada (with the former being the area now called Ontario and the latter Quebec).[1] At that time Simcoe determined the structure of government and the land settlement policy of the province, based on his desire to establish a landed aristocracy. The result of his policies, evident in the 1830s, was a political system composed of two bitterly opposed parties, and an administration controlled by a small landed elite. Since that political structure determined the structure of the economy - by, for example, its impact on government involvement in development projects and banking laws - its origins and background will be briefly described.

The government of Upper Canada was comprised of a Lieutenant Governor, appointed by the Crown, an Executive Council, whose role was strictly advisory, selected by the Lieutenant Governor, and the Legislature. This last body was composed of the Legislative Council, between 33 and 40 members in the 1830s, who were all life time appointees of the Lieutenant Governor, and the Legislative Assembly of 64 members (after 1836) who were popularly elected (Armstrong,

1967).[2] Any bill before the Legislature had to be approved by both Houses and was then passed on to the Lieutenant Governor for Royal Assent. The Lieutenant Governor had the power to give or withhold this Assent, or 'reserve' a bill to be sent to England for consideration, and the Colonial Office had the right to disallow any bill, even after Royal Assent had been given by the Lieutenant Governor.

The first settlers in Upper Canada were primarily United Empire Loyalists who moved up from the United States after the American Revolution and settled on the edges of Lake Erie and Lake Ontario. It was estimated that the population of the province in 1806 was 70,718 (as compared to a population of 250,000 in Lower Canada).[3] By 1824 the population had risen to 150,000 half of whom resided in the Eastern District (Spelt, 1972; p. 34). The only towns were York and Kingston; "no other settlement was larger than a hamlet" (Spelt, 1972; p. 46).

Prior to the 1830s, immigration was almost exclusively a result of group assisted migration schemes, such as the Scottish immigration to Perth, and the Irish settlers whom Peter Robinson organized to settle around Peterborough. After 1830 the population of the Province rose dramatically. Private unassisted migration generated a steady increase in the population which rose from 197,815 in 1829 to 295,863 in 1833 and over 400,000 by 1839.[4]

Kingston, the more prosperous town at the turn of the century, had lost its dominance by the 1830s. In 1797, the town of York (now Toronto) was named the provincial capital because of its good harbor and its distance from the American border. Initially York grew slowly, since the port was not on the main trade route between Kingston and Niagara. Its fertile hinterland, powerful political influence and the impact of the canal system, however, resulted in rapid growth. In 1834 the town of York became incorporated as the city of Toronto, and by 1839 its population was approximately 12,000.[5] The American canal system completed in 1828, connected Lake Ontario with New York City by way of the Erie and Oswego canals, which reduced the dependence of Toronto on the Kingston and Montreal export route.

The political power of Toronto arose out of the land-granting system. In his attempt to establish a landed elite, Simcoe gave large land grants to a select proup of settlers (Craig, 1963; p. 34). Many of these settlers emerged as members of the 'Family Compact', a Tory aristocracy based in York/Toronto, whose members obtained their power through the favour of successive Lieutenant Governors, and positions on the appointed Legislative and Executive Councils.

Although there is considerable debate in the historical literature on the size and importance of the Family Compact, it is generally accepted that it existed and wielded a

significant influence on government policy in the period 1821-41.[6] The Compact members shared many attributes: they were predominantly Anglican Loyalists; most owned considerable land holdings and also financial wealth; many were merchants involved in foreign trade. They all belonged to the Tory party, which controlled the political process to the frustration of the other political party, the Reformers, who represented the agrarian populist interests.

There were many questions on which the Tories and Reformers differed. The key issues including land settlement, public works, economic policy and government reform. The land settlement policy in Upper Canada was stated in the Proclamation of February 1792, which made provision for Clergy and Crown Reserves. An area was surveyed and townships delineated, each of which was divided into 200 acre lots. One-seventh of the lots were reserved for the Crown and one-seventh for the 'Protestant' clergy. These lots were scattered throughout the township, and were intended as a source of revenue (when they were sold later) for the Protestant Church and the government. The reserved lands became a source of dispute, initially because the reserved lands were held by the Church and the government. As a result many of the roads (which settlers were required to build in front of their property) were interrupted at reserved lots since no-one cleared in front of the unsold lots. Later, when the clergy reserves were sold, there was

argument over the definition of Protestant, with the Anglican Tories arguing that Protestant meant Anglican, and the Baptist, Methodist and Presbyterian Reformers decrying this interpretation.

The debate over public works and economic policy arose because the Reformers were largely farmers, while the leaders of the Tory Party were merchants. Thus the Tories wanted to see a canal system built between Lake Huron and Montreal in order to capture the shipping and forwarding trade from the American West. They also wanted the government to bear the cost of these canals as then it would be borne by the entire province (and presumably private capital on such a scale was unavailable).

Similiarly, the Tories wanted tariffs on American agricultural produce reduced to encourage shipment by the Canadian route. The agricultural community on the other hand saw no reason why they should finance canals to transport someone else's produce, and no reason why competitive American products should be admitted to Canada, when the reciprocal arrangement was not in place.

In addition to the Provincial government involvement in the economy, the Imperial government also played an important role. In Section 2.2 the role of Imperial commercial policy is described, but the Imperial authorities also had an economic impact through their military

establishments in Upper Canada. In the early years of the province's history, the role of the British military was the most important facet of the Imperial connection. At the turn of the century the British garrisons on the Great Lakes were comparable to export markets as a market for the surplus products of the area. In later years as the province grew, and the garrison remained of approximately the same size, its relative importance declined. From 1828-37 the Provinces of Upper and Lower Canada together held 2500-3000 men of the British Armed Forces; that is, 5 or 6 regiments.[7]

The economic role of the garrison was twofold. With many of its supplies imported, there was increased business for forwarding companies who shipped goods through the Great Lakes. Secondly, the purchase of provisions that could be produced locally, supplied a market for local farmers.[8]

There were four divisions in the military forces: Army, Navy, Ordnance, and the Commissariat. The Ordnance Department included the Engineering Corps, and were responsible for construction, communications and transportation. When the British government decided to build the Rideau Canal between the Ottawa River and Kingston, it was constructed by the Ordnance Department. The canal, built between 1826 and 1832 at a cost of about £1,000,000, was a source of employment and stimulated the growth of the commercial sector of Kingston. The Commissariat Department was in charge of the administration of the armed forces and

in particular was responsible for all payments. Since the military expenditures play an important role in later discussions, I will briefly describe the payment system.

The Commissariat was under the control of the Commissary General, who resided in Quebec, and several Assistants and Deputies at the various garrisons across the Canadas. Unfortunately, as far as data are concerned, the Military accounts were never divided between the two provinces, but a central accounting was done for the Canadas. In Britain, Parliament annually voted money for military expenditures in Canada. The Commissary General would usually draw on this money by selling Treasury Bills to banks and merchants in Canada who would supply him with specie. All payments by the Commissariat, for example, for provisions or labor supplied, were made in specie (that is, not in bank notes), which subsequently found its way back to the banks.

2.2 The Economy of Upper Canada in the 1830s

In the 1830s the Upper Canadian population was composed primarily of farming small-holders. There was also a limited mercantile class resident in the small towns and ports, who were involved in wholesaling, retailing, shipping and forwarding. There was little industrial development, in North's sense of "the development of manufacturing for a larger market than the particular geographic area" (North,

1966; p. 157). Milling was the primary manufacturing activity, with grain being ground for both domestic consumption and export. The timber industry was the most important activity in the Ottawa valley and Bytown area, but was less important in South-Central Ontario.

V.C.Fowke (1962) has debunked the myth of the self-sufficient Canadian pioneer, and shown that most farmers, while they produced goods for their own consumption, were also involved in market transactions. Their surplus production was sold either to repay debts incurred in starting the farm, or to finance the purchase of implements, textiles and other dry goods.

The data on goods involved in international trade, provide some insight into the behaviour of the economy in Upper Canada. However, although these data are more available than any other real goods data, they are still extremely scarce. There was no port in Upper Canada that handled ocean-going vessels, so that all the trade between Great Britain and Upper Canada went through the port of Montreal in Lower Canada. It is possible nonetheless to obtain data on Upper Canada exports because the Lower Canadians kept records of imports at Coteau du Lac (up the St. Lawrence from Montreal) classified by place of origin (that was the port of entry into Lower Canada of Upper Canadian goods). Unfortunately, no similiar record was kept of the imports of Upper Canada through Coteau du Lac. Data

on trade between Upper Canada and the U.S. are even more scarce, and the only systematic information is the customs duties collected at the Upper Canada ports on imports from the U.S.

The gaps in the trade data for Upper Canada can be partially closed by drawing inferences from the more plentiful data on the trade of British North America as a whole. These data are summarized in Tables 2.1 to 2.4, and they illustrate that the majority (60 - 70% of imports and exports) of British North American trade was with Great Britain. The most important imports from Britain were textiles and metal manufactures, which together accounted for over 60% of the imports of British North America.

The direction of trade was determined by both the commercial policies, and the production mixes of Upper Canada's two major trading partners.

The major exports of Upper Canada was wheat and wheat flour, and Table 2.5 shows that, on average, they were 40 - 50% of Upper Canadian exports to Lower Canada (either for Lower Canadian consumption or re-export to Britain). Under the British Corn Laws (described in Appendix 1) Canadian wheat and flour exports were given preferential treatment by Britain. Conversely, Canadian wheat faced a tariff of 25c a bushel on exports to the United States which usually constituted a prohibitive tariff (wheat prices averaged

Table 2.1

Exports of British North America: 1834-43

(by destination)

Year	Destination				
	U.K. £stg.	%	U.S. £stg.	%	Total £stg.
1834	1,721,441	65.9	95,787	3.7	2,611,018
1835	1,719,995	63.5	149,212	5.5	2,706,694
1836	1,862,797	65.1	153,054	5.3	2,861,500
1837	1,819,849	63.0	146,658	5.1	2,888,075
1838	1,936,765	66.3	139,974	4.8	2,921,985
1839	2,061,241	62.3	228,632	6.9	3,307,169
1840	2,675,508	67.6	189,586	5.0	3,955,929
1841	2,849,712	64.9	229,035	5.2	4,488,094
1842	1,951,668	61.7	115,775	3.7	3,160,185
1843	2,252,775	69.8	113,360	3.5	3,228,542

Table 2.2

Imports of British North America: 1834-43

(by source)

Year	Source				
	U.K. £stg.	%	U.S. £stg.	%	Total £stg.
1834	1,821,053	62.8	299,237	10.3	2,900,416
1835	2,375,007	71.5	271,065	8.2	3,319,724
1836	3,127,754	75.8	278,048	6.7	4,128,378
1837	2,669,114	69.4	276,869	7.2	3,844,373
1838	2,506,930	68.7	275,696	7.5	3,646,778
1839	3,495,637	70.0	608,728	12.2	4,995,723
1840	3,170,507	67.3	822,153	17.4	4,709,990
1841	3,285,538	67.5	898,958	18.4	4,870,073
1842	2,655,048	67.9	747,645	19.1	3,911,171
1843	1,957,850	64.4	612,997	20.2	3,038,415

Source: Great Britain, Parliament, Sessional Papers (Commons) 1847, Reports from Committees, Vol. 2, "Colonization from Ireland" Vol. VI, Appendix p.10.

Table 2.3

Relative Share of the Canadas in British North American Trade

Year	Canadian Imports Value (£ stg.)	%	Canadian Exports Value (£ stg.)	%
1834	1,018,922	39%	1,063,643	37%
1835	896,848	33%	1,496,378	45%
1836	1,034,514	36%	1,941,053	47%
1837	908,702	31%	1,602,353	42%
1838	968,599	33%	1,413,269	39%
1839	1,099,337	33%	2,137,374	43%
1840	1,625,685	41%	1,903,043	40%
1841	1,884,328	43%	1,935,687	40%
1842	1,327,306	42%	1,923,223	49%
1843	1,381,159	43%	1,126,536	37%

Source: See Tables 2.1 and 2.2.

Table 2.4

Imports of British North America (1834-43)

(by products)

in £stg.

Year	Textiles	%	Manufactures	%	Total
1834	766,558	45.9%	207,862	12.4%	1,671,069
1835	1,176,097	54.5%	204,555	9.5%	2,158,158
1836	1,533,491	56.1%	303,030	11.1%	2,732,291
1837	1,082,397	50.5%	259,517	12.1%	2,141,035
1838	1,006,675	50.5%	240,285	12.0%	1,992,457
1839	1,673,537	54.9%	392,534	12.9%	3,047,671
1841	1,436,445	50.4%	380,126	13.3%	2,847,913
1841	1,534,503	52.1%	409,390	13.9%	2,947,061
1842	1,284,463	55.0%	273,925	11.7%	2,333,525
1843	842,090	48.1%	236,097	13.5%	1,751,211

Textiles = apparel and cotton manufactures + silk manufactures + woolin goods.
Metal Goods = hardware and cutlery + iron and steel

Source: Great Britain, Parliament, Sessional Papers (Commons) Vol.14, "Trade of the United Kingdom with different foreign countries" Vol.XXXIX, p. 330.

Table 2.5

Exports from Upper Canada to Lower Canada: 1831-39

(by product)

Year	Wheat (bus)	Flour (bbl)	Ashes £cy.	Total £cy.	% Flour & Wheat
1831	434,850	89,428	94,640	599,618	46.5
1832	311,052	71,580	88,655	448,951	41.2
1833	366,888	112,470	61,266	538,193	54.1
1834	349,623	164,000	45,906	538,254	43.9
1835	39,470	102,117	54,457	443,275	29.1
1836	56,751	173,103	88,424	639,857	42.8
1837	5,511	52,290	104,264	496,241	16.1
1838	16,086	124,029	86,191	594,819	42.5
1839	31,284	125,139	84,273	504,930	38.7

Source: Blue Books of Lower Canada.
Imports of Lower Canada at Coteau du Lac from Upper Canada.

about $1 a bushel). In general, wheat and flour prices in the U.S. were slightly higher than in Upper Canada, but from 1835-38 the price difference rose sufficiently to encourage some Canadian exports of flour to the U.S. (Jones, (1946) 1977; p. 123). The 1831 Colonial Trade Act repealed duties on American agricultural products entering British North America, but wheat and flour were usually sent to Coteau du Lac for export to Britain, rather than for Upper Canadian consumption.

The direction of trade in manufactured goods was similiarly affected by commercial policy. In the Canadas there was a 5% tariff on manufactured goods imported from Britain and a 12½% tariff on manufactured goods from the U.S. This difference discouraged imports of American made manufactures and outweighed the cheaper transportation costs of the Liverpool-New York-Montreal route compared to the Liverpool-Montreal-Toronto route.

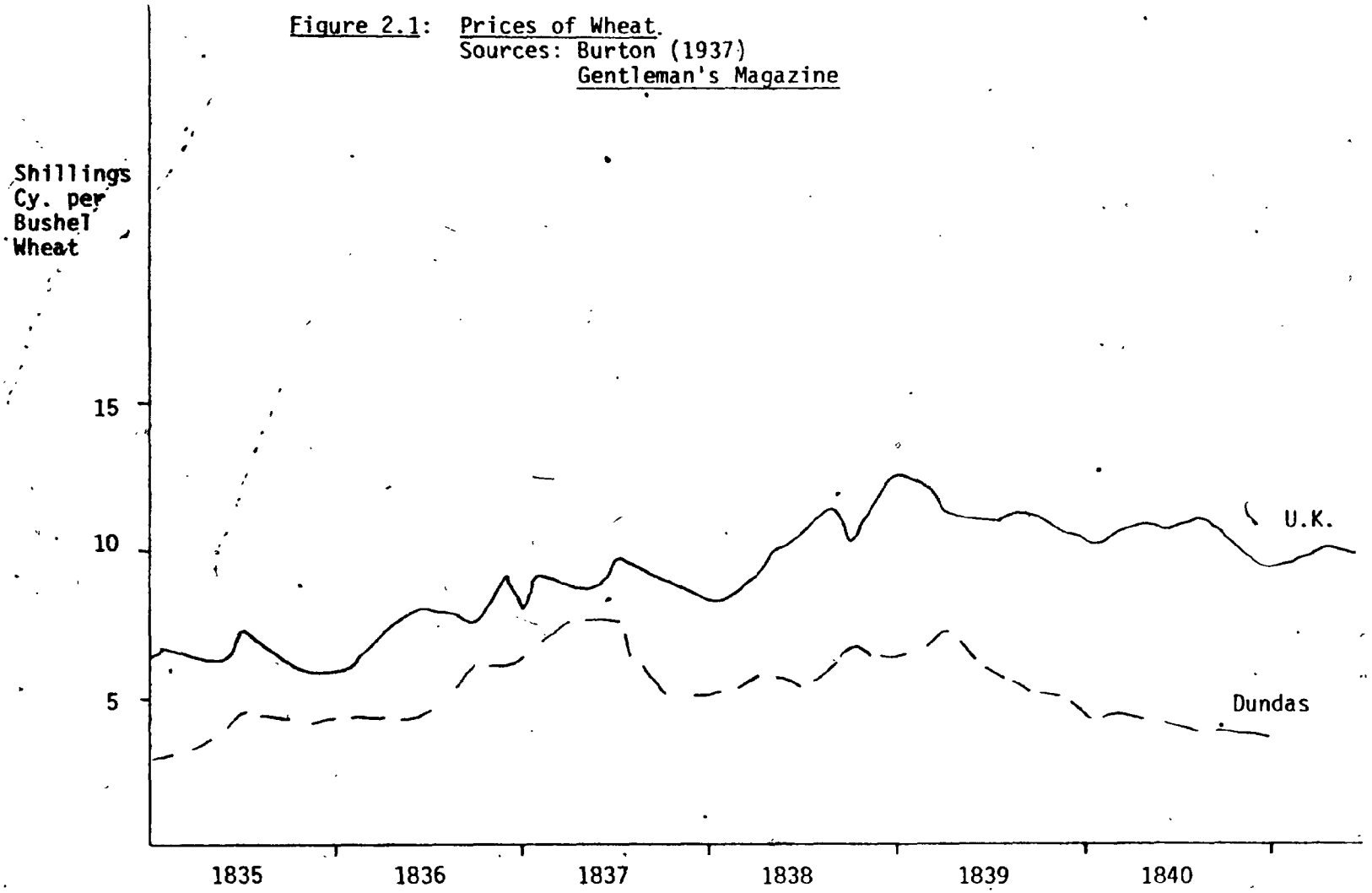
The other impediment to close trade ties between the United States and Upper Canada was the similiarity of their output mixes. The U.S. itself imported much of its manufacturing equipment and dry goods from Great Britain, and the main exports of the Northern and Western States were wheat, flour and potash (North, 1966; p. 107).

As stated earlier the most important exports of Upper Canada were wheat and wheat flour, and the well-being of

Upper Canadians in large measure depended upon the harvest, and the price of wheat. Figure 2.1 presents the behaviour of the price of wheat in Upper Canada and in England from 1832 to 1840. The behaviour of the prices illustrates well the degree of openness of the Canadian economy. Basically the price of wheat in Upper Canada depended upon the British price and the Corn Laws, so that at low British prices, the price in Upper Canada was also low. In the winter however it was very costly for goods to travel from England to Upper or Lower Canada, so that if there were an unexpected shortage (surpluses could be stored) the price would be determined by domestic supply and demand. Figure 2.1 shows that the Canadian price of wheat rose in the winter of 1836/7 relative to the U.K. price, as poor harvests in Upper and Lower Canada resulted in a shortage of wheat and flour.

The Canadian climate with its harsh winters and wet springs affected both domestic and international trade. The access from Britain to both the Canadas was limited from December until April as the ports of Montreal and Quebec were closed by ice, and in the spring the roads became impassable quagmires. Consequently, commerce in Upper Canada had a particular seasonal routine. In October individuals bought their provisions for the following winter. In January or February they would bring their wheat or flour (which had been threshed and ground during the dull late fall) to Toronto where it would be stored or sold to the merchant.

Figure 2.1: Prices of Wheat.
Sources: Burton (1937)
Gentleman's Magazine



During the spring thaw in April and May nothing moved in Upper Canada, but sales began in June and July, and the boats carrying imports up to Toronto transported flour and wheat down to Montreal. The late summer was a slow season for the merchants, until the winter purchases in late October (Acheson,1975).

The economy of Upper Canada was not one of self-sufficient pioneer communities, but rather an agricultural economy linked to the international economy, and particularly to the British economy, by the export of primary products, particularly wheat, and the import of manufactured goods. The closer links to Britain than the U.S. were as much a result of Imperial commercial policy as the work of natural economic forces.

The Upper Canadian economy may be considered a small open economy, in that it was usually a price taker in the market for its exports and imports. The important exception to this occurred in the winter months when an unanticipated change in market conditions could result in price changes, as the economy was virtually closed during the winter.

2.3 The Currency of Upper Canada

In modeling the monetary sector of Upper Canada it is assumed that there are two domestic media of exchange: metallic money or specie, and paper money or bank notes; and that specie could also serve as an international medium of exchange. This is an abstraction from the historical reality where many coins and many types of bank notes existed. This section of the chapter describes the role of specie money in Upper Canada, as both a domestic and international medium of exchange, and examines the basis for the above stated assumption. (The following section focusses on the role of bank money).

There was no Mint in Upper or Lower Canada and the specie in circulation consisted of gold and silver coin from Britain and the U.S. with a smattering of French coins and Spanish and Latin American silver. (There are no references to the existence of bullion in Upper Canada, either in bank vaults or private stocks). The unit of account in Upper Canada was the pound currency (£cy. as opposed to the £stg.).[9] There were no coins issued in this unit, but most gold and silver coins in circulation were given a legal rating in pounds currency. These ratings were changed from time to time by an Act of the Provincial government, in response to changes in the world price of specie, changes in the weight of the U.S. dollar, and the whim of the Upper Canada government of the day. The only constant in the

changing laws was that US$1=5/-cy.

A discussion of Upper Canadian coinage must start with a few details of British and American currency, since many of the coins in circulation originated there. In comparison to the multi-coin system in Canada, Britain was on a gold standard (a mono-metallic standard) and the U.S. was on a bi-metallic standard. The purpose of a bi-metallic standard was to have a high value (gold) coin for large payments and a low-value one for smaller payments. The problem with a bi-metallic standard was that if the relative value of the coins was once legally established at the market price, if it was desired to maintain circulation of both metals, the weight of at least one of the coins would have to be changed every time the relative market values changed. The British gold standard solved the problem of small payments by minting token silver coins (i.e. coins with silver value less than their face value), which were legal tender to £2 stg. only. It was an essential feature of specie standards, that specie metals would be bought or sold by the Mint on demand at the stated prices, and specie (gold or silver) could be exported without restrictions.

In Appendix 2 the gold par of exchange between the U.S. and Britain is derived; this par was $4.87 = £1stg., but was always quoted as a 9.7% premium, as the official par was $4.44 = £1stg.

In Upper Canada the relevant currency law in the late 1830s was the Act of 1836, a part of which is shown in Table 2.6. The Act overvalued the British shilling (whose legal tender value was left unrestricted) and consequently the British shilling became the dominant coin in Upper Canada. A Committee investigating proposed changes in the currency legislation in 1841, found that "In Upper Canada the change is virtually made already (to British sterling money) and there is nothing but British coin there"; and one witness stated that, "In Upper Canada, since the dollar has been rated too low in proportion to British money, the latter has ... virtually superseded all other money".[10]

The Act established par at UC$5 = £1stg. which as quoted against the 'official' par of UC$4.44 = £1 stg. was a 12.5% premium. Since, at par US$4.87 would buy £1 stg., Upper Canadian dollars would be expected to trade at a 2.5% discount in the U.S. at par. (See Appendix 2, for a discussion of the process by which shillings drove out other coins and the par of exchange was established).

The coinage laws in Lower Canada were similiar to those of Upper Canada except that in Lower Canada shillings were valued at 1/1d cy., and several French coins were legal tender at values above their specie value. This led to acrimonious correspondence between the banks as, for example, the Bank of Upper Canada would pay its debts to the Bank of Montreal in overvalued British shillings, and the

Table 2.6

The Value of Coins in £ cy. Established by the Act of 1836

Coin	Metal	Face Value	Cy. Value
Sovereign	gold	20/- stg.	24/4 cy.
Eagle (post 1834)	gold	$10	50/- cy.
British Crown	silver (t)	5/- stg.	6/- cy.
British shilling	silver (t)	1/- stg.	1/3 cy.
Dollar	silver	$1	5/- cy.

Source: Upper Canada, Laws, Statutes, An Act to repeal and amend certain Acts of this Province in relation to gold and silver coin made current by law ... 6 Wm. IV ch. 27.

Bank of Montreal would pay out its notes in debased French half-crowns. The situation was not resolved until 1841 when, after the Union of the Provinces, a unified currency system for the two provinces was created (4 and 5 Vic. Ch.93).

Payments for international transactions were made either in specie or by bills of exchange. Since, as shown in Section 2.2, the majority of Upper Canada trade was with Britain, and because London was already the international financial centre, Upper Canada trade payments and receipts were often in the form of bills of exchange on London. Thus, exporters (in Upper Canada) received bills of exchange from their debtors, which stated that the exporter would receive £x stg. in London in 60 or 90 days from date. The exporter could either wait and ship his specie, or sell (discount) this promise to pay. The banks frequently bought such exchange and sold it to importers who could then pay their English debts with such a bill.

Bill prices were determined by interest rates and the balance of payments, and the specie points. At par, bills would have sold at 12.5% premium (as described in the above paragraph) plus the interest rate component. If bill prices exceeded this plus the shipping costs of specie (i.e. the specie points) the importer would draw specie from the bank and ship it to England. If bill prices fell below the specie points (12.5% - shipping costs) the exporter would prefer to wait for the bill to mature and import the specie. The bill

prices were also influenced by the New York market for exchange on London, as it was relatively easy to send agents to New York to buy or sell bills of exchange (there were no agents permanently posted there). There are no references to any trade in internal bills of exchange but all the banks traded bills of exchange on New York, although this was subsidiary to the trade in exchange on London.

Data on specie flows in and out of Upper Canada are unavailable, and again inferences are drawn from the existing sources. There are figures on the specie reserves of the banks and of their imports (but not exports). There are also data on the inflow and outflow of specie at St. John, the main port of entry from New York to Montreal (and Upper Canada). These data are shown in Table 2.7. From 1834 onward the exports of specie from St. John are quite small, and the net imports are always positive.

There are two final points to be made with respect to the state of the currency in Upper Canada. Firstly, there are frequent comments in the literature concerning the scarcity of specie, and resulting premia on dollars and half-dollars; similiarly many authors have stated that despite the legal requirements the Banks would not redeem their bank notes in specie at par. The above discussion shows that the premia on dollars resulted from the over-valuation of the shilling, not a 'scarcity of specie'. The merchants paying trade balances in specie, preferred dollars

Table 2.7

Specie Flows in Upper Canada: 1830-40

Year	Reserves U.C. Banks	Imports U.C. Banks	Imports at St. John	Exports at St. John
	(£cy.)	(£cy.)	(£cy.)	(£cy.)
1831	42,664	26,000	185,625	53,252
1832	N.A.	63,000	79,110	96,802
1833	62,437	78,000	116,275	84,586
1834	67,541	137,500	134,207	20,250
1835	130,175	137,500	96,975	27,194
1836	138,756	75,000	30,150	17,032
1837	118,038	210,005	153,691	17,341
1838	189,706	132,500	104,175	12,431
1839	214,293	132,500	104,175	18,031
1840	229,004	60,000		

Sources: 1. Upper Canada, Parliament, Journals (House of Assembly)
2. Canada, Parliament, Journals (House of Assembly) Vol. 1, 1841. Appendix O "Final Report of the Select Committee on currency and banking"
3. Blue Books of Lower Canada.

or sovereigns to the token shillings, but given the currency law, the banks naturally charged a premium on such specie; again the premium did not reflect a 'scarcity of specie'.

In conclusion the existence of many forms of specie and coins, does not preclude an analysis based on one specie money. The operation of Gresham's law meant that the prices of all coins were fixed by their relation to the overvalued coin, and thus specie could be considered as a Hicksian composite commodity.

2.4 Banking in Upper Canada

The Canadian banking system has always been dominated by 'chartered banks'. Private banks were permitted to operate in Upper Canada until 1837, however they played only a minor role in the industry (10% of the total note issue), and after 1837 no new private banks were permitted to open. The operation of a chartered bank system gave the local legislature the privilege of allocating monopoly benefits, but the benefits of a charter (and therefore its value) were not well-defined. The advantage of a charter to the stock-holder was that it conferred limited liability status on the shares of the bank. The benefit to the holder of bank liabilities (i.e. notes or deposits), lay in the safeguards imposed upon the chartered bank, such as, a limit on note issue of three times the value of the capital stock (Breckenridge, 1895; p. 31), and the value of the government

approval.

Before the establishment of Canadian banks, trade in the Provinces was carried out by a mixture of American and British currency, bills of exchange, merchant's 'bons' (i.e. 'good for ... '), and I.O.U.s. During the War of 1812 the Imperial Army financed much of its expenditures in the North American colonies by Army Bills which were issued in payment for supplies. These were in large denominations, paying 4% interest, and small bills (less than $25) which acted as a medium of exchange and were interest-free. Although they were withdrawn from circulation in 1815, (there were then about £1.5 million cy. in circulation) they had already served the purpose of familiarizing people with paper money, illustrating that it could be both convenient and reliable.

The chartering of the first Bank of the United States in 1792 stimulated merchants in Montreal to attempt to charter a bank. They were unsuccessful until 1821 when the Bank of Montreal received its charter, having operated under Articles of Association from 1817 - 1821.

The first chartered bank in Upper Canada was the Bank of Upper Canada at York, and it was the only bank chartered in the Province between 1822-32. The story of the bank's chartering is quite involved. In January 1817 merchants in Kingston petitioned the House of Assembly for a charter for

a Bank of Upper Canada. Shortt describes the reaction of members of the Family Compact in York to the petition: "[They] seemed to have awakened to the fact that despite their customary vigilance, here was something likely to go past them which might make a desirable addition to their already valuable collection of provincial good things" (Shortt, 1900; p. 4).

The result of the subsequent political battle was that a private bank, later known as the Pretended Bank of Upper Canada, commenced business in Kingston in 1817, and the York merchants received a charter for a Bank of Upper Canada (referred to as the 'York Bank') in 1821. The Kingston merchants were then granted a charter for their bank, but the bank failed before acquiring the stipulated paid-in capital, so the York Bank was the only Upper Canadian chartered bank until 1832.

The bank was permitted a maximum capital stock of £200,000 cy., made up of 16,000 shares of £12/10/0 each. The bank could commence business after at least £50,000 (4,000 shares) was subscribed, and £20,000 paid-in in specie. These requirements were all halved shortly after the charter was issued, and the bank's opening was only made possible by the government's subscription to 2,000 shares (£25,000), and payment in specie of 25% of their value (£6,250). The notes issued were to total less than three times the paid-in capital, and were to be redeemable in specie on demand, and

had to exceed 5/-cy. ($1) in value. The bank's shareholders had limited liability, and the bank was to discount notes of hand and promissory notes, but "on no acount to lend on land, mortgage or hypotheque". Finally the opening of branches was explicitly authorized (Breckenridge, 1895; p. 56).

Prior to the opening of the Bank of Upper Canada, the Bank of Montreal operated agencies in Kingston and York. These were closed after January 1824, when a law was passed prohibiting banks from issuing notes in Upper Canada if they would not redeem their notes in specie in the Province. Apparently the observance of the law was only partial. Denison, in his history of the Bank of Montreal, states that in June 1826 J.H.Dunn, the Receiver General of Upper Canada, acted as the Bank's representative in York, and from 1829-33 the Bank of Montreal had an agency in Kingston while the Rideau Canal was under construction (Denison, 1966; p. 158).

There is a general consensus in the literature that the Bank of Upper Canada's banking monopoly resulted from the elite position of its stockholders, and was of considerable benefit to them (McIvor, 1961; p. 34; Craig, 1963; p. 162). The monopoly privilege was however limited as shown by the existence of the Bank of Montreal agency and the later appearance on the scene of private banks. On the other side of the balance sheet the bank's monopoly of lending was limited by the foreign competition. Most merchants, who were

virtually the only borrowers from the Bank, could also obtain some credit overseas, which limited the monopoly of the Bank. The one area where it did have some monopoly power was in lending to the Government, however these loans constituted less than 10% of the Bank's liabilities in the 1820s.[11] It is certainly true that the Bank had powerful political connections, however it is probable that at the time when the monopoly privilege would have become valuable, other banks obtained charters.

In the later twenties the prosperity of Upper Canada and the British decision to spend £600,000 stg. to build the Rideau Canal, spurred the Kingston merchants to renewed efforts to obtain a bank charter. These efforts were unsuccessful until the early thirties, when they gained political leverage from the wish of the Bank of Upper Canada for an increase in its authorized capital.

In 1830 the Legislative Assembly passed a bill incorporating the Commercial Bank of the Midland District, but it was rejected by the Legislative Council. The Bank of Upper Canada reacted to this threat to its monopoly power by giving its Kingston branch its own Board of Directors with the power to discount bills on the spot. The Kingstonians were not appeased however and when, in 1831, the Legislative Council proposed a bill increasing the capital stock of the York Bank, the Legislative Assembly voted against it. In 1831/2 a compromise was reached and the charter for the

Commercial Bank, and the increased capital stock for the Bank of Upper Canada were both given Legislative approval.

In November 1833 a petition was introduced to the Legislature asking for a charter for a Bank in Hamilton, to be called the Gore Bank. This petition was endorsed by Allan MacNab, a Hamilton Tory, whose reaction to the Council's rejection of the petition Shortt describes as follows "(he) began to expose the motives and methods of the Council in such matters much to the delight of the enemies of the Compact, and the edification of the public in general". (Shortt, 1901; p. 315). The Gore Bank Act was passed by the Legislative Council in 1835, and received Royal Assent in October 1835. The only unusual feature of the charter was that shareholders were subject to double liability. In the Sessions of 1836/7, nine more bank charters were approved by the Legislature, but the British government had instructed the Lieutenant Governor to reserve Royal Assent on all money (i.e. banking and currency) Bills. Thus these charters were withheld and subsequently forgotten in the financial crisis of 1837-39.

Although the three largest banks had charters, it was legally permissible to open a bank under Articles of Association, and four such private banks opened in the early 1830s: The Farmer's Banking Company, The Niagara Suspension Bridge Bank; the Bank of the People and the Agricultural Bank. These all issued notes (without limited liability

however) and the Agricultural Bank, in 1834, innovated the practice of paying 3% interest on deposits, which policy was subsequently copied by the chartered institutions. The share of the private banks in total note issue by Upper Canada banks peaked in 1837 when the four private banks had issued 17% of the notes in circulation. In that year the Legislature passed an Act "to protect the public against injury from private banking" which prohibited the note issue of private banks except those already in existence.

No new banks were chartered in Upper Canada until the mid-1850s, and although the Bank of British North America commenced operations in the province in 1837, it did not issue notes within the province until after 1840. The Bank was incorporated in the United Kingdom in 1836 and Canadian banks, which saw it as a source of capital for the Province, enthusiastically endorsed its arrival. The bank later became an important source of loans and foreign capital inflow, although its note issue was always a relatively small part of total note issue, and was also small relative to the amount of its discounts.

The system of banking that had evolved by the mid-1830s was that of a few large chartered banks (each with some locational monopoly), which had several branches, and a fringe of private banks. There had, however, been considerable discussion of alternative banking systems. The two favored alternatives were unregulated or free banking,

and a Provincial Bank, and subsequently both of these schemes were implemented. As early as 1821, a Provincial Bank was first suggested as a cure for the economic ills or 'scarcity of specie' in the Province. In April 1821 the Kingston Bank had not taken up its charter and the Legislature passed "An Act to Establish a Provincial Bank" which was to be called the Bank of Upper Canada. However, two days later the charter for the "Bank of Upper Canada" or York Bank, was returned with Royal Assent from England and that Act took precedence. In fact, the desired Provincial Bank's charter was very similiar to that of the Bank of Upper Canada, which acted as a Provincial Bank for the first ten years.

In the 1830s Wm.H.Merritt, the promoter of the Welland Canal and a prominent business man in Upper Canada, secured a Committee to investigate the establishment of a Provincial Bank. Witnesses suggested alternative ways of increasing the circulation and more importantly the amount of loanable capital in the Province; specifically, increasing the capital of the already existing banks, establishing a Provincial Bank and deregulating Banking. Ultimately Merritt introduced a bill to establish a Provincial Bank with a capital of £500,000 of which £350,000 was to be subscribed in England, £25,000 would be subscribed by the Provincial Government, and the remainder would be raised by private subscription. He argued that the Bank would make sufficient

profits to ease the public debt, but the Bill failed to pass, possibly due to the disinclination of shareholders of the existing banks who dominated the Legislature.

The idea of a Provincial Bank was reintroduced after the Union of the Provinces by the then Governor General, Lord Sydenham (né Charles Poulett Thomson) who had been involved in the contemporary UK debate between the Currency and Banking Schools of thought. He was 'an ardent supporter' of the Currency School which believed that "the way to avert booms and panics as well as to maintain the intrinsic value of the standard was simply to control the issue of notes" and this could be done by having a central issuing authority (Davoud, 1964; p. 97). In August 1841, he introduced a proposal to establish "The Bank of the Province of Canada" which would have a monopoly of note issue in the Province, but the proposal was dismissed without discussion by the House of Assembly.

2.5 The Role of the Banks as Suppliers of Money and Credit

The banks in Upper Canada served two economic functions; they supplied a medium of exchange and they were the only organized domestic short-term (mercantile) lending agency. The functions of the Bank are illustrated by the Balance Sheet of the Bank of Upper Canada shown in Table 2.8. The largest liability of the Bank was its notes in circulation. Throughout the thesis it is assumed that bank

Table 2.8

The Bank of Upper Canada

Balance Sheet

February 3, 1836

Assets

Specie	£ 102,859	
Real Estate and Furniture	8,858	
Bills of Other Banks	16,092	
Balances due from Other Banks	7,408	
Notes and Bills Discounted	479,321	
In 'transit'	1,745	
Total Assets		£ 616,283

Liabilities

Notes in Circulation	£ 220,023	
Deposits	157,755	
Deposits with Interest	8,737	
Balances due to other Banks	29,768	
Total Liabilities		416,283
Capital Stock		200,000
		£ 616,283

Source: Upper Canada, Parliament, Journals, (House of Assembly)

notes were a part of the money stock, while deposits were not. This arbitrary assumption is based on the fact that deposits were not used as a medium of exchange but were more similiar to today's savings accounts. There are no references to the use of cheques on deposits as a means of payment, which further supports the conclusion that they were savings accounts rather than a medium of exchange. The 60:40 split between bank notes and deposits was reasonably typical of the 1830s although during 1837 bank notes briefly were a smaller fraction of total liabilities than were deposits.

The balance sheet does not distinguish between the various assets in the Bank's portfolio and only shows the level of specie reserves and the total of bank lending. A full discussion of the bank's reserve ratio is postponed until Chapter 6, however the 17% reserve ratio in Table 2.8 is reasonably typical.

Bank notes were a significant component of the total stock of money but the lack of data on the amount of specie held by the public means that it is impossible to state its exact importance. There are some indications however that during the 1820s and early 1830s, the public gradually increased their holdings of bank money, and total money as the convenience of paper money was noticed, and banking institutions became familiar and available to wider areas.

In 1825 the circulation of the Bank of Upper Canada had reached £61,000 cy. and the Bank's Cashier (i.e. general manager) estimated that the circulating medium of the Province was £135,000 cy. made up of £30,000 cy. in specie, £60,000 in Bank of Upper Canada notes and £45,000 in Lower Canada notes and those of the United States (McIvor, 1961; p. 36).

By the late 1830s the role of paper money had expanded, as illustrated by the following two pieces of evidence. The Manager of the Bank of Montreal, giving evidence before a Committee inquiring into the causes of the 1859 Recession, compared it to the 1837 financial crisis and commented that "Bank notes, then, almost as now, were exclusively the circulating medium".[12]

The second piece of evidence comes from the Blue Books of Upper Canada in which the Lieutenant Governor was required to comment annually on the currency of the Province. The usual entries in the 1830s simply gave the legal tender values of many coins and said that Notes of the three chartered banks were in circulation as well as some notes from United States and Lower Canada banks. In 1840 the entry is somewhat fuller since there was a significant change in the currency - the resumption of specie payments by Upper Canada banks. The Lieutenant Governor states that since (a) the banks issue small notes (i.e. 5/- or $1), and since (b) specie was not used for internal transactions

during the suspension: "no means exists for ascertaining the amount of metallic currency, but it certainly is exceedingly small in proportion to the whole currency of the province". He added "there is a partial circulation of the paper issued by the banks of Lower Canada and the United States".[13]

These small pieces of information support the inference that in the late 1830s, the paper money of the Upper Canada banks was a major component of the money stock. They also give supplementary evidence on the competitive nature of money issue, since it is clear that both U.S. and Lower Canadian paper money circulated in Upper Canada.

The revenues of the banks arose from their lending which was predominantly in the form of discounting notes of hand, and bills of exchange. This was, therefore, all mercantile lending, and the merchants in turn gave credit to purchasers, who usually obtained goods on credit. The larger merchants usually had three alternative sources of credit: his British exporter/supplier, a British finance house or Bank, and a Canadian bank. In his recent book on the Buchanans of Hamilton, McCalla (1980) shows that their liabilities included all three alternatives and this appears to have been quite usual.

The usury laws incorportated into the bank's charters prohibited any lending which yielded a return greater than

6% per annum. In fact if a contract stipulated a higher rate of return, the debtor was not obliged to repay the sum. The banks always lent at the 6% rate (McIvor, 1961; p. 35), supporting the hypothesis that the usury law represented a binding constraint on the banks as lenders.

2.6 The Long-Term Capital Market

The long-term capital market can be broken down into domestic and international transactions. During the 1820s there was virtually no long-term capital inflow, and long-term lending consisted of private individuals borrowing from other private individuals on mortgages (Gagan, 1974), and government borrowing on debentures from either private individuals or the banks. The government borrowing was on a small scale; only five of the twenty-five issues exceeded £10,000 cy. and all of these five were to raise money for the construction of the Welland Canal.

In the 1820s three large capital projects were undertaken in Upper Canada and each was financed in a different way. Chartered in Britain in 1824, the Canada Company purchased approximately two million acres of Crown and Clergy Reserves, from the Upper Canadian government, for £344,375 payable over the years 1827-1843. The purchase price was used to pay the expenses of government, previously assumed by the British, so the company which was initially to provide a source of capital for the colony, simply

substituted for British payment of administrative costs.

The Rideau Canal was constructed and paid for by the British Army, but while its construction generated a small boom in the Kingston area for a few years, the canal was constructed for defence purposes, and did not affect transportation routes and costs for the Upper Canada farmers.

The Welland Canal connected Lakes Erie and Ontario avoiding Niagara Falls. Construction began in 1824 and was completed in 1833. It was financed by a mixture of shareholder capital, privately held bonds, and Provincial government bond holdings. The latter undoubtedly influenced by the close connections between the Welland Canal Company and the Family Compact (Aitken, 1952). Although patterned after the Erie Canal, the Welland Canal never achieved the success of that Canal and throughout the 1830s revenues were insufficient to pay for maintenance and interest payments.

In the 1830s the Provincial government sought long-term loans in Britain. The first loan, of £200,000 stg. was granted in 1834; the house of Thomas Wilson and Company, with considerable experience in Anglo-American finance took the loan, and in April 1835 a loan for £400,000 stg. was split between Wilson & Co. and the Baring Bros. Once the English finance houses had accepted the loan the governmet implemented it by selling bills of exchange on Wilson &

Co. or the Baring Bros. to those who tendered for them: the purchasers in 1834 included the Bank of Upper Canada (£55,000), the Commercial Bank (£45,000), the Bank of Montreal (£20,000), Wm.H.Merritt (President of the Welland Canal Company, £41,600) and sundry merchants.

The money raised by these loans was used to repay previous issues which had fallen due, and to commence improvements to the St. Lawrence Seaway. The improvements generated little revenue however, as they were useless unless similiar work was done on the St. Lawrence in Lower Canada, and the Legislative Assembly in Lower Canada refused to support such improvements. As a result, although the loans in 1834 and 1835 eased the fiscal pressure temporarily, in 1837 the Provincial government again resorted to borrowing. In 1837, however, the London market for North American bonds was very much weaker, and the government sold the bonds (denominated in £stg.) by tender in Upper Canada.

The bonds worth £138,650 were all bought by the Upper Canada banks and the complexity of the exchange is illustrated by the Council's evaluation of a tender by the Bank of Upper Canada to buy the bonds at par: "The offer of the Bank is a fair one; this season will probably bring in the London market about 97%, the rate of exchange is about 7% in favour of London, from which is to be deducted commission and expenses (about 1%)". The bank could then

expect a 3% profit (100-3+7-1), which the Council felt was a 'fair' return to a risky venture. That risk was indeed high, as the bonds sent subsequently to Baring Bros., sold at between 90 & 95% rather than 97%.

Again the bond issue only provided temporary relief for the Provincial government, and by 1840 it was forced to sell its stock in the Bank of Upper Canada in order to meet its external interest payment. (The stock sold at 1% premium for £25,250).

In summary, the 1830s witnessed the beginning, on a very moderate scale, of long-term investment in Upper Canada by the British. The medium was government backed debentures, although direct investment (the Canada Company) and private bond issues (the Welland Canal Company) also generated some capital inflow.

2.7 Political Unrest in Upper Canada in 1837

In Canada, 1837 was a momentous year in both the political and economic spheres. In May the Lower Canada banks suspended specie payments, and the Upper Canada banks, while maintaining specie payments, drastically reduced their notes in circulation and discounts. Towards the end of the year, in November and December respectively, there were Rebellions in the Lower and Upper Provinces, which ultimately resulted in the Union of the Canadas in February

1841. This chapter discusses the political situation, and leaves until the next chapter the discussion of the direct antecedents of the banking crisis.

The Rebellion in Upper Canada was a limited armed revolt by a few of the Reformers led by William Lyon McKenzie. The Reform Party lost political power in 1836 after an election in which the Lieutenant Governor - Sir Francis Bond Head - had led the Tory campaign. He was also charged with giving voting privileges (i.e. land patents) to Tory supporters. McKenzie started to talk about an insurrection in March 1837, when Lower Canada radical leaders were also urging revolution. Most of the Reform Party remained aloof from talk of violent action, but McKenzie had followers, and the number grew after October 1837 when Bond Head sent the British troops in the Province to Lower Canada for its defence. McKenzie appears to have wanted Upper Canada to join the United States and in November 1837 he wrote a draft constitution for the State of Upper Canada.

The 'rebellion' commenced on December 5, 1837 when 700-800 men gathered at Montgomery's Tavern 2 miles north of Toronto. That evening, armed with a dozen rifles, pitchforks and spades, they marched down Yonge St. to Toronto where they were met by a Sheriff and 20-30 riflemen; a short exchange of gunfire in the murky twilight left the battlefield deserted as both sides fled. The following day

Colonel MacNab (of Gore Bank fame) with reinforcements of a thousand militia men, marched north and routed the dissidents, some of whom fled to the U.S. while others were taken prisoner. The quick defeat of the revolt means that it is impossible to assess support for the movement. While less than a thousand people rose against the government, a victory by the Rebels might have encouraged many others.

The rebellion would have played a much less important role in Canadian history had it not generated American involvement in the Province. Craig states that, "Intervention from across the American border, lasting over several years, was to bring far more alarm, expense, and bloodshed than the Rebellion itself produced" (Craig, 1966; p.249). In the United States groups of Patriots and Huntsmen without the sanction of the Federal government, were involved in frequent skirmishes with Canadian militia. The most serious of these occurred in late 1838: on November 11, 1838, 400 Patriots crossed into Upper Canada at Prescott but surrendered to the militia; on December 4, 1838 a thousand men crossed at Detroit but met a similiar defeat (Guillet, 1939).

There is some debate about the seriousness of U.S. intentions vis-a-vis Upper Canada. The groups involved argued that they were freeing Upper Canada from Imperial domination. Craig states that a spirit of Manifest Destiny persuaded Americans to free the neighbouring peoples.

However, the conflict between the North and South on the issue of slavery would probably have caused the Southern States to reject the entry of another Free State into the Union.

In early 1838 it appeared that the Tories had held onto complete political power, but their complacency abruptly ended. The British government appointed Lord Durham as Governor General for Canada, and commissioned a complete investigation of the State of the North American colonies. In his Report, Lord Durham recommended that the Canadian Provinces be united, a responsible executive council be established, and capital be made available for Provincial capital works. The union of the Canadas was necessary, he declared, to assimilate the French Canadians: the 400,000 Upper Canadians combined with the 150,000 Anglophone Lower Canadians would be able to dominate the French Canadians.

The Report stimulated much debate, and the staunch Upper Canada Tory, J.B.Robinson, spent a year in England arguing against Responsible Government. In 1839 Lord Sydenham became Governor General of Canada and by promising an Imperial guarantee on a £1.5 million sterling loan, and allowing that the Upper Canada debt would be a charge on the revenue of the United Province, he convinced the Upper Canada Legislature to accept most of the recommendations of Lord Durham's Report.

2.8 Summary

This rather lengthy discussion of Upper Canadian history presents the background necessary for a discussion of the money market in Upper Canada in the 1830s. This section briefly summarizes those features which were most influential, not in historical terms, but in their relevance to the behaviour of the Upper Canada money market.

Upper Canada was in many ways a 'small open economy' in the 1830s. The economy was largely agricultural; produce was grown/raised for subsistence, the home market and the export market. The major export crop in the Great Lakes region was wheat; the importance of timber and development of the Ottawa Valley and Bytown region has been largely ignored in this discussion as it influenced, and was influenced, by the Montreal banking network rather than that of Upper Canada.

The province was nominally on a specie standard and there was a well organized foreign exchange market. Bills of exchange were sold by the government, the British army and exporters, and the banks acted as middlemen in this trade. There were good transportation routes between Toronto and Montreal or New York (especially in the summer and before the border incidents of the late 1830s). The prices of sterling bills varied with those in New York with the difference normally limited by transportation costs, and reflecting the overvaluation of coins in Upper Canada.

Neo-Classical theory suggests that prices in a small open economy would be exogenous, but Upper Canada was not completely open. In particular, the fact that most trade went through the St. Lawrence (as a result of tariff policy by the U.S., Britain and the Canadas) meant that for six months of the year the economy was virtually closed. Therefore there was some leaway for domestic factors to affect prices, and it was noted that the price of wheat was determined not only by ruling British prices and the Corn Laws, but also by local supply and demand factors.

The bond market or loanable funds market was also far from being a perfect market in a unified world economy. Domestic lending was controlled by binding usury laws which prohibited contracts where the interest charge was more than 6%. Long term capital inflow from Britain consisted solely of Provincial Government issues, even the Welland Canal Company using either government or privately raised domestic funds. How much of the short-term capital in the country was domestic we shall never know. The banks were not permitted to lend on mortgages and there was significant private mortgage lending. Most general retailers gave credit to their customers and themselves received credit from their wholesaler. The wholesaler would receive some loans from his British supplier and some from the Canadian banks. From the evidence of contemporaries there can be no doubt that the banks provided an important source of credit for the Upper

Canadian merchants, and doubly so when the Anglo-American financial crisis dried up the alternative British sources of funds.

FOOTNOTES

[1]Craig (1963 provides a good background to the history of Upper Canada.

[2]Popularly elected here means that the franchise to vote was given to men who owned a freehold property to the value of £5 in the town, or £2 in the country.

[3] Census of Canada 1870-71 (Ottawa, 1875) Vol. 4.

[4]Ibid.

[5] Blue Books of Upper Canada (1839).

[6]For further discussion of the Family Compact see, Saunders (1957), Wallace (1915), or Ewart (1925).

[7]During and after the Rebellions from 1838-44 there were 14 Regiments with 8,400 men stationed in the Canadas. Great Britain, Parliament, Commons, Parliamentary Papers, 1850 Vol. Appendix A, p. 770.

[8]Philp (1949).

[9]The pound currency was sometimes referred to as Halifax currency (Wilson, 1944;p. 34).

[10]Canada, Parliament, House of Assembly, Journals, Volume 1, Appendix O, 1841, July 13, 1841.

[11]Ibid., August 27, 1841, and various reports of the Bank's balance sheets in the Journals.

[12]Canada, Parliament, House of Assembly, Journals, Vol. 17, 1859, Appendix No. 5;#67; p. 17. "Second Report of the Committee on Banking".

[13]Upper Canada, State Papers "Executive Council Minute, dated March 28, 1838", Vol. 67, p. 22.

CHAPTER 3

THE INTERNATIONAL ECONOMY IN THE 1830S

A discussion of the monetary system of a small open economy is incomplete unless accompanied by a discussion of the contemporary international economy. This chapter describes the economies of Upper Canada's major economic partners - Lower Canada, the United States, and the United Kingdom - during the 1830s.

The broad paths of economic behaviour in Britain and the U.S. were very similiar. From 1830 to 1836 there was a period of growth, prosperity and mild inflation. However, in 1836 the boom faltered and by 1837 had developed into a financial crisis that was particularly severe in the U.S. A rapid recovery ensued, beginning in 1838 and ending in the fall of 1839. This in turn gave way to an era of deflation and depression which lasted until 1842/3.

Much has been written on the causes of economic fluctuations in the U.S. during the 1830s, and on the role of international disturbances in those fluctuations. In examinimg the international economy, I will focus on the alternative explanations of the fluctuations presented in the literature, and on the different methods of international balance of payments adjustment that they propose.

The literature may be classified into three schools of

thought. The earliest interpretation was that put most completely by Hammond (1957), who argued that domestic policies were the dominant cause of the fluctuations. This thesis was contradicted by Macesich (1960), (and Temin is basically in this school) who used Viner's price-specie-flow mechanism to show how inflation and capital exports from the United Kingdom had caused the economic fluctuations. Finally, Williamson used a general equilibrium framework that is similiar to the Monetary Approach to the Balance of Payments, to provide a broader interpretation of events.

3.1 The Inflation of the 1830s

In 1832 Britain commenced its recovery from the cyclical trough of 1829-31.[1] This recovery was marked by expansion of domestic investment stimulated by the demand for railroad construction, and the expansion of exports (of both goods and capital) to the United States. During the early thirties (1832-36) the economy was aided by plentiful harvests which kept down the price of wheat, and grain imports, and which helped the balance of payments. In 1835 the expansion quickened, and assumed the characteristics of a speculative boom. Consequently, prices started to rise, with Gayer's wholesale price index showing a steady rise from 83.9 in January 1835 to 100.7 in January 1837.

There was significant speculation in domestic joint-stock companies, which rose to a peak in the summer of 1836.

The President of the Board of Trade, Poulett Thompson (future Governor General of Canada) wrote in a well-known description of the market, that "every man must be struck with astonishment at the fever which rages at the moment for these speculations" (Gayer, p.256). The peak of the boom may be marked as July 1836 when the Bank of England raised Bank Rate in order to stop the outflow of its specie reserves. The increase from 4% to 4½% was the first change in Bank Rate in nine years, and was combined with credit restrictions designed specifically to curtail Anglo-American finance (Matthews, p.56).

The U.S. economy was marked by a steady inflation from 1831 onward, with a brief respite during 1834. The Warren and Pearson wholesale price index rose from 91 in January 1831 to 95 in December 1833, and then fell to 88 in mid-1834. It then rose steadily until February 1837 when it peaked at 129. Economic activity seems to have followed a similiar trend of expansion during the 1830s with a slight contraction in 1834, and a quickening of the expansion during 1836. The boom culminated in the Panic of May 1837 when the New York banks suspended specie payments and their example was immediately copied by most of the banks in the nation.

The traditional explanation of the inflation, described most completely by Bray Hammond, blames the economic policies of President Andrew Jackson, and in particular his

attitude toward the Second Bank of the United States. That bank, given a federal charter with a twenty year term, in 1816, had by virtue of its size maintained some control over the volume of money in circulation. In 1832, the Bank's charter was renewed by Congress, but the renewal was vetoed by Jackson. In 1833/34 the government removed its deposits from the Bank, and this, some argued, was the cause of the recession in 1834. The subsequent inflation is then blamed on the fact that there was no large bank to control the circulation and in particular to police the activities of the wild-cat Western banks.

Macesich was the first author to emphasis the international context in which the U.S. economy operated. He showed that since the U.S. was a small open economy operating in a specie standard world, the fluctuations in prices and the money stock would be at least partially determined by external forces. Using Viner's model of international balance of payments adjustment, he argued that the inflation in the 1830s was a result of the British price rise, and the capital imports absorbed by the U.S.

Other economists, particularly Temin and Rockoff, have agreed with Macesich's basic interpretation. Temin adds that the supply curve of specie was also shifting outward during the period, due to cost changes in the Mexican production of silver and the reduced role of specie in Oriental trade. This would also tend to promote international inflation

through an expansion of the world money stock. Rockoff emphasizes that the data show that the U.S. reserve ratio rose during the period of inflation, thus countering the argument that wild-cat banking and over-issue was the cause of a monetary expansion.

Both Temin and Macesich treat the level of U.S. capital imports as exogenous and Williamson (1961) starts his criticism with this point: "These capital flows did not occur in a vaccuum" (Williamson, 1961; p.374). He argues that the exogenous force in the U.S. economy was the Long Swings in economic activity. During the 1830s income growth led to excess demand for money and goods and an excess supply of securities. These potential disequilibria generated a trade deficit, capital imports and specie inflow. (The Long Swing is attributed to the uneven growth of the cotton sector, which was the source of the majority of U.S. exports). While theoretically more complete, Williamson's approach cannot explain the much more rapid inflation in the U.S. than in Britain. He merely comments that "The flow of gold may have oversatisfied excess demands in the money market generated by real income growth, since the upswing to the 1830s is accompanied by price inflation" (Williamson, 1961; p.377). This inflation is a prediction of the price-specie-flow mechanism described by Macesich, in which capital imports generate an inflow of specie which raises American prices and causes a trade deficit that

offsets the capital inflow.

Canada was also affected by the expansionary aura of the 1830s, but to a much lesser extent. The Lower Canadian economy was dominated by two forces during this period, the agricultural crisis and the growth of the timber trade. From 1832 Lower Canada had a chronic wheat deficit (Ouellet, 1980a; p.339), and the poor grain harvests provoked the habitants to diversify into mixed farming. Thus the farmers became more autonomous and even grew flax for clothing. The decline in agricultural production was, to some extent, offset by the benefits of Upper Canada's growth and the expansion of the Lower Canadian timber and ship-building industries. The timber industry was stimultated by the the revival of the British construction industry after 1832.

During the mid-'30s wheat prices were kept down by the low demand from the U.K. and Lower Canada did not have an exportable surplus. In 1834 a harvest failure was coupled with a slump in the foreign demand for ashes and staves, but the economy improved somewhat in 1835 and 1836, before the international crisis of 1837 had an impact. In general, Ouellet presents the 1830s as a period of economic stagnation in Lower Canada.

Upper Canada, on the other hand, was fairly prosperous in the mid-1830s, but while the U.S. grew from 1830 onwards,

in Upper Canada the boom was squeezed into the years 1835 and 1836. Throughout this period the major export crop was wheat, and the good harvests in Britain reduced potential export earnings from that crop. The boom was associated with a capital inflow resulting from the Provincial borrowings in London to finance Public Works projects. The successful sale of the debentures probably reflected the ease on the London money markets and optimism generally characteristic of Anglo-American finance at that time.

3.2 The Financial Crisis

The increase in Bank Rate in July 1836 marked the beginning of a crisis that, while particularly severe in the area of Anglo-American trade, had repercussions throughout the British economy. The causes of the crisis have been variously attributed to "Excessive speculation and optimistic expansion by businessmen" (Craig, p.242) and to the conduct of Anglo-American trade, and in particular the over-extension of British credits to North Americans (Gayer).

Although the crisis started with the financial houses, it moved rapidly to the cotton and other industries, and "Many business firms went bankrupt, thousands of workers were suddenly out of employment and severe distress was reported from all the manufacturing districts" (Gayer, p.265).

The crisis appears to have been more severe in the United States, where the first signs of its approach appeared in late 1836, but it did not come to a head until May, 1837. In early 1837, business failures in New Orleans (based on Anglo-American cotton trading) and rising interest rates in the East reflected the growing monetary crisis, which culminated in the suspension of specie payments by the U.S. banking system.

Once again each school of thought has its own interpretation of events. The traditional explanation again blames the economic policies of Andrew Jackson. Jackson made two policy changes in 1836/37. The first known as the Specie Circular, promulgated in August 1836, stated that all sales of public land were to be paid for in specie. The objective was to dampen the speculative boom in sales of Western lands, but the result, the traditionalists argue, was to drain specie out of the East and into the West. The second policy change (which occurred in June 1836) was the Deposit Act which stated that most of the Federal Government surplus that was at present in the 'pet' banks was to be distributed in specie, to the individual states. The distribution, which was to be made in four equal installments starting in January 1837, would require the Eastern 'pet' banks to have large specie holdings. The traditional school argues that these two conflicting policies resulted in the necessity of

suspension of specie payments in May 1837.

Temin counters these arguments by analyzing the amount of specie movements that would be required by the two enactments. He concludes that the Specie Circular would not have generated movements sufficient to play even a minor role in the drain of reserves in the Eastern banks in May 1837 (Temin, p.122). Turning to the Deposit Act he states that, "the inference that the distribution placed large strains on the banks in New York must be rejected" (Temin, p.132), and "The distribution, while it posed a burden for the banking system, and while it created much trouble after the suspension of payments, did not cause the suspension" (Temin, p.13).

Macesich blames two forces for the crisis of 1837: the first is the fall in external prices during 1836/7 which, given the constraints of the specie standard, and his Vinerian theory of its operation, required a fall in the U.S. money stock and prices. The second contractionary force was the "victory of political forces favoring a hard currency" (Macesich, 1960; p.120). This was reflected in "public misgivings about the maintainance of the specie standard" (Macesich, 1960; 421), which contributed to a drain of specie from the banks which forced the suspension.

Temin having argued that Jacksonian policies were not the dominant cause of the crisis in May 1837, goes on to

argue that again external factors predominated. (His discussion is more detailed, but very similiar, to that of Williamson (1961)). The links between the British capital market and the U.S. economy were largely via the cotton market. The United Kingdom purchased on average 72% of U.S. cotton exports (Temin, p.103). The contraction of credit by the Bank of England and consequently British finance houses, had the effect of decreasing the demand for cotton, as the British industrial sector contracted. This effect was reinforced by the rising wheat and therefore bread prices in England, which reduced the demand for cotton goods (Temin, p.140). The short run inelasticity of the supply of cotton, meant that the fall in demand led to a sharp fall in the price of cotton as well as in the volume of U.S. cotton exports.

The fall in cotton prices precipitated the U.S. financial crisis and suspension, as the decreased revenue from cotton exports meant that importers could not obtain enough bills of exchange to pay their debts in England. The price of bills rose and reached the specie export point, and this drain of specie to Europe made necessary the suspension by the banks.

Temin's interpretation of the behaviour of money and prices up to 1837 can be illustrated by Figure 3.1. Assume that the U.S. was a small open economy on a fixed exchange rate, and that goods markets were sufficiently integrated for

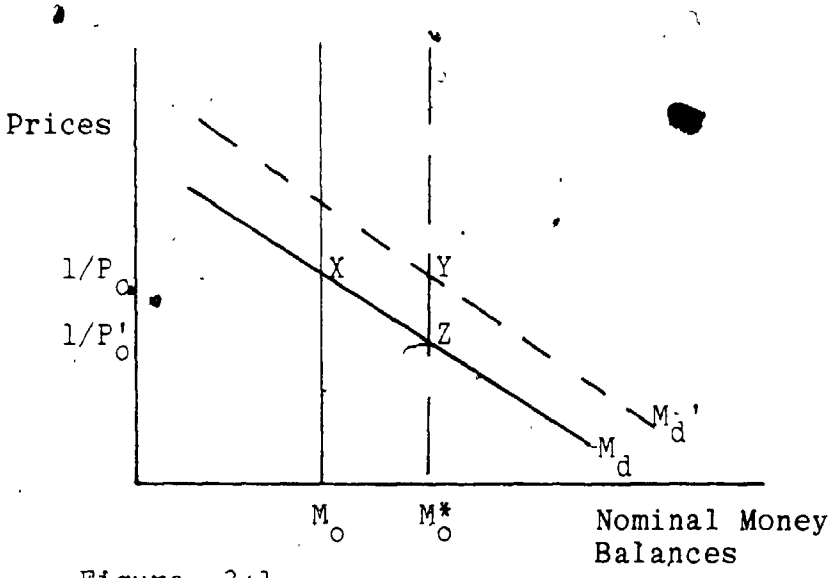


Figure 3:1

U. S. Monetary Adjustments in the 1830s

the law of one price to hold. An initial (say 1830) monetary equilibrium exists at X. If we assume that money demand was a function of real income, and that during the 1830s the capital inflow, prosperity of the cotton sector and expansion in the construction industry raised real income the demand for money would shift to M_d'. To maintain purchasing power parity there would be a specie inflow and shift in the supply of money to M_o^* and the new equilibrium would be at Y. The subsequent contraction of credit and decline in the cotton sector would shift back the demand for money, and create an excess supply of real balances. Under the constraints of the specie standard, equilibrium would be restored by an outflow of specie and fall in moninal money balances. A fractional reserve banking system however, cannot contract the money stock as easily as it expands, and an attempt to liquidate too quickly would result in bankruptcy. To avoid this contingency the banks suspended

specie payments; this meant that the exchange rate was no longer fixed, so the domestic price level could rise to P_o' and the money stock could remain at M_o^*. This equilibrium is shown at Z. The price of gold would then, by the law of one price, have to rise as rapidly as the price of goods.

The 'revisionist' interpretations of Temin and Macesich have been refuted by a new analysis of the Bank War. Sushka (1976) argues that the Bank War affected the structure of the U.S. financial system causing a rise in the currency/deposit ratio and banks reserve ratio. She argues that these caused a sharp contraction in the bank money stock causing the Panic of 1837. She concludes that Temin's analysis, implying that the Panic was caused by an outflow of specie in 1837, is contradicted by the data, since there were net specie inflows every year from 1831-39. On the other hand, these specie inflows weaken her own hypothesis since a fall in the currency and reserve ratios would not necessarily reduce money stock if offset by specie inflows.

There are very few data on the severity of the crisis in the U.S. Temin (p.120) states that "The deflation of 1837 was mild and short-lived; it does not seem to have caused major distress in the economy". This conclusion may be correct but his evidence is thin. He argues that economic distress implies unemployment, and while there was unemployment reported, it cannot have been high enough "to represent a major cost to society" since only 10% of the

population was urbanized (Temin, p.120). This seems to indicate that he is using an inappropriate measure of economic distress. He continues that "Agricultural production does not seem to have been affected by the crisis", but there is no evidence on this point despite the fact that his argument as to the mildness of the crisis must rest upon it.

In Lower Canada too, 1837 was a year of economic crisis. The year started with very high prices for most commodities, but particularly grain: "The poor crops of 1836, which corresponded to a more or less deficient harvest in the West and an increased demand in England, had provoked a rise in agricultural prices" (Ouellet, 1980a; p.425). There were many reports of starvation, as the winter wore on and in the spring grain was imported from Europe.

The news of the suspension of specie payments by the U.S. banks on May 10, 1837 quickly reached Montreal and the merchants and bankers met and agreed that the banks of that city would also suspend. In Lower Canada the banks could suspend specie payments without forfeiting their charters (Creighton, p.311). This action was immediately copied by the banks of Quebec City.

Contemporary Lower Canadian opinion of the Lower Canadian suspension (as opposed to the U.S. suspension) is summarized by the following editorial comment in the

Montreal Transcript (18 May 1837): "There is this wide difference between the two measures of suspension; they have suspended specie payments to prevent the departure of the precious metals to those countries where they were due on their balance of trade. We have suspended specie payments to prevent the precious metals being carried away to a country where we owe nothing" (italics in the original).

Adam Shortt, in analyzing the suspension of the banks, argues that the Lower Canadian suspension was necessary because of (a) the close relations between the money markets of Montreal and New York and also (b) because "Canadian indebtedness to the United States was considerable, giving the Americans a command on Canadian money which meant bank notes in the first instance and their specie in the second" (Shortt, 1902;p. 16). While he argues that the suspension was necessary, he states that the Lower Canada crisis was less severe than that in the U.S., since the 'speculative discounting of the future had been on a much humbler scale'.

After suspension the premium on specie quickly rose to 12% above par (i.e. it was quoted at 21½% premium), but Shortt states that "Neither the merchants nor the the public however were required to make a tithe of the sacrifices that would have been forced upon them had business been paralyzed by a sudden and severe contraction in the circulating medium such as threatened Upper Canada" (Shortt, 1902;p. 21). In Upper Canada the banks had not suspended specie payments.

When news of the suspension by the banks of the United States and Lower Canada reached Upper Canada, the merchants and bankers there both sought a similar suspension within the Province. A suspension, however, required an Act of the Houses of Assembly, if the banks were not to forfeit their charters. This required the concurrence of the Lieutenant Governor, Sir Francis Bond Head who believed that 'commercial faith and national honour' required the maintainance of specie payments. Despite petitions to the contrary on May 25, and June 8, 1837 Head wrote to the Colonial Secretary in England saying that the banks were content not to suspend, since, if it were necessary, he had offered help from the Military Chest.[2]

The concern of the mercantile sector provoked a re-opening of the Legislature in June, and an inquiry into the causes of the 'present pecuniary embarrassments'. It was unanimously agreed that the fundamental cause was the over-trading and speculation by Americans, which had caused the suspension by their banks, and led to the sharp decrease in lending by the Upper Canada banks. Most witnesses said that suspension by the Upper Canada banks was a necessary part of any recovery programme, and a Bill was passed permitting suspension by any bank provided that it (a) obtain the Lieutenant Governor's permission, (b) proved that it was solvent, (c) limited it's note issue after suspension to the

value of its equity, and (d) did not trade in specie while it was suspended. These stipulations were sufficient to stop the banks from suspending until the end of September when the Commercial Bank requested permission to suspend since it had only £13,004 in specie reserves and "in consequence of the distress of the agricultural and commercial community". The Bank of Upper Canada and Gore Bank maintained specie payments until March 1838.

Once again it is difficult to measure the real economic hardship that accompanied the financial crisis. Creighton describes the situation: "In Montreal and Quebec the spring business was pitiable, and it was reported late in May that affairs in Upper Canada were virtually at a standstill" (Creighton, p.314). But no attempt is made to seperate the effects of 'a winter of high prices, scarcity and aggravated distress' from the effects of 'a financial panic and a commercial slump'.

3.3 1838: A Short-Lived Recovery

In both Britain and the United States the economy recovered quickly from the economic downturn in 1837, and in both countries, many economic indicators had higher peaks in 1838 than in 1836. Gayer et al. illustrate the double headed boom as shown in Figure 3.2. They ascribe the partial recovery in England to the renewed vigour of Anglo-American trade, and to the continued stimulus of the domestic

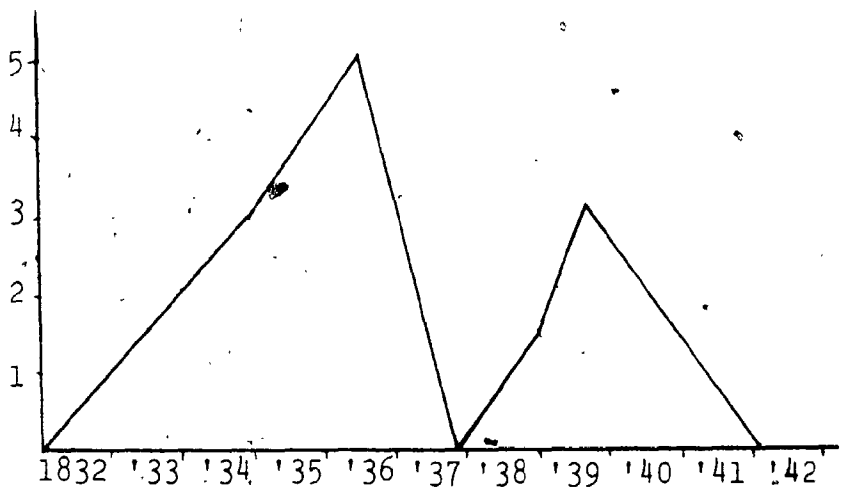


Figure 3.2

U.K. Cyclical Indicators in the 1830s.

railroad construction. In February 1838 Bank Rate was reduced back to 4% (its level from 1827 until July 1836), reflecting the rising reserves of the Bank of England.

The recovery in the U.S. also commenced in the spring of 1838. Matthews states that "the recovery of activity in the U.S. in the summer of 1838 followed so immediately on the fall in discount rates that it is impossible not to suspect a direct causal relationship... By the end of 1838 prosperity had in general returned, and the peak reached in certain series approached or even surpassed the highest points attained in 1835-36" (Matthews, p.63-4). He notes that the recovery was much stronger in the West than in the South.

Most economic historians have agreed on the principal factors determining the 1838 recovery, although they accord different weights to the various factors. The three central

influences were the resumption of capital imports, the increased price of cotton and the impact of the distribution of the surplus. The traditonalists placed most weight on the revival of the cotton sector. Nicholas Biddle attempted to restore order to the cotton market, by single-handedly taking the place of the many cotton brokers who had left the industry in 1837. He purchased a large share of the crop, possibly in order to manipulate the market price. In 1838/9, his machinations were not necessary as the poor crop of that year (Temin, p.150), was enough to significantly raise the price.

The initial resumption of capital imports was a direct result of the easing of the London money market. Subsequently Nicholas Biddle was instrumental in floating new securities (post-notes) in both Paris and London which further stimulated the export of capital from Europe. In the U.S. the import of capital eased the resumption of specie payments as it created a specie inflow. If there had been no capital inflow resumption would have required a fall in prices and the domestic money stock (Point X in Figure 3.1). The role of capital imports depends upon the interpretation of international adjustment processes adopted. The Macesich method implies that capital imports are initially transferred in the form of specie which increases the domestic money stock and inflates domestic prices. This inflationary pressure would obviate the deflationary

pressure implicit in resumption.

The Williamson general equilibrium approach would suggest that capital imports would only be accompanied by specie imports if there was simultaneously an excess demand for money at the fixed world price level. Thus at unchanged world prices, resumption would necessarily imply a deflation, but if there were capital imports and an increased demand for money this deflation would not require a fall in the stock of money (Point Y in Figure 3.1).

Temin argues that the Deposit Act also aided the recovery in 1838/9, since it 'had the effect of raising income'. The $37 million federal government surplus was to be distributed to the individual States in four installments during 1837, but the intervention of the Crisis caused the federal government to postpone the final installment, which in fact remains unpaid. Temin argues that because the goverment had held these funds idle, the distribution had an expansionary impact as the States employed the monies for Public Works: this is not necessarily true, since the federal government had not hoarded the funds but held them in the pet banks.

'In the two Canadas political events appear to have dwarfed economic events. In October 1837 a Rebellion commenced in Lower Canada, when the French patriotes attempted to overthrow the English speaking ruling class.

While the economic hardship of the year may have promoted the Rebellion, its main causes were much longer term, and the economic hardship was more the starvation following the poor harvest than a result of the financial crisis. This uprising encouraged 'rebels' in Upper Canada who also took to arms to overthrow the ruling elite. Both attempts were unsuccessful but led to several U.S. attempts to invade Canada, and free Canadians from their colonial masters. This in turn caused Britain to move regular army forces to the Canadas, and quadruple its usual spending on the defence of the Canadian provinces. The military spending helped the Canadian economy recover from the financial crisis; a Bank of Montreal offical later said that, "The crisis would unquestionably have proved to a much wider extent disastrous, had it not been that simultaneously the enormous expenditure for military purposes, consequent upon the Rebellion, counteracted that result and rendered the resumption comparatively easy".[3]

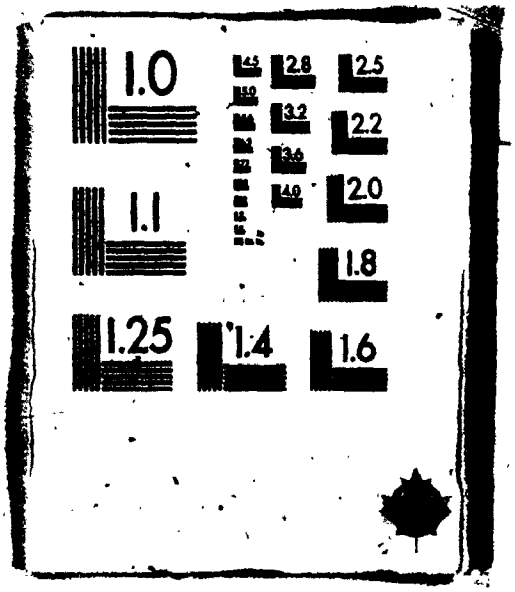
While monetary problems were eased by military spending, Ouellet reports that "destitution persisted in the countryside; money and supplies were scarce" (Ouellet, 1980a; p.431) which he attributes to yet another poor harvest, and the fact that the British recovery did not immediately stimulate the timber and ship- building trades. "In the autumn of 1838, extreme poverty still prevailed in the rural areas" (Ouellet, 1980a; p.431) and in November

1838 there was a second uprising by the patriotes, which was put down as promptly as the first had been. This prompted the banks to suspend again, arguing that the safety of their specie could not be guaranteed during the insurrection, if it had to be kept at the banks. They resumed in June 1839.

In Upper Canada there were signs of recovery late in 1837. The Commercial Bank was the only one to suspend specie payments, but the good harvest of 1837 combined with the military expenditures in the winter of 1837/8 had stimulated the economy. In March 1838 the Bank of Upper Canada and the Gore Bank suspended specie payments arguing that the increased hostility on the U.S. frontier prevented them from replenishing their stocks of specie. This questionable argument is discussed further in Chapter 4.

In 1838, the Upper Canada economy joined in the recovery in both the U.S. and Britain. Exports from Upper Canada to Lower Canada, half of which were flour, rose by 20% over their 1837 level (see Table 2.5). This promoted recovery which was enhanced by the military spending and improved financial situation. The banks increased their discounts once they suspended specie payments and the stock of money doubled. Finally, as shown in Chapter 2, the Provincial government was still spending money on public works in Upper Canada. The method of raising funds had changed since the government did not sell the bonds directly through its English agents, but sold them to the Upper

2



Canada banks who then bore the risk of a fluctuating market for American bonds.

3.4. 1839-43: Crisis, Deflation and Depression

The economic recovery that occured in 1838 was halted by the combination of poor harvests in the U.K. and the fluctuations in the cotton market. U.K. harvests were only mediocre in 1836 and 1837 but the market was supplied from stocks built up during the bountiful mid-30s. These depleted the stocks and the harvest failure in 1838 meant that grain had to be imported, which caused a serious deterioration in the balance of trade (Matthews, p.42).

The end of the recovery was again signalled by a change in Bank Rate which rose from 4% to 5% in May 1839 and to 6% in August 1839. The Bank of England raised the rate as its bullion reserves fell from £9.7 million in the second quarter of 1838 to £4.4 million in the second quarter of 1839. In addition to the deteriorating trade balance, there was an outflow of specie to the U.S., to finance capital exports to that country.

Bank rate remained above 4% until April 1842, and during that time both the financial market and the industrial sector were depressed. In 1839 as food prices and industrial unemployment rose, political disturbances were frequent (Gayer, p.301). For the next three years,

unemployment remained a serious problem, as did labour unrest.

The economic recovery in the United States, slowed in the summer of 1839, when money markets tightened, and ended with the suspension of the Bank of the United States on October 9, 1839. This was followed by temporary suspensions by Baltimore and Washington banks, but not by those of New York. The Bank of the United States continued to transact business under suspension until 1841, when it resumed specie payments, but only for a few weeks before finally failing.

Again there are traditional and revisionist explanations for the crisis and subsequent depression. The traditional explanation states that a major factor was "the violence and speculative nature of the boom that had preceeded it". This coupled with the failure of the Bank of the United States (operating under a state charter) and Nicholas Biddle's unsuccesful cotton market manipulations, was seen as sufficient cause for what Douglass North described as the most severe depression of the century (North, p.32).

The work by Temin, Rockoff, Macesich et al. tends to reach similiar conclusions. Temin explains the crisis as the result of falling cotton prices and a decrease in British capital exports. In the summer of 1839, European investors were becoming skeptical of U.S. securities. Biddle was still

trying to maintain cotton prices, but the bumper crop of 1839 meant that he required large funds for cotton purchases. These were financed by the issue of debt instruments in both Europe and the U.S. In June 1839 there were reports of interest rates of 1½% per month as Biddle and the Bank took "all the floating capital of this city (Boston)", and similiarly in Baltimore and Philadelphia (Hammond, p.505). When the cotton harvest exceeded expectations (and British demand fell with the growing crisis there) Biddle could no longer afford to continue his efforts, and the low cotton prices caused the suspension of the Bank of the United States.

The Warren and Pearson price index peaked at 119 in April 1839, and declined steadily to 73 in March 1843. During this time there were many bank failures. While Friedman and Schwartz agree with North, that the 1839-42 crisis was the most severe contraction in American history prior to 1929 (Friedman and Schwartz, p.299), Temin argues that in fact the era was one of deflation and not depression, and that real G.N.P. actually rose by 16% over the period. He suggests that the money stock fell during the period and that falling prices substituted for falling production.

Rockoff's interpretation of the economic conditions in the years 1839 to 1843 differs from that of Temin. Rockoff states that current literature has concluded that "The

deflation of the early 1840s was brought about by a decline in the public's confidence in the banking system, and the response of bankers to a less favourable climate". This statement was made on the evidence that specie reserves of the banks increased, while the stock of money fell by 2.6% per annum from 1839-43. The reserve ratios of the banks are estimated to have risen by 6.6% per annum, and the currency/deposit ratio of the public is estimated to have risen by 1.5% per annum (Rockoff, p.452).

This conflicts with Temin's interpretation, which again depends on international stimuli working through the specie standard. This view was summarized by Rockoff: "In the early 1840s, ... international conditions required that there be an American deflation in order to produce balance of payments equilibrium". Since the U.S. economy has been treated as a small open economy by those analyzing the 1830s, the specie standard required that when U.K. prices fell, U.S. prices also fell.

If in fact the public distrusted banks the impact would be as follows: a fall in U.K. prices would generate a fall in U.S. prices, and a fall in the bank money stock; the shift in the attitude towards banks would have no long-run impact on prices, but would further decrease the demand for bank money and hence its equilibrium stock.

Finally Rockoff's evidence shows that while prices fell

at an average of 12% per annum, (the actual numbers depend upon whether the index used is that of Warren and Pearson or Smith and Cole), the money stock fell at 2.6% per annum, implying a considerable change in either income (supported by Temin) or the velocity of money. This is not discussed at all by Rockoff, and perhaps his statement that there is now a "clear outline of the monetary history of the Jacksonian Era" (Rockoff, p.458) is not completely accurate.

The crisis and deflation/depression that occurred in the United States did not have a very significant impact on the Canadas. Lower Canada had experienced virtually no recovery in 1838, but in 1839 there were some signs of growth. The agricultural sector was still depressed with the main cause being low output, since grain prices were rising. The industrial sector improved from 1839 to 1842: in 1839 ship-building increased by 80% (Ouellet, 1980a; p.433). Low levels of urban unemployment accompanied expansion and growth in the timber industry.

In Upper Canada the 1839 U.S. crisis was (as in Lower Canada) not a serious contractionary force. During the year, the Canadian press made numerous references to the growing crisis. The Montreal Gazette (2 June 1839) referred to the unfavourable news from England, and the 'great gloom' this had caused in New York. Similiarly the Kingston Chronicle and Gazette (26 June 1839) suggested that "a general commercial crisis is undoubtedly fast approaching in the

United States". Again, the Gazette (29 June 1839) cited a New York report of "a prevailing sentiment of an approaching crisis". Then the pressure appeared to abate until matters came to a head in October 1839, when the Kingston paper (16 October 1839) reported that the Bank of the United States had suspended. An item dated 20 September 1839, in London, reported that the English banks were "confidently expected to suspend". An additional report from London dated 28 September 1839, (and quoted in the Kingston Chronicle and Gazette on 11 November 1839) stated that money matters were growing daily more critical.

Despite awareness of American financial conditions, all the Upper Canada banks resumed specie payments in November 1839. The U.S. crisis was most severe in the cotton growing South, where bank failures were most common, and in areas most closely connected to the cotton sector. The stability of the New York financial system steadied the Upper Canadian banking system.

Chapter 2 stressed the dominance of Britain in Canadian trade, and this provides another reason for the limited impact of the U.S. contraction on Upper Canada. Economic conditions there were more closely connected to those in Britain, but the cause of the Depression in the U.K. was the poor grain harvest which both worsened the British balance of trade and lowered real income. The impact on Upper Canada, however, was to raise the price of it's main export:

"From 1839 to 1842 the high prices for corn in Great Britain made it frequently possible for Canadian wheat to enter at the merely nominal duty of 6d per quarter" (Creighton, p.345). In 1841, the Upper Canada economy received a further boost in the form of an Imperial guarantee for a £1.0 million sterling loan. The monies, raised largely in the U.K., were used to consolidate some of the previous borrowing, and to finance improvements of the St. Lawrence Waterway, which were begun in 1842. In general the early 1840s were prosperous years for Upper Canada.

3.5 Conclusions

The cyclical fluctuations in the United States and Britain paralleled each other as both economies went through a double headed cycle in the years 1833-42, and the two economies appear to have been very closely interwoven. As a result of the growth of the cotton sector, the American economy had reached the point where it could significantly affect the British economy.

Economic fluctuations in both partners affected Upper Canada, but the effects were not always in the same direction. The Anglo-American financial crisis in 1837 affected Upper Canada, by reducing the scope for foreign borrowing, and also by its effect on the monetary system. The recovery of the Upper Canada economy, however, was independent of that of Britain and the U.S. The poor

British harvests in 1838, which were an important stimulus to the British Depression, actually caused an increase in real income for Upper Canada, and a dramatic rise in the value of Upper Canada exports.

The causes of the severe cyclical fluctuations are still unresolved. The traditional analyses that blame two individuals, Andrew Jackson and Nicholas Biddle for the boom/bust characteristics of the era, have been replaced by a 'revisionist' interpretation. The work of Temin, Rockoff, and Macesich emphasizes the constraints of the specie standard, and explains the economic changes in terms of monetary changes resulting from the operation of the international specie standard.

Two challenges to the Revisionist interpretation have evolved. The first (Sushka, 1976) introduces new evidence and methods of analysis to suggest that the Bank War did cause the Panic of 1837.[8] The second (Williamson, 1961, 1964) argues that the specie standard was an important constraint on economic behaviour, but suggests that the behaviour of the money stock must be seen in a general equilibrium framework. This approach is more satisfactory theoretically, and will underlie the model developed in this thesis.

None of the authors discussed above have analyzed the implications of the suspension of specie payments in 1837/8

for the determination of the level of the money stock. Clearly, during the suspension, the 'discipline' of the specie standard would operate in a different manner - if it operated at all. This thesis contributes to the literature on the specie standard, by examining the operation of the monetary system during a suspension, and by analyzing how the constraints of the specie standard controlled the money stock even when redeemability was not required by law.

FOOTNOTES

[1]This discussion relies extensively on Matthews (1957).

[2]Upper Canada Sundries, State Books Volume G, p. 431.

[3]Upper Canada, Legislative Assembly, Journals, Vol. 1859, Appendix 69, p. 17.

[4]In addition, the work of Rockoff and Sushka shows that 'wild cat banks' and speculative bank behaviour were not a result of the Bank War.

CHAPTER 4

UPPER CANADA ON A FIXED EXCHANGE RATE

In May 1837, the Banks of the United States and Lower Canada suspended specie payments, causing specie there to rise to a premium. Concurrently, merchants and politicians in Upper Canada called for a suspension of specie payments by the Upper Canada Banks, but the Lieutenant Governor refused to recall the Assembly until early in June. The Bill allowing suspension was delayed until July 11, 1837, and even after its passage the Banks did not immediately suspend payments. The Commercial Bank eventually suspended in September, 1837 but the other chartered banks maintained specie payments until March 1838.

Following the U.S. suspension there was a severe financial contraction in Upper Canada which has variously been described as the natural effect of the U.S. suspension and/or the result of the Lieutenant Governor's refusal to grant permission to the banks to suspend immediately. This chapter presents a model of the monetary sector which is used to analyze the causes of the financial contraction. Conclusions indicate that the Upper Canadian contraction was not an automatic consequence of the U.S. financial collapse, and that the severity of the Canadian contraction was largely a result of the inappropriate passage of the Suspension Act by the Legislature, which created unnecessary uncertaintly about the future policies of the banks.

4.1 The Conventional Wisdom

The economic boom that occurred in both the United States and Upper Canada abruptly halted in Upper Canada with the very poor harvest of 1836. Through the winter of 1836/7 the prices of wheat and flour rose dramatically (see Figure 2.1). In 1837 there was no grain to export and exports fell to their lowest level in the 1830s (see Table 2.5) between ½ and 1/3 of the level of other years. The Christian Guardian (August 1837) recalls the "severe distress, which, in consequence of the partial or total failure of the crops was experienced during last winter".

The suspension of specie payments by the U.S. Banks on May 12, and shortly thereafter by the Lower Canada banks, capped the harsh winter of 1837. Immediately there were public demands for suspension by the Upper Canada banks in order to avoid specie flowing to the U.S. and to prevent a drastic reduction in bank loans. The Kingston Chronicle and Gazette (17 May 1837) stated that the failure to suspend would mean that "the chief part, if not the whole, of our issues would get into American hands, and return quickly upon our institutions for redemption". In the same issue there was a copy of a petition by Kingston merchants asking the Commercial Bank to suspend. In the May 22 issue, the Commercial Bank replied that it would be happy to suspend if the other Upper Canada banks agreed to do so. Another item, copied from the Montreal Transcript argued that the Upper

Canada banks must suspend or lose all their specie within three weeks. The Toronto Patriot also called for suspension so that discounts would not be stopped, and in order to maintain the circulating medium.

The obstacle to suspension in Upper Canada was the Lieutenant Governor's belief that suspension was dishonourable and therefore (if a further reason were required) suspension would sully the name of Upper Canada and reduce the value of Upper Canada bonds on the British market. He refused for several days to accede to petitions to reconvene the Legislature (Chronicle, 27 May 1837), and offered to help the banks with funds from the Commissariat, and by allowing the use of their notes in all government transactions.[1] It was not until May 31, that he proclaimed a Special Sitting of the Legislature, held from June 19 to July 11.

The Legislature investigated the causes of the 'present pecuniary embarrassments' and most witnesses blamed the monetary derangement in the U.S.. Sir Francis Hincks, Cashier of the People's Bank, provided the most succinct explanation:

> "The merchants being cut off from the usual accomodation from the banks who have been compelled to stop discounting from an unusual demand for the precious metals, caused by the suspension of specie payments in the United States, and the great demand for exportation owing to the balance of trade being much against this Continent."[2]

The Legislature finally passed a Bill permitting the Banks to suspend if they (a) presented a statement of their affairs showing that they were solvent, and (b) had the consent of the Lieutenant Governor (7&8 Wm. IV ch 2).

In the meantime there had been a serious run on the Upper Canada banks, but this was largely over by the end of May. In the month between May 15, 1837 and June 15, 1837, the notes in circulation fell by 33% and the specie reserves of the chartered banks fell by 36%.[3]

Although both continued to fall, it was generally believed that the 'panic' was over by the beginning of June. On May 31, 1837 the Christian Guardian commented:

> While every bank in the neighbouring Republic is in a state of real or dishonourable virtual bankruptcy, it must be gratifying to every truly patriotic mind in Upper Canada to learn that the banks in this City have passed uninjured through the severe run which has been made upon them; and that the confidence of the public is again restored and business progressing as though the panic had never existed.

Similiarly, the Chronicle (27 May 1837) reported that "the panic appears to have subsided here".

By July many of the early critics of the Lieutenant Governor's decision not to suspend had reversed their position, and argued that he had been right. The Chronicle, a paper that had initially strongly supported suspension, in an editorial (29 July 1837) stated that:

> As yet we are not aware of the failure of any one man engaged in Commerce in this Province, although

> the Commercial community have suffered and will yet suffer deep inconvenience from the withdrawal of the money in circulation and the failure of the accomodation upon which their business was based.

Later (16 August 1837) the same paper went yet further, "The principle his Excellency maintains, while it is in reality only dimmed by few and comparatively light commercial embarrassments, stands forth in bold relief, a beacon.....to guide our future commercial career". Finally, the paper (15 September 1837) suggested that the fact that Upper Canada debentures were selling at par in London, reflected the economic wisdom of the policy of non-suspension.

In Lower Canada, meanwhile, the papers talked of the 'degraded state of the Provincial currency' and a condition where 'it is no longer criminal to steal Bank notes', and recommended immediate resumption (Montreal Transcript quoted in Chronicle, 9 September 1837). The Chronicle (30 September 1837) spoke of how loudly suspension was complained against in the Lower Province by a large portion of the community.

Despite these arguments, the Commercial Bank welcomed the news that the Suspension Bill had been passed the Bank of Upper Canada and the Gore Bank directors determined to continue specie payments, which earned them the displeasure of the Toronto Board of Trade (see Chronicle 12 July 1837), but the Commercial Bank immediately applied for permission to suspend. When Bond Head (the Lieutenant Governor) stated that their notes would not then be taken in government

transactions they delayed, but reapplied on September 1837. This application was made, according to the Bank, "In consequence of the distress of the Agricultural and Commercial community", and "solely with a view to accomodating the community with discounts".[4] The timing, immediately prior to the merchant's fall purchase season, suggests that this may indeed have been the reason, and the bank pointed out that its reserve ratio was higher in September, than at the beginning of May, suggesting that it did not need to suspend, because of the threat of a run.[5]

The law permitting suspension contained several restrictions on the behaviour of a suspended bank: the bank could not sell the specie in its vaults at the time of suspension; its note issue was restricted to less than the value of paid-in capital; and $1 notes were to remain convertible.[6]

The Upper Canada harvest in 1837 was excellent,[7] and the Commercial Herald (4 November 1837) described the improved state of the economy:

> It is gratifying to hear that business is rapidly increasing in Toronto, mutual confidence having been in a great measure re-established among the mercantile part of the community. Several extensive sales have lately been effected in favor of merchants from the Western part of this Province.

Most of the newspapers however, were preoccupied with discussing the uprisings in both provinces, which occurred in November and December 1837 (see Section 2.7).

The uprisings had a significant impact on the monetary side of the economy and ultimately led to the suspension of the remaining Upper Canada banks. In the first quarter of 1838 the Commissariat spent about £350,000 sterling in the Canadas, as much as it usually spent in an entire year.[8] A considerable part of this money was raised by the sale of bills of exchange to the Bank of Upper Canada. That bank bought bills worth £140,000 cy. (approximately £117,000 stg.) in January and February 1838, again an amount equal to a typical year's purchases of exchange.

The purchase of bills from the Commissariat, made partly in specie and partly in Bank notes, raised the bank money stock and implied that the Bank must increase its reserves. This could have been accomplished through the sale of the Commissariat exchange in New York, but the prices of sterling exchange (in New York) were below the specie import points (see Figure 4.1). The bank saw large profits in either holding the bills until prices rose, or in holding the bills and then remitting them to London when they became due. Either of these courses required the bank to delay in adding to its specie stocks and the Bank therefore applied to the Lieutenant Governor for permission to suspend.

The Bank justified its request in slightly different language. It stated that in December 1837 it had held £140,000 in specie but the requirements of the Commissariat

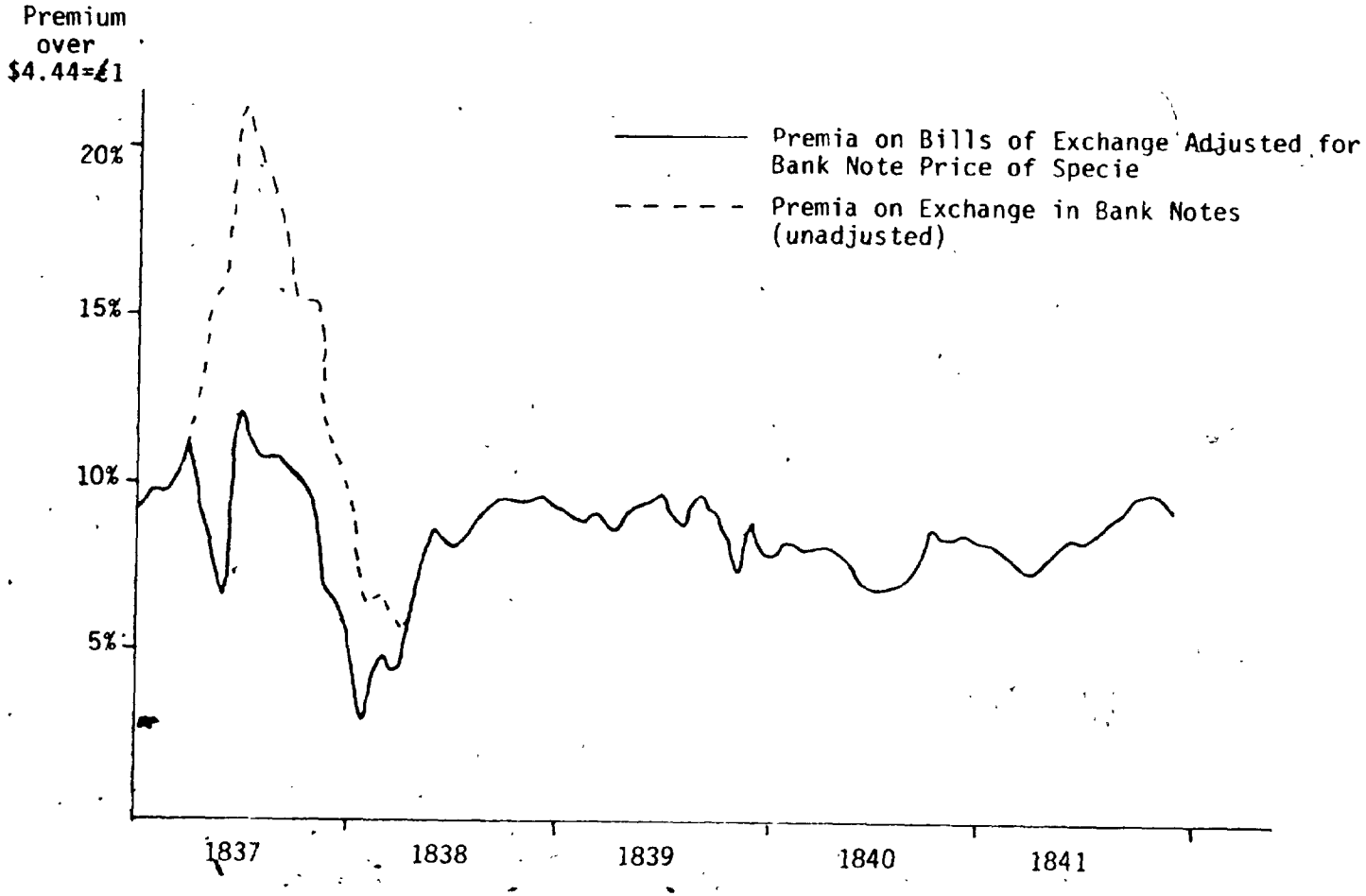


Figure 4.1: Premia on Bills on London in New York.
Sources: New York Albion
Warren and Pearson (1932)

as a result of the insurrection that month had led to large withdrawals of specie and increases in note issues: "Its late extraordinary issues were based upon his (the Commissary General) Treasury Bills sold to the Bank and which it had remitted to London....being an actual gold deposit more than equal to meet the entire circulation of its notes".[9]

The Executive Council in acceding to the Bank's request made the following comment:

> It appearing that the reduction of the amount of specie in the vaults of the Bank arose principally from its supplying the Commissariat Department with money for the expenses arising from the late Rebellion and the resistance of aggression on the frontier, for which money the Bank received Bills on her Majesty's Treasury by which means large funds are accumulated in London, belonging to the Bank, but at this season of the year and in the state of popular feeling on the American frontier, not available for the purpose of procuring specie, but at the same time offering the best security to the holders of bank bills for their ultimate redemption in money.[10]

They went on to stress that the suspension of other banks on the Continent and the mercantile problems in the U.S. were minor causes compared to the 'late revolt' and the 'outrageous conduct of American citizens on our frontier'.

The Executive Council granted the Bank's request on March 6, 1838, and five days later a similiar request by the Gore Bank was granted. At the same time the day before the Legislature was prorogued, the Suspension Act was amended, (by 1 Vic ch. 22), to allow banks to issue notes up to twice

the value of their paid-in capital, and also to allow them to trade freely in specie. (It had previously been amended to last until the end of the 1838/39 Sessions rather than the 1837/38 Sessions)[11].

In the remainder of this chapter, economic theory is employed to address two questions that emerge from the discussion of this period: what was the impact of the U.S. suspension of specie payments, and did the government response make adjustment by the Upper Canadian economy to the suspension, easier or more difficult.[12]

These questions have been addressed before, firstly by contemporary journalists, politicians etc., and secondly by economic historians of the era. The contemporary writers believed that the American suspension caused a fall in the Upper Canada specie stocks (through both and internal and external drain) and that this caused a decrease in loanable funds which was the most serious consequence of the U.S. suspension. As described above, there was considerable discussion of the extent of the fall in both money stock and loans, and therefore of the appropriateness of the governments's policy.

The standard account of the economic history of the period is Adam Shortt's work (January, 1902), and the interpretations of Creighton (1970), MacIvor (1958) and Craig (1963) accept Shortt's analysis unquestiongly. Shortt

states that the U.S. suspension initially led to a run on the Upper Canada banks but that the money stock stabilized after a month: "when the first scare was over and the issue of the banks had been curtailed from 25-30%, the urgent need for money prevented the remainder of the notes from returning upon the banks".[13] The 'run' was caused by fears of an external drain, and by McKenzies advices that individuals should hasten to redeem their notes in specie.

Shortt states that, before it suspended, the Bank of Upper Canada ceased discounting so that it could put more of its assets into foreign exchange speculation. This statement is then copied by MacIvor (p.45) and Creighton (p.313), but that it is not entirely true is shown by Table 4.1. The data show that discounts as a percentage of bank notes in circulation were unusually high from July 1837 to February 1838, so while discounts contracted rapidly the cause was primarily the fall in note issue rather than a shift in the emphasis of discounts in the Bank's portfolio.

The conclusions that Shortt draws with respect to government policy are that Bond Head erred in delaying suspension and that the Assembly was correct to pass the Suspension Act. The consequence of the Lieutenant Governor's delaying tactics was that "the commercial distress in Upper Canada was more severe than anywhere else on the continent" (p.111). This conclusion endorsed by MacIvor,[14] is offered without evidence, and it ignores the impact of the poor

harvest of 1836 on the economy. Furthermore it contradicts the contemporary comments discussed earlier, which stated that there were no commercial failures and that business was recovering long before the Upper Canada and Gore Banks suspended.

In order to analyze the impact of the U.S. suspension on the Upper Canadian monetary system it is essential to build a structural model of that monetary system. The remainder of this chapter presents such a model and uses it to interpret the reaction of the monetary system of Upper Canada to the U.S. suspension, and the results are then compared to both the analysis by contemporaries and that of Shortt.

4.2 A Model of the Monetary Sector

Upper Canada is assumed to be a small open economy operating in a specie standard world. It is therefore assumed that prices of goods in specie are determined by the rest of the world:

$$P_1 = P_I \qquad 4.1$$

where P_I - international price level, assumed fixed

P_1 - domestic prices in specie

and arbitrarily defining units of measurement so that $P_I = 1$, we also have $P_1 = 1$. There are two competing monies circulating, banknotes (Mp), and specie (Mg). These monies are held because they supply the characteristics, security

(S), and convenience, (C) which enter into the utility function. The amount of each characteristic contributed by a unit of money is given by Si, Ci, (where i=g,p). The agent's holdings of S and C are given by

$$S = SgMg + SpMp \qquad 4.2$$

$$C = CgMg + CpMp \qquad 4.3$$

Finally, as described below, the assumption that each money has an absolute advantage in the production of one characteristic motivates the diversification of agents' portfolios.

The convenience of a money depends upon its advantages or disadvantages in terms of weight, volume, number of denominations, rate of depreciation (trouser pockets) and ease of transformation into specie and goods. It is assumed that Cp>Cg, and that banks can influence Cp by such changes as opening more branches, or opening for longer hours.

The security of a money depends upon the variance in the expected future purchasing power over specie. The security of specie (Sg) is then fixed and the security of bank notes (Sp) will necessarily be less than Sg. To obtain an operational definition of this concept, assume that agents assign some non-zero probability to the event of bank failure or suspension of specie payments, and further assume that such an event would decrease the purchasing power of bank money. Suppose also that an agent's expectations of the future purchasing power of bank money may be described by a

density function such as Figure 4.2. This function has $Y=F(x)$ where x has a modal value of 1, a mean value of

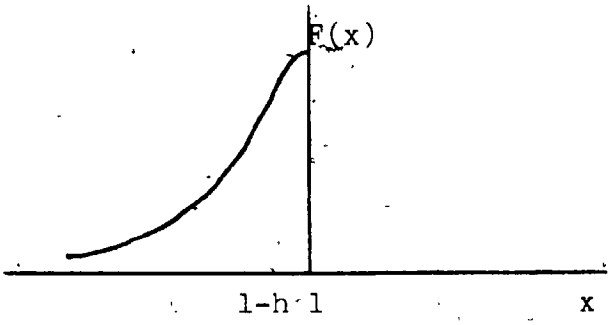


Figure 4.2
Expected Value of Bank Notes in Specie.

$1-h<1$, and can be fully described by its first two moments, $\mu_1=1-h, \mu_2 = \sigma$. The security of bank money depends inversely upon the value of σ ; that is, a higher variance would lower the security of bank money.

The household's utility maximization problem is described by equations 4.4 to 4.8. In this two period framework the household gets utility from the consumption of goods and from the characteristics of money. Money is an alternative to mortgage/bond holdings as a means of carrying purchasing power between periods, (a method described more fully in Patinkin (1965, pp.78-88)).

$$\text{Max: } U = U(Z_1, Z_2, S, C) \qquad 4.4$$

$$\text{subject to } S = SpMp + SgMg \qquad 4.5$$

$$C = CpMp + CgMg \qquad 4.6$$

$$Y = Mg + Mp + B + Z_1 \qquad 4.7$$

$$Z_2 = Mg + Mp(1-h) + B(1+r_m) \qquad 4.8$$

where Zi is expected consumption of goods in period i

Y is the fixed initial endowment

B is the mortgage/bond holdings

r_m is the mortgage interest rate

(1-h) is the expected purchasing power of bank money in the second period.

Household equilibrium is characterized by:[15]

$$\frac{\partial U/\partial Z_1}{\partial U/\partial Z_2} = (1 + r_m) \qquad 4.8$$

$$\frac{\partial U/\partial S}{\partial U/\partial C} = \frac{Cg(r_m+h) - Cpr_m}{Spr_m - Sg(r_m+h)} \qquad 4.9$$

$$\frac{\partial U/\partial S}{\partial U/\partial Z_1} = \frac{1}{1+r_m} \cdot \frac{Cg(r_m+h) - Cpr_m}{SpCg - SgCp} \qquad 4.10$$

$$\frac{\partial U/\partial S}{\partial U/\partial Z_2} = \frac{Cg(r_m+h) - Cpr_m}{SpCg - SgCp} \qquad 4.11$$

Equation 4.9 states that the marginal rate of substitution between security and convenience equals their relative marginal costs. Equations 4.10 and 4.11 set the marginal rate of substitution of a money characteristic for a consumption good, equal to the relative marginal cost of obtaining the characteristic. The implicit prices of the characteristics are:

$$P_c = \frac{Sg(r_m+h) - Spr_m}{CpSg - CgSp} \qquad 4.12$$

$$P_s = \frac{Cpr_m - Cg(r_m+h)}{CpSg - CgSp} \qquad 4.13$$

Equilibrium in the money market is illustrated in Figure 4.3. The holdings of specie money are shown by OG/OG', and those of paper money by OB/OB'. The slope of G'B' = Ps/Pc, where Ps/Pc > (Sg-Sp)/(Cg-Cp), since the increased holdings of convenience through increasing holdings of Mp costs not only some security but also some goods purchasing power. G'B' will be called the market opportunity line (MOL).

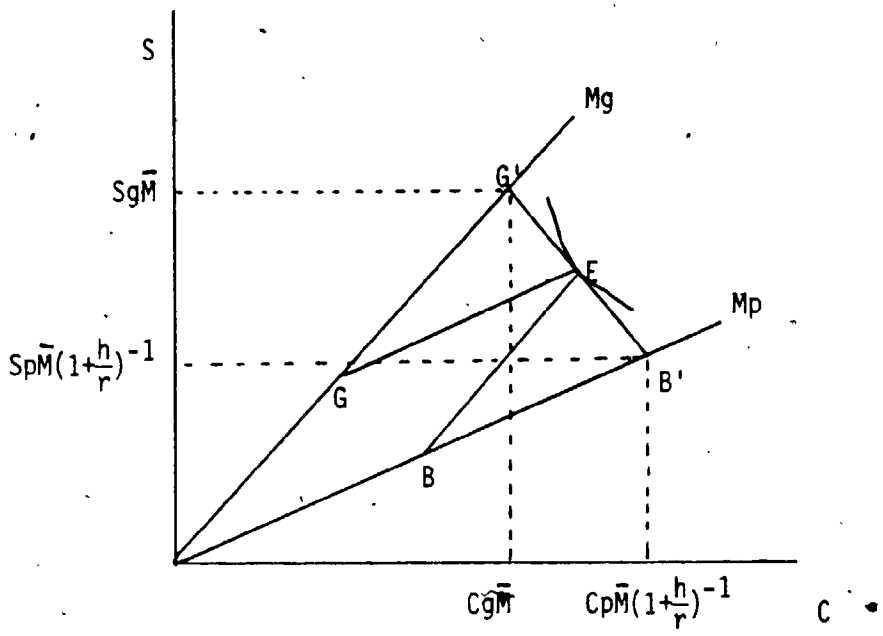


Figure 4.3
Household Choices Between Monies.

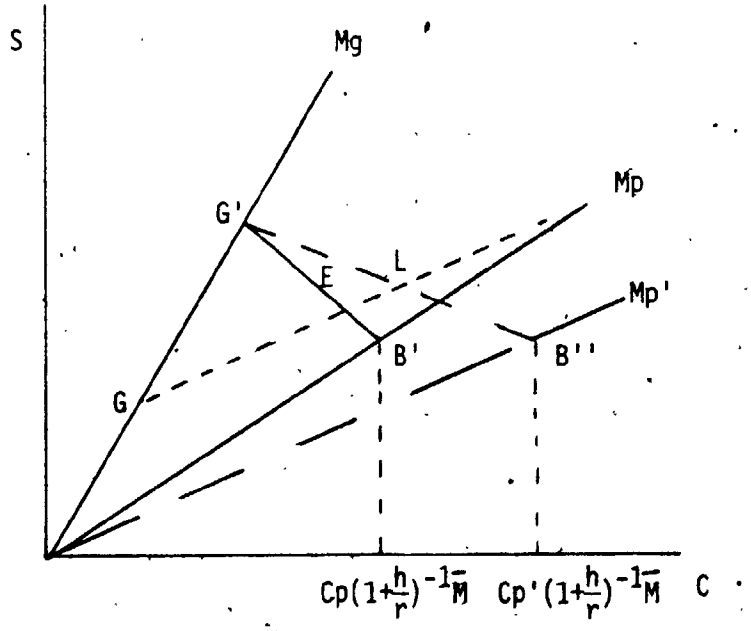


Figure 4.4
Effects of Changes in the Convenience of Bank Money.

Assuming that $\bar{M}$ is fixed, we can observe the impact on household's demand for money of changes in the characteristics of paper money. To summarize the discussion of the next few pages: the effect of an increase in the convenience of paper money is ambiguous; a decrease in the expected loss from paper money also has ambiguous results, but is more likely to increase the demand for bank notes; and an increase in the security of paper money (a fall in σ) will increase the demand for bank notes, if characteristics are not Giffen goods.

The method is illustrated by an increase in the convenience of bank notes. The ray OMp shifts to OMp' and the market opportunity line becomes G'B''. The condition for an increase in Mp is that the new equilibrium is on G'B'' below L, where L is constructed by drawing a line parallel to OMp' through G. If the new equilibrium were above L then Mg would have risen, and with M, $\bar{l}$, and r_m fixed, Mp must have fallen. The sign of $\frac{\partial M_p^d}{\partial C_p}\Big|_{\bar{M}}$ is indeterminate if $\bar{M}$ is fixed. If the convenience of bank money improves however, there would be (under normal assumptions) a shift out of bonds and goods into money. It is assumed that the net effect of this is that $\frac{\partial Mp}{\partial Cp} > 0$. (This assumption is reinforced by the historical context of the model: during the early nineteenth century the growing convenience of paper money in the U.S, has been suggested as an important

cause of the observed decrease in the velocity of money (Timberlake, 1981)).

The effect of a change in the expected loss of paper money is illustrated by Figure 4.5. The MOL shifts to G'B'' (the coordinates of B'' are $CpM(1+\frac{h}{r})^{-1}$, $SpM(1+\frac{h}{r})^{-1}$, and the condition for an increase in Mp is that the new equilibrium lie to the right of L_2. L_2 is the point at which GE extended meets the MOL. (This condition is less restrictive than in the previous case since L_2 is northeast of E and not due East).

Finally we can look at the impact of a change in the security of money. As Figure 4.6 shows, unless security is a Giffen characteristic, if bank money becomes more secure, demand for bank money will be increased. This occurs because bank money does not have an absolute advantage in that characteristic.

An increase in Sp shifts Mp to Mp' and the new MOL is G'B''. The condition for an increase in the demand for bank money is that the new equilibrium lie on B'B'' below L_3. L_3 is the intesection of the line parallel to Mp' which runs through G.

All three changes that have been analyzed cause a fall in the relative price of convenience (if Pc/Ps = R, then $\frac{\partial R}{\partial Cp}<0$, $\frac{\partial R}{\partial Sp}<0$ and $\frac{\partial R}{\partial h}<0$). In the case of a rise in the convenience of bank money however, the existing portfolio,

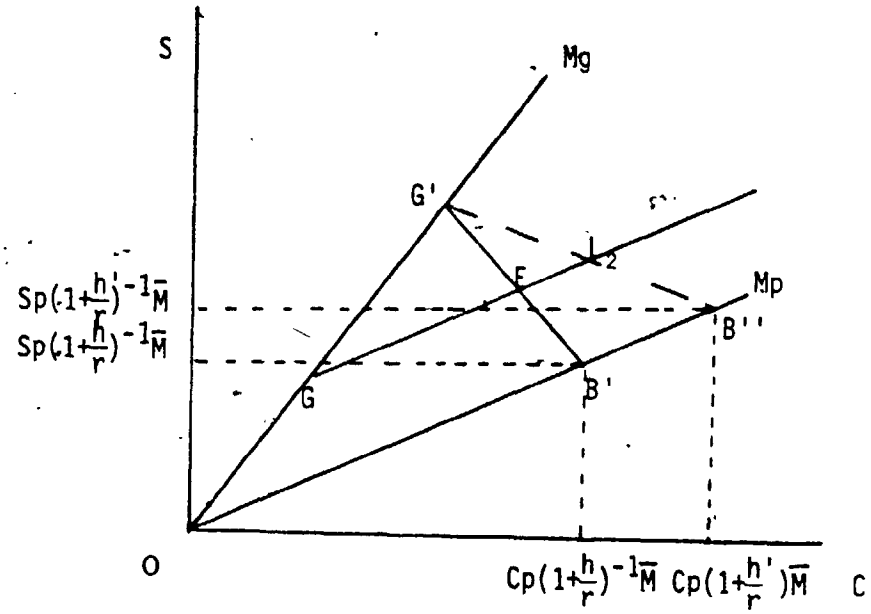


Figure 4.5

Effects of Changes in Expected Value of Bank Money.

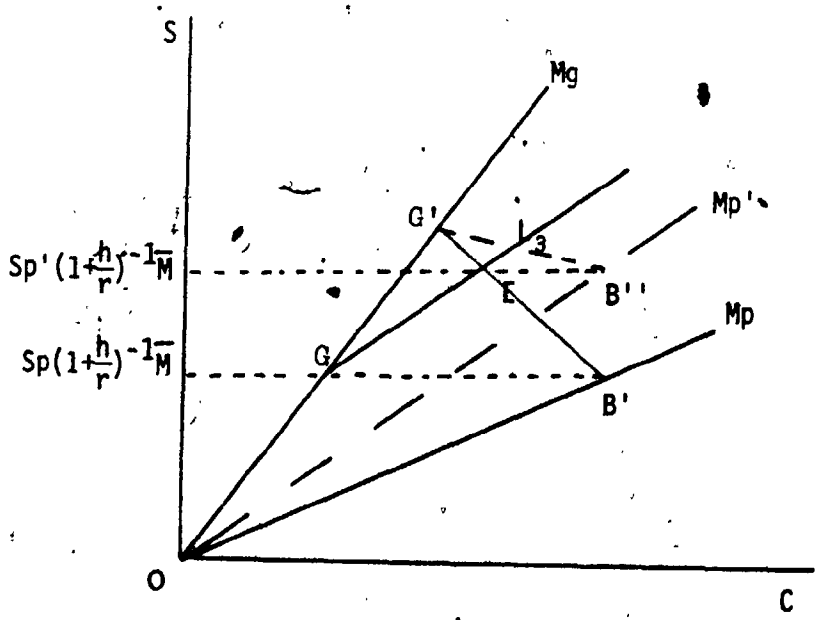


Figure 4.6

Effects of Changes in Stability of Bank Money.

holds much more convenience after the shift so that there may be substitution into more security, i.e. specie money. For reasons stated above it is assumed that, consumers switched into money when it became more convenient. If the security of bank notes rises then the original portfolio contains no more convenience than originally and the individual will attempt to attain more convenience by obtaining the money with an advantage in the production of convenience.

The above analysis yields the following demand for money functions:

$$Mg^d = Mg^d(Sg, Sp, Cg, Cp, Y, r_m, h) \qquad 4.15$$

$$Mp^d = Mp^d(Sg, Sp, Cg, Cp, Y, r_m, h) \qquad 4.16$$

with $\frac{Mg}{Sg}>0$ $\frac{Mg}{Sp}<0$ $\frac{Mg}{Cg}>0$ $\frac{Mg}{Cp}<0$ $\frac{Mg}{Y}>0$ $\frac{Mg}{r_m}<0$

$\frac{Mp}{Sg}<0$ $\frac{Mp}{Sp}>0$ $\frac{Mp}{Cg}<0$ $\frac{Mp}{Cp}>0$ $\frac{Mp}{Y}>0$ $\frac{Mp}{r_m}<0$

The supply of bank money is determined by assuming that the supply is produced by a profit maximizing monopoly bank and by determining its optimum level of output. The profits of the bank are described by

$$\Pi = r_c L - nMp \qquad 4.17$$

where Π - profits

r_c - interest on mercantile credit

L - loans

n - per unit cost of money stock.

$\bar{m}$ - desired reserve ratio

The model is closed by stating that

$$L = (1-\bar{m})\ Mp \qquad 4.18$$

$$Mp = Mp(Cp) \qquad 4.19$$

$$Cp = g(n)\ g'>0 \qquad 4.20$$

Equation 4.19 is the demand curve for bank money (based on equation 4.15), and equation 4.20 describes the increasing marginal cost of providing convenience. Equation 4.19 states that improving the attributes of bank money is initially relatively cheap but it becomes progressively more expensive.

The maximization problem for the bank is therefore,

$$\text{Max: } \Pi = r_c(1-\bar{m})\ Mp - n\ Mp \qquad 4.21$$

$$n = n(Mp) \qquad 4.22$$

$$= g^{-1}(Cp) \qquad 4.23$$

$$= g^{-1}[Mp^{-1}(Mp)] \qquad 4.24$$

$$\frac{\partial \Pi}{\partial Mp} = r_c(1-\bar{m}) - n'\ Mp - n = 0 \qquad 4.25$$

$$MR = MC$$

and equation 4.25 states that a profit maximizing bank would issue notes up to the point where the marginal increase in revenue $(1-\bar{m})r_c$, just equalled the increased cost involved in persuading people to hold bank notes. This relationship is illustrated in Figure 4.7. The diagram shows that a monopoly bank would issue less money than a competitive bank ($Mp^o < Mp^*$). The supply curve states that if the banks had to offer Cp they would be willing to supply Mp money; the curve is determined by $Cp = g(n)$, $\bar{m}$, and r_c.[16] The demand curve results from aggregating household's demands for bank money,

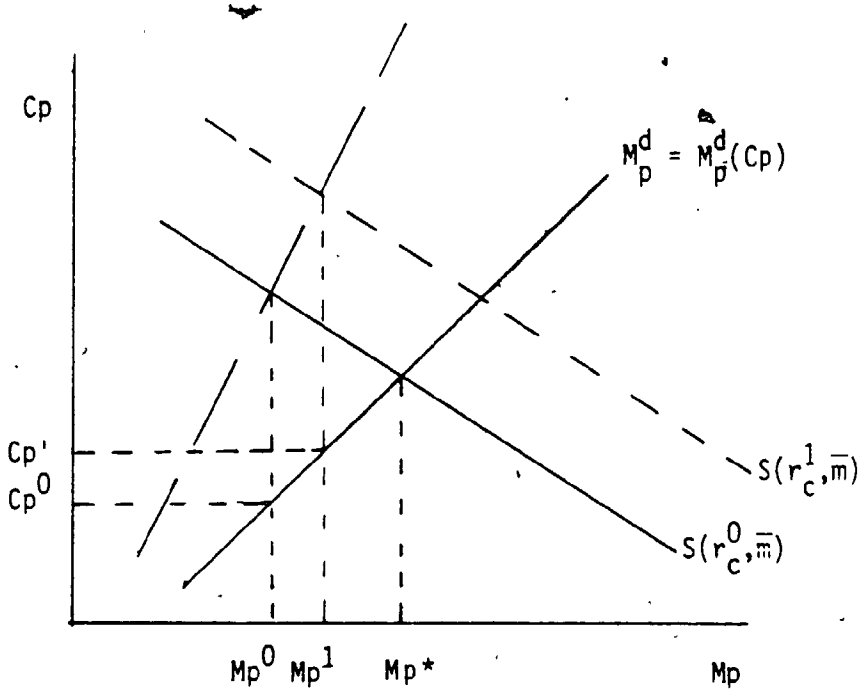


Figure 4.7
Equilibrium Bank Note Issue.

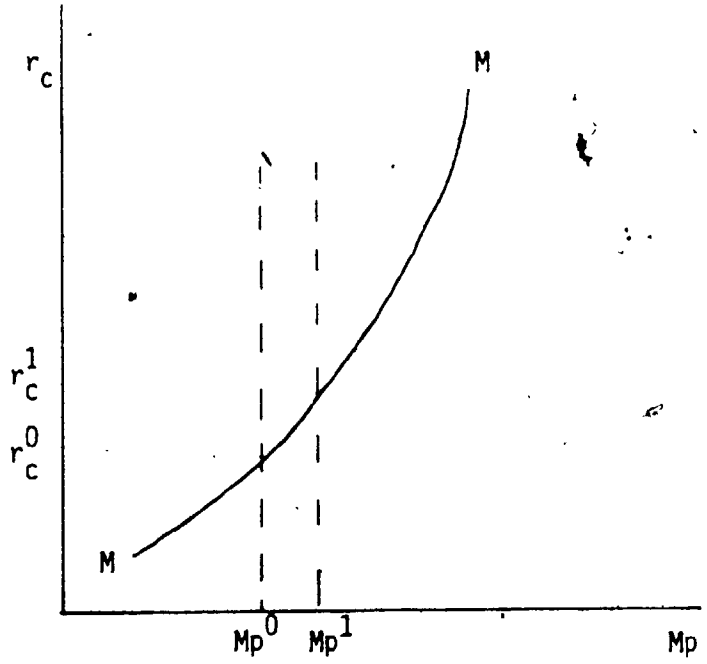


Figure 4.8
The Derived Supply Curve of Money.

and assuming that variables other than Cp are fixed (Equation 4.19).

The unusual terminology culminating in a downward sloping supply curve results from the determination of the supply of money, by analyzing it as a factor input into the bank's production (of loans) function. The graph shows equilibrium in a market where the purchaser of an input is a monopsonist.

If the return on bank lending rose from r^0 to r' the supply curve would shift upwards, as the banks would be willing to issue more money at any given level of convenience (convenience being a cost to the bank). The equilibrium money supply would then rise from Mp^0 to Mp'.

The relationship between r_c and Mp is represented in Figure 4.8 by the line MM', whose slope is given by

$$\frac{dMp}{dCp} = \frac{\partial Mp}{\partial Cp} g' (1-\bar{m}) \qquad 4.26$$

It is postulated that in the early stages of monetization this curve would be relatively flat as there would be considerable scope for increasing the convenience characteristic of money quite cheaply (i.e. g' is relatively large). Furthermore, at low levels of bank money holding, the demand for money would be relatively sensitive to changes in convenience. If, for example, the initial states of the world had an agent consuming only Mg, a corner solution, improving the convenience of money will increase

Mp, and $\frac{\partial Mp}{\partial Cp}$ will be relatively larger.

The MM curve describes the amount of money that the banks would be willing to supply at a given rate of interest. The equilibrium levels of r_c and Mp are determined by the loan market. The supply of loans is given by $L^S = (1-\bar{m})Mp$, and when combined with a demand curve for bank loans, the interest rate and bank money stock are simultaneously determined.

The demand for bank loans depends on the structure of the credit market. I assume a dual credit market. In the 'mortgage market' both borrowers and lenders are private agents and there is no lending by either banks or non-domestic sources. Upper Canada banks operated in the 'mercantile credit' market in which they competed with international borrowers and lenders. The relationship between the two markets is ignored since there is little information about it. I suspect that the links between the two markets were weak, and that the mortgage market was characterized by higher interest rates, if only because it was easier to evade the binding usury laws in that market.

This model of the 'mercantile credit' market is based on theoretical precepts and some stylized facts about the market. Figure 4.9a shows the supply and demand for Canadian loans by the rest of the world; equivalently, British demand for Canadian bonds and the demand for British bonds by

Canadians.It assumes an infinite elasticity of demand by the rest of the world (it is assumed that in the credit market, the rest of the world is Britain) for loans from Canadian banks at r_0, and an L-shaped loan supply curve. That supply curve is based on the observation that overseas loans to Canadian merchants were at rates above the British lending rate, and assumes that, given income levels, there was a fixed amount of capital available to Upper Canadians.

The Canadian domestic market is shown in Figure 4.9b where $L_c^s = (1-\bar{m})Mp$. Figure 4.9c combines the markets to show the equilibrium r*, L*, which implies Canadian loans OLc and overseas borrowing LcL*. The Canadian bank money stock is $Mp = Lc/(1-\bar{m})$.

Figure 4.9c incorporates assumptions based on the observed data: $r^* > r_1 > r_0$, and $r_2 > r^*$ which imply that Canadian loanable funds were completely absorbed in domestic lending and there was some foreign inflow.

This basic model can be expanded to show the impact of a usury law in Upper Canada. As Figure 4.10 shows, if the usury rate is less than r* it is binding. The usury law reduces lending by Canadian banks, but does not have as large an impact on total loans as overseas lending makes up the difference. The decrease in Canadian bank lending neccessarily reduces the equilibrium bank money stock: $\Delta Mp = \frac{1}{1-\bar{m}}\Delta Lc$.

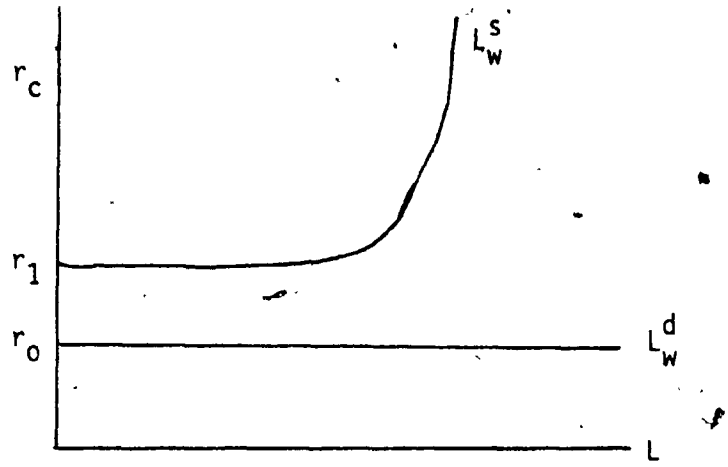


Figure 4.9a: Supply and Demand for Loans by Britain.

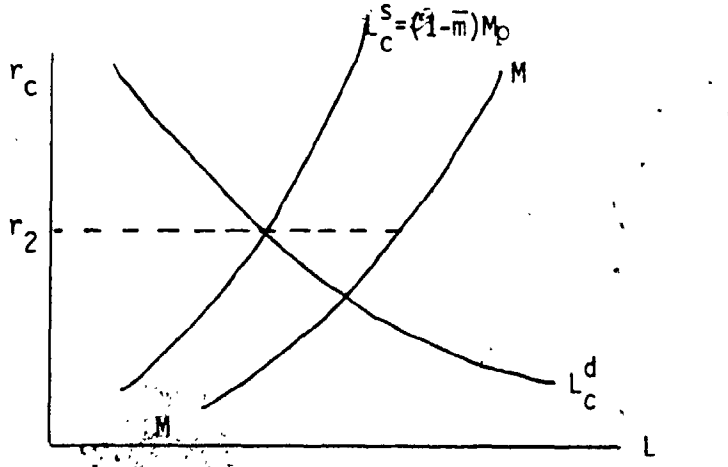


Figure 4.9b: Supply and Demand for Loans by Upper Canadians.

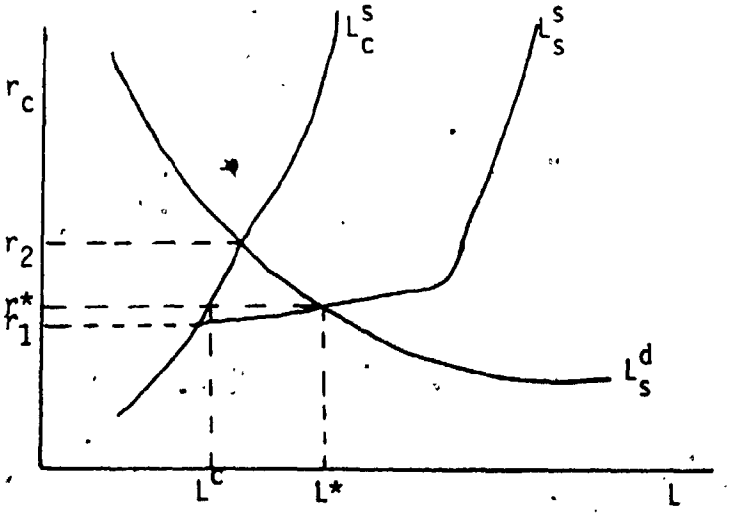


Figure 4.9c: Loan and Bank Money Market Equilibrium.

The workings of the model are illustrated by two comparative statics exercises. If the demand for loans increased the new equilibrium would yield a higher level of r*, L*, and Lc* (see Figure 4.11). The elasticity of foreign lending implies that the interest change is small, and thus the increase in Canadian bank lending is small, over a finite range. The increased demand for loans, would increase the equilibrium stock of bank money: $\Delta Mp = \frac{1}{1-\bar{m}} \Delta Lc$. This occurs because the banks having seen greater profits from lending, expended resources to increase their loanable funds; that is, they expanded their note issue. The change in L and Mp depends on the slope of L_S^S and the more inelastic L_W^S is, the more an increase in demand for loans will increase the domestic money stock. Figure 4.11 shows an increase in Canadian lending from L_C^0 to L_C^1.

In a market constrained by usury laws, a shift in the demand for loans curve does not change the profitability of lending, so that the money stock is unchanged, and the outstanding Canadian bank loans also remain constant, with simply a greater excess demand for loans.

In analyzing market equilibria it has been assumed that the security characteristic of money was fixed. During the period under analysis, there is considerable independent evidence of a shift in agent's perceptions of the future purchasing power of bank money, or a fall in 'h'. Using the

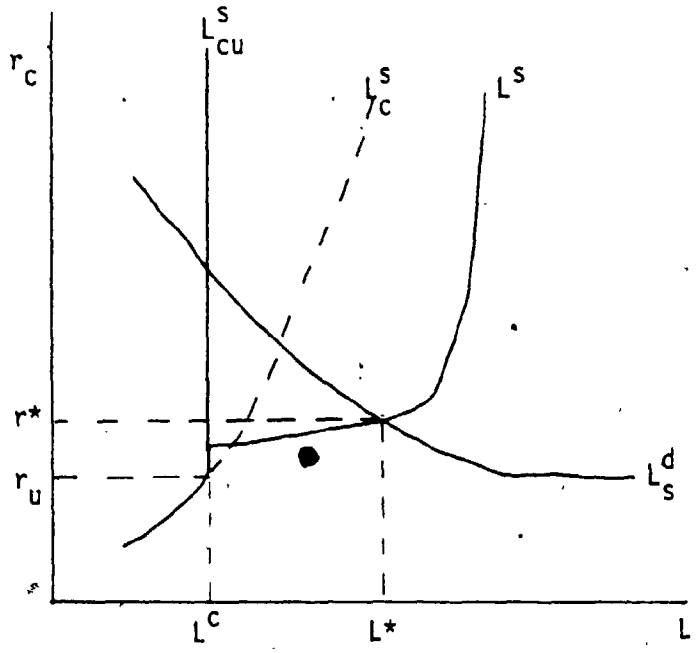


Figure 4.10
Loan Market with Usury Laws.

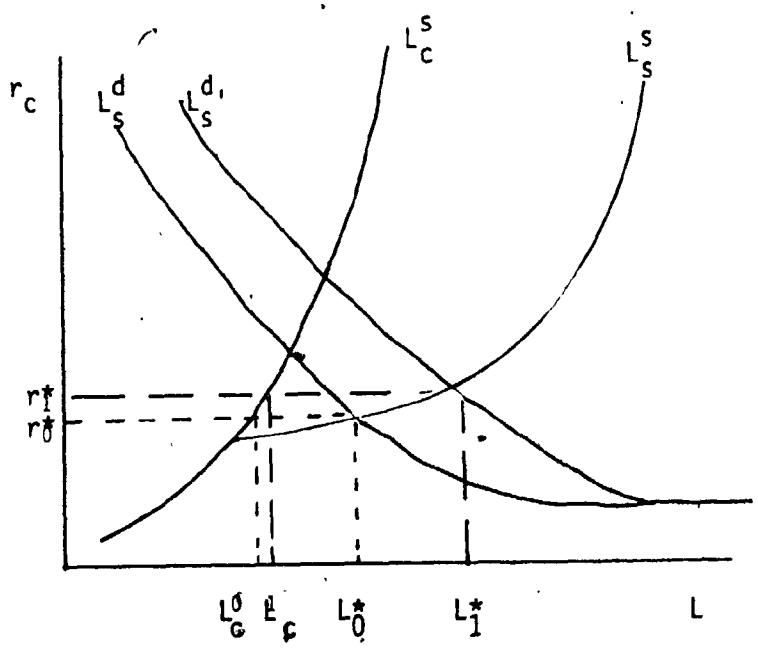


Figure 4.11
Effects of Increasing Demand for Loans.

analysis of a household's demand for bank money, this can be shown to generate (ceteris paribus) a fall in the demand for bank money (in terms of Figures 4.7 and 4.8, Mp(Cp) will rise, and MM' will shift leftwards), and therefore the loan supply will shift inwards.

Figure 4.12 illustrates that the fall in the domestic supply of loans has a small effect on the equilibrium levels of interest rates and loans. Again the fall in domestic supply is largely offset by an increase in foreign lending, but the result is extremely sensitive to the elasticity of the supply of foreign capital. If foreign capital were unavailable then the interest rate would rise significantly, and the amount of lending would similiarly fall significantly.

If there were binding usury laws then a fall in h would cause a larger fall in the volume of credit, since it would not create an incentive for the banks to improve the quality of money, and therefore the supply of loanable funds.

We have until now assumed that the only way by which the banks can affect the bank money stock is through the manipulation of the convenience characteristic, however it is likely that there is a further link caused by the relationship between the density function $Y=f(X)$ of expected purchasing power of bank money, and the reserve ratio. If the reserve ratio were not fixed and $h=h(m)$, $h'>0$ then the

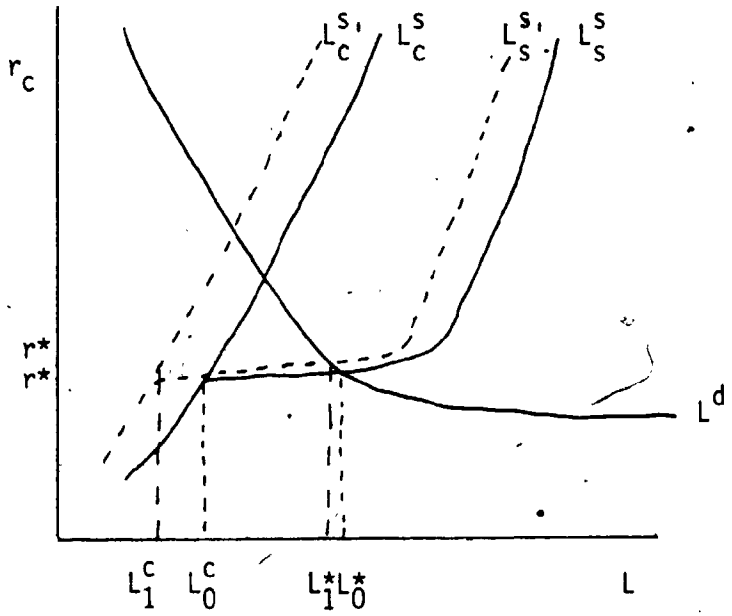


Figure 4.12

Effects of a Fall in Demand for Bank Money.

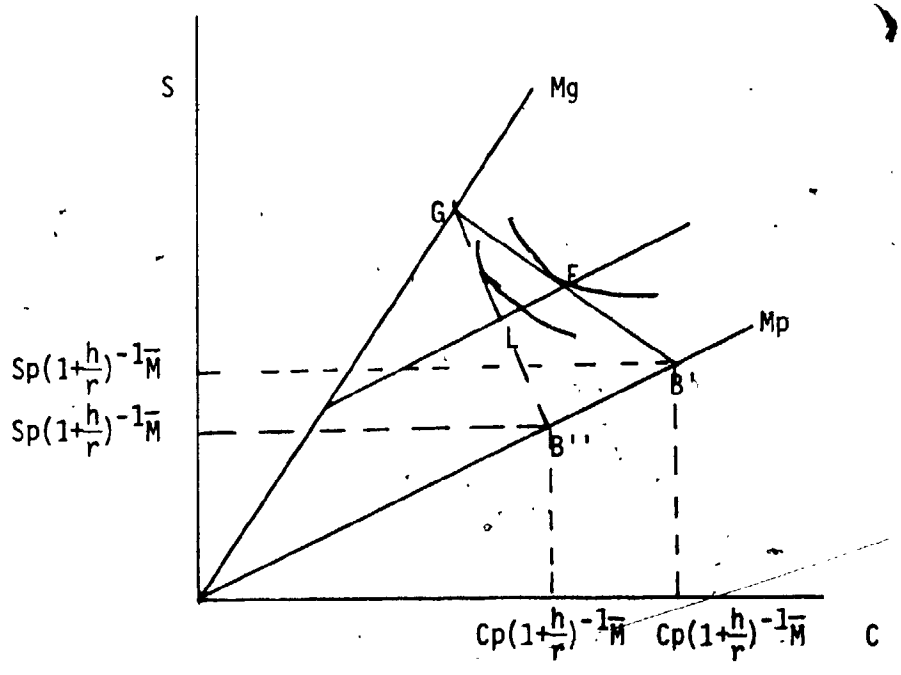


Figure 4.14

Effects of a Fall in the Expected Value of Bank Money.

banks would determine the equilibrium reserve ratio where the marginal cost of holding higher reserves equalled the marginal revenue from the increased circulation and loanable funds, which in turn equalled the marginal cost of increasing circulation by increasing convenience.

If we assume that the reserve ratio was established in such a way, then the exogenous fall in the expected purchasing power would be offset by (a) a higher interest rate, (b) a higher level of convenience, and (c) an increase in the reserve ratio. Again, if usury laws constrained $r^* < r_u$, then the change in reserves and convenience would be significantly less.

The factors determining equilibrium in the bank money market having been described, it remains to discuss in a little more detail the determination of the equilibrium stock of specie. The demand for specie by individuals was described by equation 4.15, and the demand for reserves by the banking system is simply mMp. In a small open economy, the monetary approach to the balance of payments says that the supply of specie changes to equilibrate the supply and demand for money at the world price level. This implies assumptions about the ease of trading in specie. Upper Canada was a small economy and it was relatively easy to acquire specie from New York throughout this period. (In contrast, it is usually assumed that the U.S. stock of specie at this time was fixed in the short run (Sushka,

1976; p.822)).

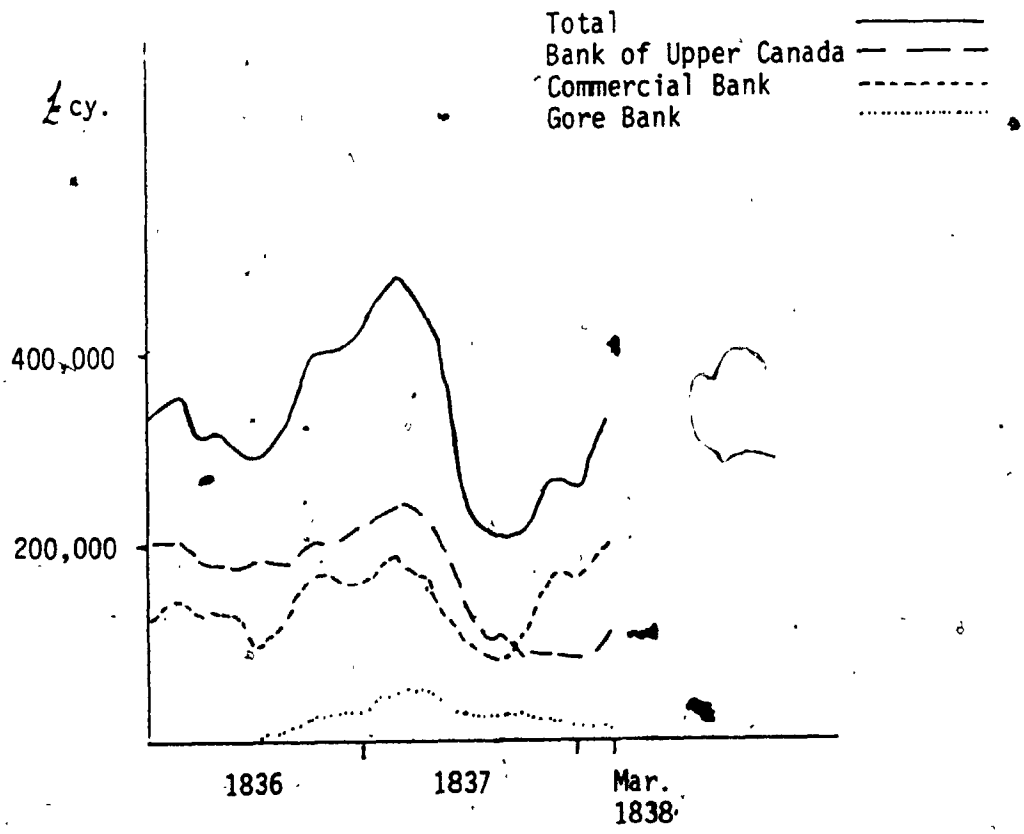
4.3 The Impact of the U.S. Suspension on Upper Canada

Figure 4.13 shows the behaviour of the stock of bank money during the period under discussion. This Figure shows the dramatic drop in the money stock from May to July 1837: from £443,230 cy. to £257,556 cy. The Bank of Upper Canada and Gore Bank maintained approximately the same low level of issue for the next eight months while the Commercial Bank immediately increased its note issue after it suspended specie payments in September 1837.

Both the contemporary literature and subsequent historical analysis has suggested that the fall in the money stock was caused either by an external drain or by the banks fears of an external drain. The conclusion was then derived that the Upper Canada banks should have suspended after the U.S. banks suspended. An examination of the arguments made concerning the causes of an external drain shows that there is little evidence that an external drain did or would have caused the banks to decrease their note issue.

The implication is that the cause of the fall in the Upper Canada money stock was an internal drain. In particular, it is suggested that Upper Canadians as a result of the U.S. and Lower Canada suspensions, reinforced by the indecisiveness of their own government, had greatly

Figure 4.13: The Stock of Bank Money.
Source: Canada, Journals, 1841 App. O



decreased faith in the continued redeemability of their bank notes, and increased expectations of a fall in the specie value of those notes. The model of Section 4.2 shows that such a change in expectations would reduce agents' demand for bank money from one equilibrium level to a lower level. If the banks wished to maintain specie payments, they had to decrease the supply of bank notes. The model also predicts that the fall in the demand for bank money would be at least partially offset by an increase in the demand for specie (in the hands of the public.

The first step in the analysis is to consider why there might have been an external drain and resultant fall in the money stock. Contemporaries argued that this would occur both because of speculation by Americans holding Upper Canadian bank notes, and because the balance of trade was against Upper Canada.

There were differences of opinion concerning the amount of Upper Canadian note circulation in the United States. Thomas Ridout, Cashier of the Bank of Upper Canada argued, (in a not totally unbiased letter to the Lieutenant Governor[17]):

> It appears therefore that it will not be difficult for speculators to pick up the greater portion of the Upper Canada notes circulating in the States of Ohio, Pennsylvania and New York. The present circulation being nearly £200,000 we assume that nearly one half of that sum may be bought up by speculators and brought here for redemption.

On the other hand, Executive Council member McCauley wrote

to the Lieutenant Governor referring to "the amount of our notes now in circulation in the United States, which is probably at present inconsiderable".[18] Finally an anonymous correspondent of the Patriot (who used the pen name 'R' and whose series of letters regarding the suspension will be referred to later) similiarly stated in reference to Upper Canada note circulation in the U.S.: "...I do not think therefore that there can be any great amount outstanding among our neighbours; nor could the amount at any time during the last winter have been very considerable".[19]

Whether or not the American circulation was large, economic theory suggests that if specie rose to a 10% premium in the U.S., and Upper Canada bank notes were still convertible into specie at par, they (Upper Canada notes) would also rise to a premium relative to U.S. dollar bills. As stated in Chapter 2, the currency laws in Upper Canada had debased the Upper Canadian dollar so that in specie it was worth 3% less than a redeemable U.S. dollar. On May 16, 1837, Ridout, in his letter to the Lieutenant Governor reports that:

> In consequence of the Banks of the United States having very generally discontinued to redeem their notes in specie the value of the precious metals has suddenly risen and the notes of the Upper Canada banks which have heretofore been at a discount of 5% in the New York market have simultaneously attained a premium.

Thus Upper Canada notes did rise to a premium after the U.S. suspension. Agents would therefore either have to pay a

premium to purchase Upper Canada notes, thus eliminating the potential profit at the margin; or if they held Upper Canada bills, could use those for domestic payments at their increased value, reducing the need to redeem notes at the bank in order to make a profit. While the rise in the value of Upper Canada notes would not necessary eliminate the possible intramarginal gains, a comment in the Kingston Chronicle and Gazette (27 May 1837) that "there has been scarcely any demand [for specie] from the American side", suggests that the external drain was small.

A related source of external drain, but one which is not mentioned in any of the contemporary literature, concerns the possibility of an Upper Canada speculator redeeming his bank notes in specie and using that specie to buy U.S. bank notes. American notes were at a discount of 10% in specie terms, and if speculators were certain that the American banks would resume specie payments in May 1838 they would expect a 10% return on their investment.

While this form of speculation undoubtedly occurred on a small scale, it would not cause a dramatic external drain. The premium on specie in U.S. dollars was determined in the U.S. asset market which would equate expected returns on assets adjusted for risk. The Upper Canadian speculators were only a small part of the U.S. asset market and there is no reason why Canadian speculators should have been more sanguine than the market. Therefore, there is no reason why

speculative flows would have caused an external drain.

The alternative source of an external drain would be a fall in U.S. prices (in terms of specie) and the impact of the suspension on the trade balance. The problem is clearly put by Hagerman who stated that, "The course of trade is in favor of the United States and though unaided by speculation in exchange, must in the end drain our vaults". (The correspondent 'R' also refers to the balance of trade argument for suspension by the Upper Canada banks). Hagerman's statement simply asserted that Upper Canada could not run a balance of trade deficit permanently, but the trade argument might also refer to the stimulus toward a trade deficit by the U.S. devaluation. The effect of such a stimulus would depend upon the level of U.S.-Upper Canada trade and the relevant elasticities.

The level of trade between Upper Canada and the U.S. has already been demonstrated to be relatively low. In fact the Chronicle (8 July 1837) pointed to the unliklihood of Americans obtaining Upper Canada bank notes "due to the scarcity of trade between the U.S. and the Province". 'R' takes issue with Hagerman over the direction of trade and argues that "during the last winter [1836/37] the balance of trade between the States and Upper Canada, was rather in favour of the latter" (Patriot 27 May 1837).

The key point in respect of the impact of the

suspension on trade flows, is that it would be a gradual response and not the cause of a sharp drain of specie. It has been stated (see Chapter 2) that the low levels of US-Upper Canada trade resulted from both commercial policies and the fact that Canada and the U.S. specialized in the production of the same goods. These facts suggest that the trade elasticities might also have been quite low, which would mitigate the impact of the devaluation.

In conclusion economic theory suggests that the role of an external drain was probably relatively small in Upper Canada after the U.S. suspension, because Upper Canada notes quickly reflected their increased value in U.S. dollars, and because there was a low volume of trade between the two areas. Thus the fall in the money stock must have resulted from an internal drain, or a change in the desired holdings of bank money by Upper Canadians. In turn this suggests that the impact of the suspension was felt not directly but by its effects on individuals expectations of the future value of Upper Canada bank notes.

After the U.S. suspension agents expected that the Upper Canada banks would suspend, and having seen the premium that arose on U.S. notes, they would expect that if the banks failed note holders would suffer a capital loss (in specie terms). In terms of the model of Section 4.2, the U.S. suspension caused a change in the expected purchasing power of bank money (h) and thus caused individuals to

demand less bank money.

The model suggests that a fall in the expected purchasing power would reduce demand for bank notes, but not necessarily to zero (see Figure 4.14). As agents reduced their holdings of bank money, the marginal utility of convenience would rise, which is presumably what Shortt meant when he said "the urgent need for money prevented the remainder of the notes from returning upon the banks".

The reduced demand for bank money implied that the supply of loans by Upper Canadian banks fell simultaneously. If there were no international credit market, the impact of this fall on the Upper Canadian market could be illustrated by Figure 4.15. The decrease in loan supply is partially offset by the banks increased interest earnings which enable them to affect the 'convenience' of money; the fall in the money stock is therefore $(L_2^c-L_1^c)/(1-\bar{m})$ rather than $(L_2^c-L_3^c)/(1-\bar{m})$.

Introduction of the usury law constraint and an international credit market, means that the impact of the fall in demand for bank money was more severe, as is illustrated by Figure 4:16. If the international loan supply were stable and elastic then the decrease in the supply of Canadian funds could have been offset by increased borrowings from abroad. However, there is clear evidence of a decrease in lending from Britain during 1837, largely as a

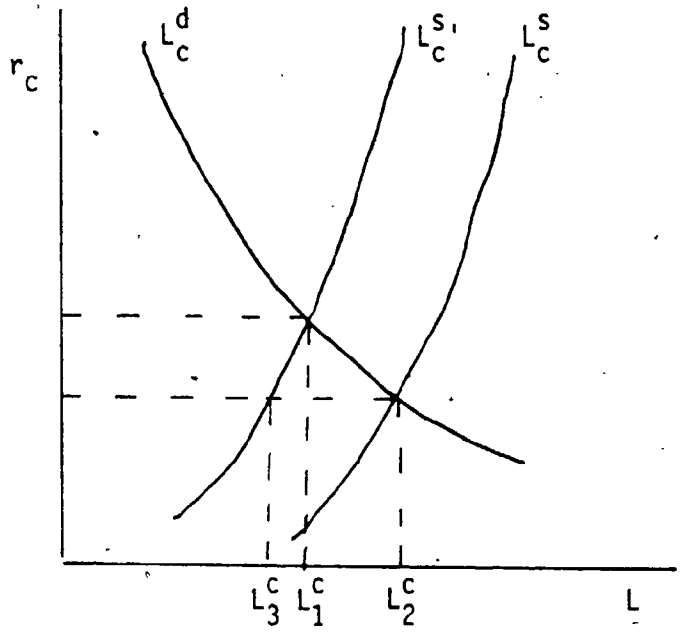


Figure 4.15
Effects of a Fall in the Supply of Loans: Closed Market.

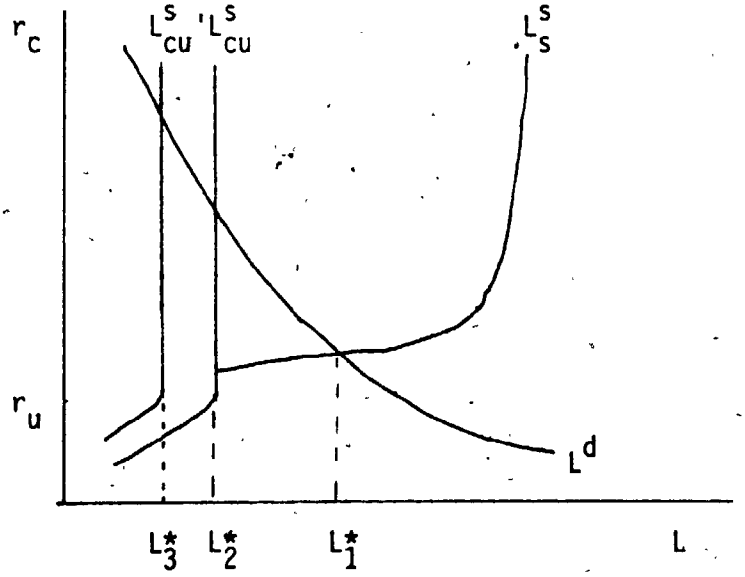


Figure 4.16
Effects of a Fall in the Supply of Loans: Open Market.

result of American business failures.[20] Thus the impact of the decrease in lending was made more severe by (a) the imposition of a usury law which restricted the banks from attempting to increase the public's demand for bank money, and (b) the inability of borrowers to offset this by increased overseas borrowings, caused by a prohibitive upward shift in the supply of overseas funds. The fall in loans was thus from L_1^* to L_3^* and there was a decline in the money stock $(L_1^* - L_3^*)/(1-\bar{m})$.

The model also predicts that specie reserves of the Upper Canada banks would fall over the period May 1837 to July 1837, but that individual's holdings of specie would rise. Although insufficient to rigorously test this prediction, the data available do give some support to the hypothesis.

There are annual data on specie imports by the banks and during 1837 the Commercial Bank and the Bank of Upper Canada (there are no data for the Gore Bank) imported £209,905 cy. In specie. However the change in specie reserve holdings of the banks during 1837 was £70,933. The data on specie outflow are more sparse, showing only specie leaving through St. Johns (Quebec) to New York. These data show exports of £17,341 and net specie imports at that port of £136.350 cy. (The reserves of the Bank of Montreal rose by £33,340 during 1837). The data on flows at St. Johns would however miss any specie going from Toronto to New York

directly, for example, through Oswego. The evidence certainly does not refute the hypothesis that while bank reserves fell, individual specie holdings rose, and there was a net specie inflow into Upper Canada.

Finally, it is worth restating that the fall in the banks discounts was slightly less than the fall in their notes in circulation. This implies that they were not substituting out of one asset into another, at the expense of the Canadian merchants.

4.4 Conclusions

The objectives of this chapter were to present a theory of the demand for money, appropriate for an economy in which a banking system was evolving, and to use that theory to analyze the behaviour of the bank money stock in Upper Canada when the United States suspended specie payments. The theory assumed that the production of money was costly, and thus the equilibrium money stock was endogenous.

Emphasis was placed on the role of expectations in determining the demand for bank money. As Upper Canada was a small open economy, it is suggested that it was changing expectations of the value of bank money that led to a sharp reaction to the U.S. suspension of specie payments, rather than the emergence of a serious external drain. Since the

fall in the bank money stock was from one equilibrium to another, the effects would have been less serious if the economy's adjustment mechanisms had not been constrained by usury laws.

Finally it is postulated that Shortt has overstated the seriousness of the monetary crisis in 1837. That 1837 was a year of relative hardship is undisputed, however poor harvests accounted for much of this hardship; the 'banking crisis' would have been felt particularly in the mercantile sector, and a previously mentioned newspaper report stated that there were 'no commercial failures'.

Table 4.1

Discounts as a percentage of Notes in Circulation

Bank of Upper Canada

	1836	1837	1838	1839	1840	1841
JANUARY	1.52	1.68	2.63	0.79	1.79	2.18
FEBRUARY	1.61	1.70	2.27	0.51	1.73	2.13
MARCH	1.73	1.59	1.85	0.77	1.76	2.20
APRIL	1.97	1.66	1.42	0.75	1.79	2.35
MAY	1.98	1.71	1.19	0.73	1.85	2.11
JUNE	2.11	1.80	1.01	0.71	1.92	2.15
JULY	2.11	2.37	1.51	0.79	2.09	
AUGUST	1.89	2.54	0.86	0.80	2.05	
SEPTEMBER	1.87	2.31	0.75	1.01	1.68	
OCTOBER	1.64	2.48	0.91	1.29	1.90	
NOVEMBER	1.80	2.50	0.84	1.53	1.95	
DECEMBER	1.65	2.70	0.85	1.64	2.05	

Source: Canada, Parliament, Journals, (House of Assembly) Volume 1, Appendix O.

FOOTNOTES

[1]Upper Canada Sundries, Vol. 81, p.431.

[2]Upper Canada, Parliament, Journals, (House of Assembly) Volume 1, 13th Parliament 2nd Session.

[3]Canada, Parliament, Journals (House of Assembly) Volume 1, Appendix O, 1841.

[4]Upper Canada Sundries, State Books Volume H, p. 603.

[5]Upper Canada State Papers, Volume 17, pp. 68-82.

[6]In consequence very few $1 notes were issued by the banks, and in fact the City of Toronto started issuing $1 notes.

[7]Ouellett (1980, p.)

[8]Public Archives of Canada, Military Records, RG 8, Series C Volume 144 (see Table 6.1).

[9]Upper Canada, Parliament, Journals (House of Assembly), 13th Parliament, 4th Session "Correspondence on the Subject of Suspension of Specie Payments", Vol. 2, p. 611.

[10]Upper Canada, State Books Volume H, p. 647.

[11]1 Vic. Ch. 4.

[12]I have followed Adam Shortt, in assuming that the actual suspension of specie payments by Upper Canada banks resulted from the political upheavels and the Upper Canada Rebellion. This means that it should not be treated endogenously.

[13]Shortt (1902, p. 105-6).

[14]McIvor (1958, p. 44).

[15]See Appendix 4.1.

[16]The supply curve is downward sloping because $g'(n)>0$, which states that the increases in inputs yield less than proportionate increases in convenience.

[17]Upper Canada Sundries (13 May 1837) 96880 A

CHAPTER 5

SUSPENSION WITHOUT INFLATION

This chapter continues the analysis of the monetary system of Upper Canada and examines the period during which the banks suspended specie payments (March 1838 to November 1839). The model of Chapter 4 assumed a fixed rate of exchange between the two currencies, specie and paper money, and that model is adapted to the case where the banks are no longer required to trade specie at par with bank notes. This adaptation is accomplished in two stages, firstly, in a perfect foresight model it is shown that a profit maximizing bank would decrease the nominal stock of bank money balances at the time of suspension. The bank would then gradually increase the money stock until the date of resumption. In the second stage these results are modified to allow uncertainty about the length of suspension, and also to allow for the possibility that agents do not correctly anticipate bank actions. Under these assumptions, the banks increase the money stock at the time of suspension, and subsequently deflate the currency.

When the banks suspended specie payments, they were no longer required to redeem their notes with a legally fixed quantity of specie metals. The banks continued to trade in specie but would buy and sell it at a rate determined by the market. Typically the price of specie in banknotes was higher than the pre-suspension par, and the price was quoted

as a premium of x% over par. This premium reflected the fact that at par, there would be an excess supply of bank notes.

5.1 Previous Analyses of Temporary Suspensions

Despite the considerable work done on North American monetary history, very little has been said about the determinants of the bank money stock during a temporary suspension. The most explicit treatment of suspension is that of Friedman and Schwartz (1963) for both the Greenback Period and the 1893 restriction/suspension of specie payments. Temin also mentions suspension during the period 1837-8. I shall briefly discuss the analyses of these authors and then examine Adam Shortt's description of monetary behaviour in Upper Canada during the suspension.

Friedman and Schwartz (henceforth F&S) describe the impact of a suspension: "[it] in effect created a dual monetary system - currency and deposits not interchangeable at a fixed rate" (p. 110). They emphasize the importance of expectations of resumption in determining the (flexible) rate of exchange between currency and deposits, both in the 1860s and in 1893. In the 1860s they argue that "one might expect that the rapid rise in prices during the Civil War ....to have produced....a substantial rise in money interest rates" (F&S, p.70), and yet interest rates were 'unusually low'. They explain this anomaly by postulating that there were capital inflows, by agents speculating on the greenback

dollar; or rather, speculating on a fall in the premium on specie in greenback dollars.

A similiar analysis is used in their discussion of the 1893 suspension: "the currency premium....since it was not expected to last, gave an incentive to convert foreign balances, i.e. gold, into dollar deposits" (F&S, p.110). These influences of expectations are not however related back to form a constraint on the issue of paper money.

Temin also introduces expectations into his analysis of the exchange rate between specie and bank notes, stating that the amount of the premium is at a level where "the people who thought the specie price of notes and deposits would fall further (and therefore wished to sell them) were offset by those who thought their specie price would rise (and who wanted to buy them)" (Temin, 1969; p.116). He also postulates that the public's demand for specie increased as they had learned "that bank obligations were not always 'as good as gold' and that they could lose 10% of their value in a few months" (Temin, 1969; p.119). He does not describe the behaviour of the banks except to comment that they wished to build up reserves prior to May 1838, in order to be in a strong position when they resumed specie payments. There is no explicit discussion of how that would affect their note issues during suspension.

As mentioned in Chapter 2 there has been very little

written about monetary events in Upper Canadian history, so that the state of the art can be presented by discussing Adam Shortt's analysis of the twenty month suspension period (Shortt, 1902). In his discussion, Shortt focused on the Bank of Upper Canada. He claimed that the Bank wanted to suspend in order to be able to increase its note issue to the extent of £400,000 (Shortt, 1902;p.112). The Bank would then use the excess issue to finance speculation in foreign exchange: "the Bank [of Upper Canada] had no occasion whatever other than its own temporary interest, for suspending when it did", which interest arose out of expectations of "a steady reaction in the United States exchange market" (p. 114), i.e. a sharp rise in the U.S. premium on London exchange. Shortt continues, "1838 passed and the opening months of 1839 without any opportunity for the bank to unload its large amount of London exchange". The Bank was therefore unwilling to resume specie payments until after the summer of 1839, when the supply of government exchange dropped and the price of exchange on London, in New York, advanced (Shortt, 1902;p. 118).

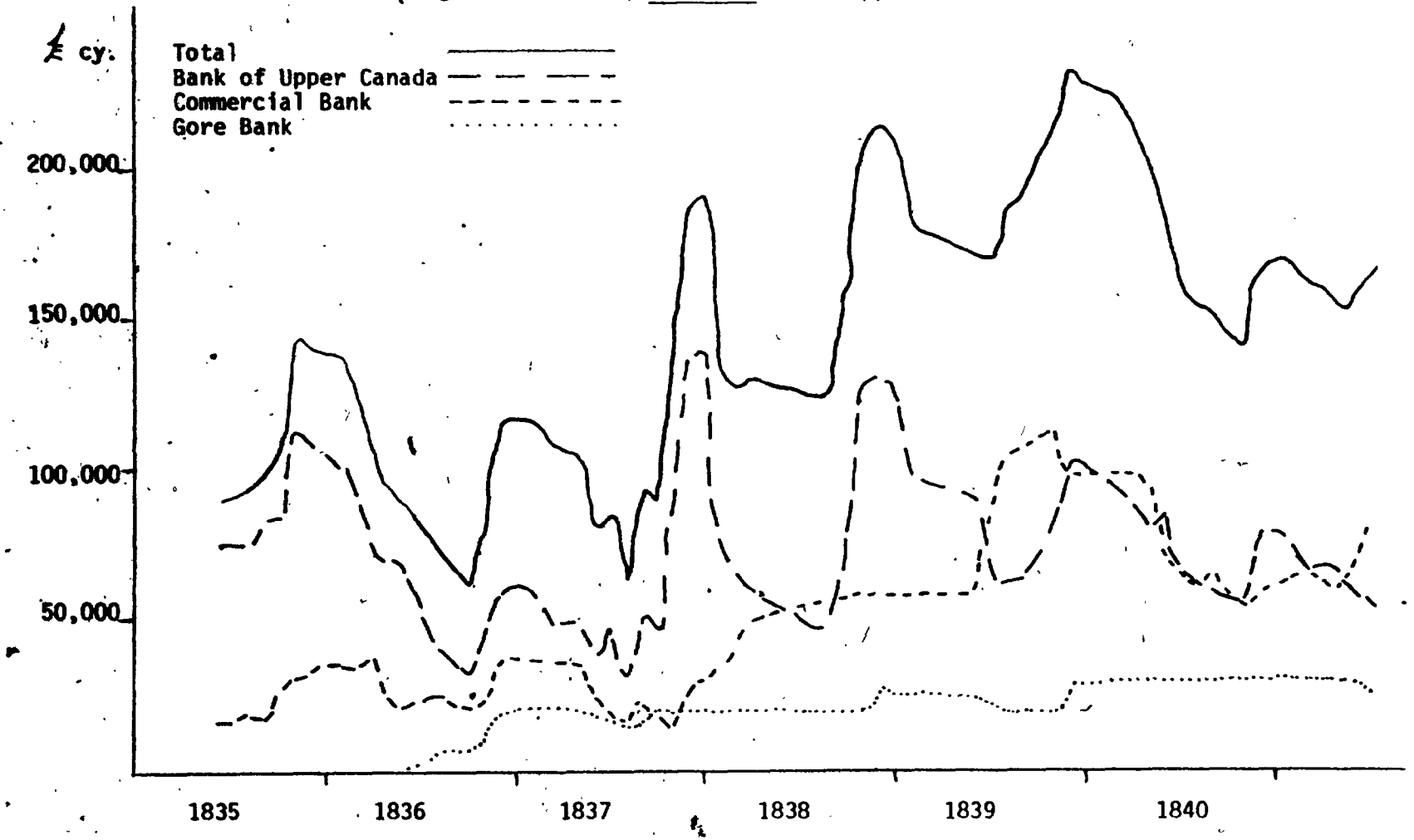
The suspension of specie payments (in Shortt's view) provided two benefits for the Bank: it could speculate with its 'normal level' of reserves, since they would not be required for at least a year; and, to the extent that it could expand the note issue, the bank would have additional resources on which to earn a rate of return. The former

benefit is clear, however, the latter is constrained by the ability and desire of the bank to 'inflate' the real supply of money. I shall argue in the following section that both would be quite limited.

For Shortt's hypothesis to be valid, the premium on exchange in New York should have been relatively low from March 1838 until the summer of 1839. Table 4.1 showed that the price of London exchange had substantially recovered from its low in February 1838 by June 1838 when the U.S. banks had resumed specie payments. The high premium of 9.5% in December 1838 was not equalled until October 1841. Certainly the Bank of Upper Canada did not need to wait until October 1839 to take its profits on exchange speculation. It would have been more profitable to sell exchange in December 1838, and use the proceeds for domestic lending.

The specie reserves of the Bank of Upper Canada (shown in Figure 5.1) did not fall significantly during 1838/9. The seasonal fluctuations and limited availability of data imply that this can only be an approximate conclusion). The size of the jump in purchases of foreign exchange suggest that Shortt viewed the banks increase in holdings of foreign exchange as arising out of increases in note issue (an increase in the size of the portfolio) rather than out of the negligible freeing of specie reserves (a shift between assets, size of the portfolio constant). He must therefore,

Figure 5.1: Bank Reserves in Specie.
Source: Canada, Journals, 1841 App. O



by implication, have seen the benefit to the banks of the suspension of specie payments, as lying in their ability to inflate the note issue. I shall term this the 'inflationist hypothesis'.

Shortt hypothesized that the banks had the ability to inflate the nominal money stock up to the legal limit of twice the capital stock. The work on U.S. suspensions suggests that the role of expectations and the possibilities of currency substitution affect the money interest rate and the specie-price of deposits and notes (or equivalently, the premium on specie). These analyses of temporary suspensions of specie payments, have tended to ignore the fact that the amount of the bank money stock during a suspension, and hence the bank money - specie exchange rate, would be determined in part by the profit maximizing behaviour of banks, and it is this question that the following section addresses.

5.2 The Supply of an Inconvertible Currency.

The model of Chapter 4 is modified by the removal of the assumption that the banks are required to redeem their notes in specie. It was assumed that $P_1 = P_2$, i.e. the price of goods in specie and in bank money was identical, but this assumption is replaced by one of expectations of resumption. Initially the restrictive assumptions of a perfect foresight model are used to illustrate the analysis, but some of these

are subsequently relaxed.

First, assume that the Upper Canadian monetary sector was in equilibrium as described by the model of Chapter 4 with no anticipation of suspension and that all values of variables in that equilibrium are denoted by the superscript °. Then we have $Cp^{\circ}>Cg^{\circ}$, $Sp^{\circ}<Sg^{\circ}$, $h^{\circ}>0$, Mp°, Mg° and the return to each money holding is such that the net return (inclusive of convenience, security and expected losses) is equal to r°, the real rate of return on mortgages and the marginal product of capital. Finally define $P_1{}^{\circ}=P_2{}^{\circ}$.

The assumption that each bank had a local monopoly is maintained. However, theory to be presented requires not that each bank had an absolute monopoly based on its location, but that where hinterlands overlapped, the banks colluded rather than competed. Since the two larger banks held over 90% of the market for bank notes (on January 1, 1837) this is not an unreasonable assumption. Neither bank could assume that its behaviour would not affect the total stock of bank notes.

Next, assume that an unanticipated suspension of specie payments occurs which all agents in the economy expect with complete certainty to last exactly one year, from t_s - the date of suspension, to t_r - the date or resumption. (These apparently inconsistent assumptions are relaxed later although there are sound historical reasons for employing

asymetric assumptions). Assume further that real income in Upper Canada and international goods prices in specie are (and are expected to be) constant over the period.

The path of the money stock during suspension will be that which maximizes bank profits subject to institutional constraints. Since we have assumed that the banks of Upper Canada operated as collusive monopolists, the analysis here follows that of Cagan (1956) and Bailey (1956), and the optimal rate of inflation depends upon the inflation elasticity of the demand for bank money.

By the assumption of perfect foresight, $Sp=Sg^{o}$, and from the analysis of Chapter 4, if we assume that the banks choose an optimal Cp, the demand for bank money will depend upon the rate of inflation - h. We can write this demand function,

$$m^{d} = M_{p}^{d}/P_{2} = m_{p}^{d}(h) \qquad 5.1$$

where $\partial m^{d}/\partial h<0$, and underlying the function are the relative marginal utilities of money and goods, and the ratio of Cp/Cg. Given this demand function the bank's profit function at any point in time is

$$R(t) = m_{p}^{d}(h)\,[i-n] \qquad 5.2$$

That is, the profit R(t) depends upon the level of real balances outstanding and the net rate of return per unit of real balances, where i is the nominal rate of interest received by the bank on its loans.

$$i = r^{o} - h \qquad 5.3$$

The bank's objective at the point of suspension is to maximize the discounted value of the stream of profits over the period $t_r - t_s$ by choosing the optimal inflation/deflation rate h*. This requires that expression 5.4 is maximized

$$R = \int_{t_s}^{t_r} e^{r^0 t} \{m_p^d(h) \cdot (i-n)\} dt \qquad 5.4$$

That expression is maximized by choosing an h* such that

$$\frac{\partial m_p}{\partial h} \cdot (i-n) + m_p(h^*) = 0 \qquad 5.5$$

If we define α as the inflation elasticity of the demand for bank money, then 5.5 can be written as

$$h^* = -\frac{1}{\alpha} - (r^0 - n) \qquad 5.6$$

Since $\alpha < 0$, and $(r^0-n) > 0$, h* cannot be signed. However, values of α obtained from Cagan's study of European hyperinflations suggest values of $\left|\frac{1}{\alpha}\right|$ of aproximately 25% per month. It is unlikely that (r^0-n) approached that level which suggests that $h^* > 0$, and possibly h* would be a very high rate of inflation.

The institutional constraints require that resumption occur at the pre-suspension par, so that prices in bank money at that point in time are required to equal their pre-suspension level. This can be written,

$$P_2(t_r) = P_2^0 = P_1^0 \qquad 5.7$$

If we assume that h* is a large positive number, this terminal constraint implies that the bank must decrease the nominal stock of bank money at t_s, and then increase it over the suspension period at the rate h*. This fully anticipated inflation will cause a fall in the quantity of real money.

balances demanded which implies that at the date of suspension the nominal money stock is reduced to a level below $Mp^0e^{-h^*(t_r-t_s)}$. At the date of resumption (when the expected inflation rate falls to zero) there will be a discrete jump in both the stock of real and nominal money balances. These relationships are stated summarily in equations 5.8 to 5.13, and are illustrated by Figure 5.2.

$$Mp(t_s+\varepsilon) < Mp^0e^{-h^*(t_r-t_s)} \qquad 5.8$$

$$Mp(t_r) = Mp^0 \qquad 5.9$$

$$\frac{1}{Mp}\frac{\partial Mp}{\partial t} = h^* \quad \text{for } t_s<t<t_r \qquad 5.10$$

$$P_2(t_s+\varepsilon) = P_2^0e^{-h^*(t_r-t_s)} \qquad 5.11$$

$$P_2(t_1) = P_2^0 \qquad 5.12$$

$$m_p^d(t_1) < m_p^d(t_r) \text{ for } t_1<t<t_r \qquad 5.13$$

Without analyzing the behaviour of the U.S. monetary system during 1837/8 in any great depth, it is interesting to note in the context of the above result that, from November 1837 until September 1838, the premium on exchange there was below pre-suspension Mint par. Between January and May 1838 it was more than 3% below par (see Figure 4.1). The perfect foresight model predicts that during suspension prices of specie (and goods) in paper money would be less than pre- and post-suspension prices. The U.S. behaviour is similiar to that predicted by the model.

Application of this model of behaviour under suspension to the Upper Canadian case requires that the complexities of the loan market as briefly outlined in Chapter 4 are taken

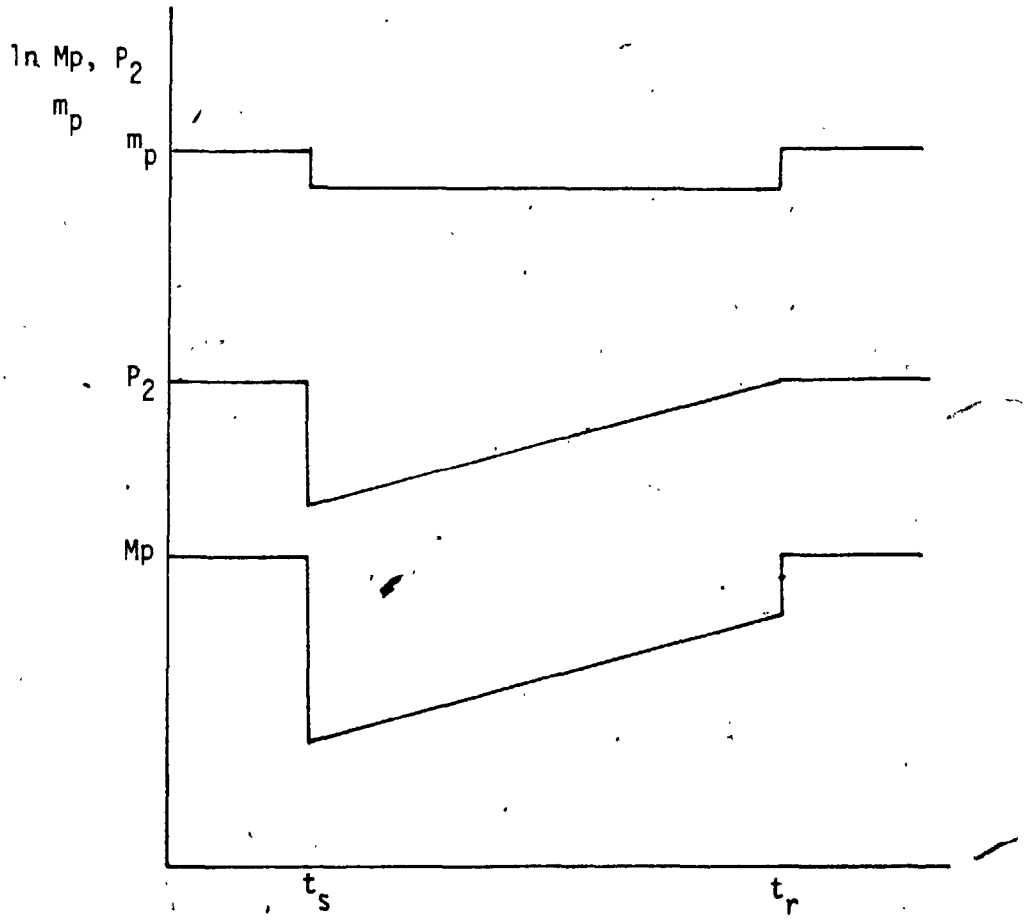


Figure 5.2
Suspension in a Perfect Foresight World.

into account. Two types of imperfections existed in the loans market: there were usury laws that required that nominal interest rates (that is, interest rates stated in bank money terms) not exceed 6%; secondly, the international credit market was not well integrated.

In Chapter 4 it was argued that the Anglo-American financial crisis in 1837, characterized by the bankruptcy of three of the major trans-Atlantic financial houses, caused a drastic shift inwards (reduction) in the foreign supply of funds. It was argued that even before this the Canadian usury laws were binding so that the decrease in foreign lending caused both an excess demand for loans at the usury rate, and an equilibrium interest rate (r^0) greater than 6%.

The unavailability of credit is evident in a letter from Peter McGill (in Montreal) to businessman W.M.Merritt: "We all feel the importance of affording facilities to the purchase of wheat in Upper Canada but the banks of Lower Canada cannot give them, and but few individual Houses will be able to supply their correspondents with the needful from hence".[1] These comments and similiar reports in the newspapers leave little doubt that there was an excess demand for loans at the 6% interest rate charged by the banks.

The inclusion of a binding usury law constraint modifies the analysis and results summarized by equations

5.8 to 5.13. The bank's profit maximization problem is now

$$\text{Max. } R = \int_{t_s}^{t_r} e^{r^0 t} \{m_p^d(h)[i-n]\}\, dt \qquad 5.14$$

$$\text{subject to } i \leq r_u \qquad 5.15$$

$$i \leq r^0 + h \qquad 5.16$$

Since the expression $\{m_p^d(h)[i-n]\}$ is not time dependent the maximum of 5.16 will require that $\{m_p^d(h)[i-n]\}$ is maximized subject to the constraints 5.15 and 5.16. Condition 5.15 is the constraint that the banks charge a rate of interest equal to or lower than the usury rate. The constraint imposed by perfect competition in the loan market states that the bank's return on loans cannot exceed the given market real rate of interest plus the rate of inflation (5.16).

The maximum is found by forming the Lagrangean

$$L = m_p^d(h)[i-n] + \lambda_s^0(r^0+h-i) + \lambda_u(r_u-i) \qquad 5.17$$

The Kuhn-Tucker conditions for an optimum then are, that,

$$\frac{\partial L}{\partial h} = m'(h)[i-n] + \lambda^0 = 0 \qquad 5.18$$

$$\frac{\partial L}{\partial i} = m(h) - \lambda^0 - \lambda_u = 0 \qquad 5.19$$

$$r^0+h-i \geq 0 \quad \lambda^0 \geq 0 \text{ and } \lambda^0(r^0+h-i)=0 \qquad 5.20$$

$$r_u - i \geq 0 \quad \lambda^0 \geq 0 \text{ and } \lambda_u(r_u-i) = 0 \qquad 5.21$$

We have argued that an unconstrained optimum would yield a rate of inflation considerably in excess of 6% per annum. If the usury law were binding then $\lambda_u > 0$, and by 5.21 $r_u = i$. From 5.18 we can show that $\lambda^0 > 0$ since $(r_u - n) > 0$ and $m'(h) < 0$, and from 5.20 it then follows that $r^0+h=i$. Thus we have,

$$h^* = i - r^o \qquad 5.22$$

$$= r_u - r^o \qquad 5.23$$

The bank's profit maximizing behaviour was to contract the money stock during the suspension. Since prices were fixed at the date of resumption this requires an increase in the bank money stock at t followed by a contraction of the money stock at rate h* during the suspension.

The Bank's profit from suspension can be interpreted as the product of the profit per unit of real money balances and the volume of real money balances (see equation 5.2). Without usury laws the bank could have profited from suspension by engaging in inflation. Their profits under the specie standard would have been

$$R^c(t) = m_p^d(0)\ (r^o - n) \qquad 5.24$$

but during suspension they could be raised to

$$R^s(t) = m_p^d(h^*)\ (r^o + h^* - n) \qquad 5.25$$

The increase in $i = r^o + h$ would have more than offset the decline in m.

Under the usury laws, where $r_u < r^o$ the bank's profit under the specie standard was

$$R^c(t) = m_p^d(0)\ (r_u - n) \qquad 5.26$$

During suspension the bank cannot raise the nominal interest rate so that they will deflate in order to increase the demand for real bank money balances. The bank's profits are then,

$$R^s(t) = m_p^d(r_u - r^o)\ (r_u - n) \qquad 5.27$$

The scope of deflation is limited, however, by competition in the loan market. The bank connot make loans at a real rate of interest higher than r^0. If the bank deflated more rapidly it would have to lower the nominal rate of interest and this would reduce it's profits. The lower nominal rate of return would not be completely compensated for by the increase in the demand for real bank money balances. (This is shown by the fact that unconstrained revenue maximization implies inflation not deflation).

Finally we can consider the case where $\lambda_u > 0$, but $r^0 < r_u$. This would occur if in the pre-suspension period the usury law were not a binding constraint, but after suspension (when the bank attempted to maximize profits by inflating rapidly and charging a correspondingly high nominal rate of interest) the constraint became binding. In this case conditions 5.18 to 5.21 still imply that $h^* = r_u - r^0$, however $h^* > 0$. That is, the bank would decrease the money stock at suspension and inflate at the rate $h^* = r_u - r^0$ during the suspension. In this case profits prior to suspension are

$$R^e(t) = m_p^d(0)\ (r^0 - n) \qquad 5.28$$

and after suspension,

$$R^s(t) = m_p^d(r_u - r^0)\ (r_u - n) \qquad 5.29$$

so that the bank has increased its profits because the increase in the rate of return earned $[(r_u - n) - (r^0 - n) = r_u - r^0 > 0]$ more than offsets the decrease in the amount of real bank money balances demanded, or equivalently, outstanding.

The rate of deflation cannot be greater than the real rate of interest. If prices at resumption are P_2^0 then prices just prior to resumption cannot be more than slightly above P_2^0, otherwise agents would expect a price fall and there would be an excess demand for bank notes, as agents attempted to obtain the potential capital gains. This constraint states that

$$P_2(t_r-\varepsilon) \leq P_2^0 e^{-r(t_r-\varepsilon-t_r)} \qquad 5.30$$

and by extension, at any time during suspension,

$$P_2(t_i) \leq P_2^0 e^{-r(t_r-t_i)} \qquad 5.31$$

Equation 5.31 states that there is a maximum rate of deflation during suspension equal to the real rate of interest.

Returning to the behaviour of the money stock during suspension, I have shown that under the conditions typifying Upper Canada in the 1830s, the period of suspension would have been characterized by a deflation (after an initial monetary expansion) rather than an inflation following an initial monetary contraction: Prices of goods in bank money would initially increase from P_2^0 to $P_2^0 e^{h^*(t_s-t_r)}$ and would then fall at the rate $|h^*|$.

The fully anticipated deflation during suspension would cause an increase (relative to levels before and after the suspension) in the quantity of real bank money balances demanded. This would mean that the nominal money stock would

increase at the point of suspension to a level greater than $Mp^0 e^{h^*(t_s - t_r)}$, and at the point of resumption there would be a discrete fall in the stock of nominal money balances.

The historical context requires one final modification to this model. The assumption that the suspension was completely unanticipated is dropped. In Chapter 4 it was shown that expectations of suspension would lead to a fall in the stock of nominal and real bank money balances. At the point of suspension then the stock of nominal bank money balances would jump to the same level as in the unanticipated case, however, the jump would be larger, as it would be from a lower base.

These relationships are summarized by equations 5.32 to 5.38, and are illustrated by Figure 5.3.

$$Mp(t_s - \varepsilon) < Mp^0 \qquad 5.32$$

$$Mp(t_s + \varepsilon) > Mp^0 e^{h^*(t_s - t_H)} \qquad 5.33$$

$$Mp(t_r - \varepsilon) > Mp^0 \qquad 5.34$$

$$\frac{1}{Mp}\frac{\partial Mp}{\partial t} = h^* \quad \text{for } t_s < t < t_r \qquad 5.35$$

$$P_2(t_s + \varepsilon) = P_2^0 e^{h^*(t_r - t_s)} \qquad 5.36$$

$$P_2(t_r) = P_2^0 \qquad 5.37$$

$$m_p^d(t_i) > m_p^d(t_r) \text{ for } t_s < t_i < t_r \qquad 5.38$$

This model can be expanded by looking at a more specific form of expectations. Many different assumptions could be made about expectations of resumption, but the one that appears to approximate the historical reality most

closely is that agents had a probability distribution over two dates: that is, they assigned an x% probability to resumption at t_{r1} and, prior to t_{r1}, a (1-x)% probability to resumption at t_{r1}. In this case, $t_r^e = xt_{r1} + (1-x)t_{r2}$ and, if it is assumed that all agents are risk neutral,

$$Mp(t_s) = Mp^0 e^{h^*(t_r^e - t_s)} - Mp^0 \qquad 5.39$$

If resumption occurred at t_{r1} holders of bank notes would make a capital gain, and if it occurred at t_{r2} the banks would make a capital gain. The path of nominal money balances is described by Figure 5.4 assuming that $t_{r1} = 1/3$ year, $t_{r2} = 1$ year, $x = 1/2$.

To summarize this discussion of monetary behaviour during a temporary suspension, I have shown that in a perfect foresight model, an unconstrained profit maximizing bank (or system of colluding banks) would initially decrease the stock of nominal balances. It would then expand the bank money stock at the profit maximizing rate to return, at the expected date of resumption, to the long-run equilibrium level.

The existence of binding usury laws implies that the banks will maximize profits by initially expanding the money stock, and gradually contracting during the suspension. The amount of the initial expansion depends upon (a) how large the excess demand for loans was in long-run equilibrium; (b) the extent to which the suspension is anticipated; and (c) how long the suspension is expected to last.

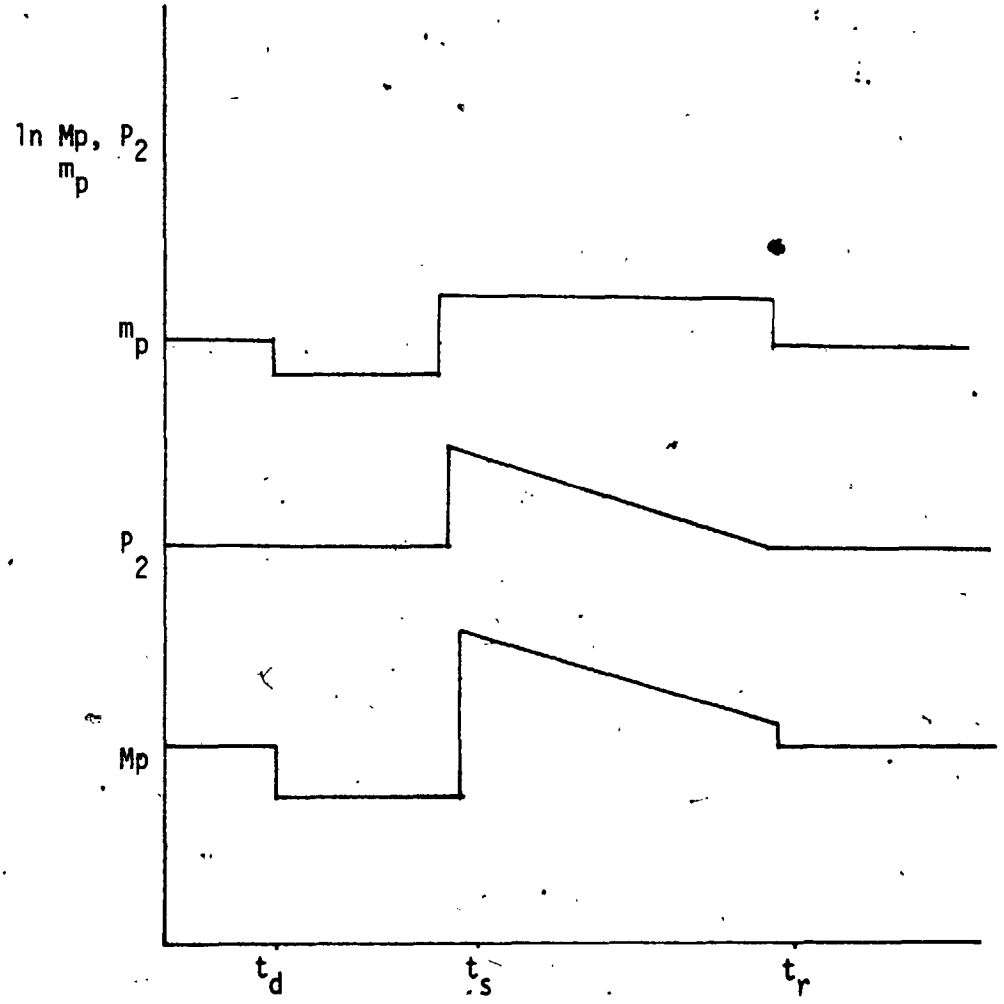


Figure 5.3

Suspension Constrained by Usury Laws.

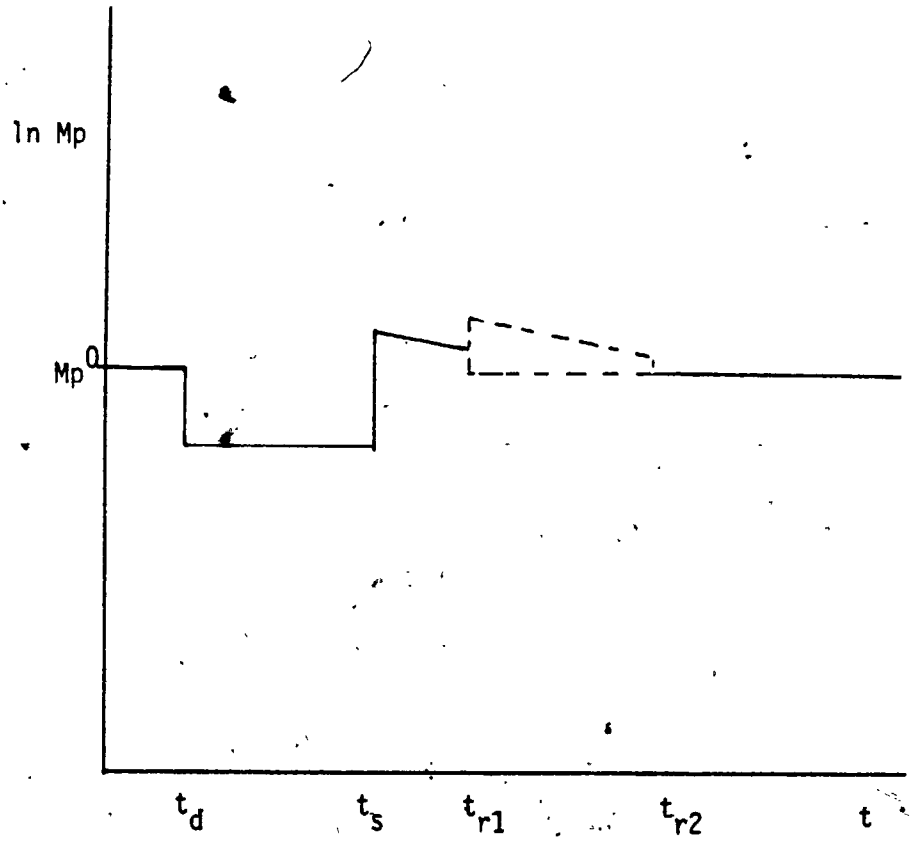


Figure 5.4

Suspension when Resumption is Expected at t_{r1} or t_{r2}.

This model suggests that usury laws can be described by their effects on seigniourage. In long-run equilibrium the constraint had the effect of reducing the seigniourage that the bank could earn, as evidenced by the fact that the nominal money stock was less than in an unconstrained optimum. In a small open economy on a specie standard the usury law by fixing the nominal rate of interest also fixed the real rate of return that the banks could earn. During suspension the bank could choose $h^*<0$ so that a fixed nominal rate of interest implied a higher real rate.

The predictions of this theory of monetary behaviour are tested against the behaviour of monetary variables in Upper Canada during suspension. The next section analyzes the expectations that were held about the date of resumption; and the following section looks at the behaviour of monetary variables during the suspension. Finally, there is a brief discussion of how closely the individual banks followed the behaviour paths predicted by the model and it is concluded that differences in bank behaviour resulted from differential access to political power.

5.3 Expectations during Suspension in Upper Canada

Having shown that the increase in the money stock at the time of suspension of specie payments depends upon how long the suspension is expected to be, this section investigates the expectations of resumption in Upper Canada. The suspension of specie payments was legally required to be a temporary phenomenon, and as the following discussion indicates there was general acceptance of the temporary nature of the arrangement. It is useful to keep in mind that the U.S. banks had been permitted in May 1837, to suspend specie payments for exactly a year, and in May 1838 they resumed specie payments as required by law.

The initial suspension law in Upper Canada was passed in July 1837 and was to terminate in May 1838. When the Bank of Upper Canada and Gore Bank suspended in March 1838, the Act was extended (by 1 Vic. ch.4) until May 1839. In May 1839 however, a controversial amendment was passed prolonging the suspension until November 1839, with a clause that permitted the Lieutenant Governor to grant a further delay in resumption. That clause was not utilized and all the chartered banks resumed specie payments in November 1839.

In the summer of 1838, several attempts were made to encourage an early resumption that is, a resumption of specie payments in that summer. In July 1838, a new

Lieutenant Governor (George Arthur) came to Upper Canada and, reflecting the displeasure of the Imperial Government with the extension of the Suspension Act, he endeavoured to get the banks to resume specie payments at a date earlier than legally required.[2] He wrote to the banks on July 17, 1838 asking for their co-operation and on July 23rd and 24th the Commercial and Gore Banks respectively agreed to this request on the condition that the Bank of Upper Canada would also participate. That bank delayed replying until August 18th, when it stated that although resumption was possible it would not be desirable as it would be harmful to the economy. In September Lord Arthur admitted defeat and wrote to the Colonial Office saying that resumption was unlikely prior to May 1839.

It appears from the contemporary newspapers that during the summer of 1838, there was little public expectation of a resumption. In June 1838 a Montreal paper stated that "we have not heard of any steps having yet been adopted by the Upper Canada banks to resume specie payments".[3] In July, when the Philadelphia banks announced that they would resume specie payments in August 1838, the Chronicle said "we hope that the Upper Canada banks will not long hesitate in following the example"; but when the Philadelphia banks did resume in August, the Chronicle (25 August, 1838) suggested that "The Upper Canada banks, as they were the longest to hold out in paying specie, are probably ambitious to be the

last in resuming".

There were a few comments on Arthur's attempts to prod the banks into resuming, but most correspondents agreed with that of the Colonist who reported that, while the Commercial Bank stated that it was happy to resume if the other banks did, "we are informed that the Bank of Upper Canada is the great stumbling block in the way". There was little discussion of monetary matters in the papers after March 1838, until Spring 1839, which suggests that agents did not expect any change in banking regimes until it was legally required.

In the spring it was generally anticipated that, as required by the Act, the banks would resume in mid-May. In February Lord Arthur wrote to the Colonial Office stating that "it is my belief that the Banks won't apply to the Legislature for a renewal of the Act".[4] However the banks did apply and rumours became rife as to the date of resumption. On April 16, 1839 the Toronto Colonist reported that "we have been informed that the Commercial Bank is now preparing to resume in July". The Examiner (24 April, 1839) cited a Montreal Herald report that it looked as though the Upper Canada banks would not resume as expected: the item noted that previously resumption was confidently expected and that they had heard that certain M.P.'s had been convinced by unusually liberal loans; furthermore, "the immediate effect in this city [Montreal] of this

intelligence, was to double the discount on Upper Canada bank notes". In May, the Chronicle (11 May, 1839) anticipated with concern a resumption on August 1, 1839 and argued against this as the banks would stop discounting and trade would collapse.

The Committee to investigate the Banks' request for an extension of the Suspension Act recommended renewal for six months, upon the condition that inter-bank balances be cleared weekly in bills of exchange on London at either 1/2% above Montreal rates or 2% above New York rates.[5] The bill that was finally passed differed from the Committee's recommendations in that it (a) permitted the Lieutenant Governor to continue the Act if he saw fit; (b) there was no clause as to how interbank balances were to be cleared in the Act; and (c) it forbade the issue of dividends during suspension. This latter stipulation was at the insistence of the Colonial Office.

The newspapers reflected the reaction of the public to the extension. Most editorials expressed mild surprise and some disappointment. The Chronicle (13 May, 1839) recommended immediate resumption arguing that the suspension of dividends was outrageous (gone was the altruism of two days earlier). The Montreal Transcript (18 May, 1839) expressed mild surprise that the Lieutenant Governor, who had reserved most of the Session's enactments, saw fit to pass the continuation Act. However the Montreal Gazette (23

May 1839) said that "Much inconvenience has been experienced by the banks here declining now to receive in deposit the notes of the Upper Canada chartered banks", and it continued that this stance was understandable since the banks had not resumed as anticipated on the first of May. (The Lower Canada banks soon reverted to accepting Upper Canada notes at a discount).

The Toronto Examiner (22 May 1839) was even more critical of the Act to continue the suspension, arguing that it was "Neither more nor less than a monstrous fraud upon the public, particularly the commercial portion of it". On the 29th it added that it was primarily the Family Compact that gained from the extension of the suspension, and that "they have his Excellency bound hand and foot", since if the Lieutenant Governor had desired a resumption he could have obtained it.

Thus, contrary to the expectations of at least some knowledgeable individuals, the banks did not resume in May 1839. Although the extension Act provided for resumption on November 1st, it is hard to see why this date sould have much more credibility, particularly since the Act of May 1839 explicitly permitted the Lieutenant Governor to authorise suspension for a further period 'as he may think proper'.

Throughout the fall of 1839 the newspapers reported on

the deteriorating economic and banking conditions in the United States. The Gazette (2 July 1839) copied a New York paper's item stating that there was a "prevailing sentiment of an approaching crisis". In October the Chronicle (16 October, 1839) reported that the Bank of England was "confidently expected to suspend" as were the U.S. banks. Notwithstanding these reports of the worsening economic climate, the Montreal Gazette (29 September 1839) reported that the Upper Canada banks were expected to resume as required on November 1, 1839.

In October 1839 Arthur was in Montreal and met with the leading merchants of that city, who questioned him on the probability of resumption, in face of the Toronto Board of Trade's recent application for a continuation of the suspension.[6] The initial report of the interview (carried by at least Montreal newspapers) stated that the Lieutenant Governor had responded by stating that he would compel the banks to resume. Subsequently, the papers retracted that statement and stated that Arthur had said that the law compelled resumption, and that the banks had not applied for an extension. This leaves the impression that despite the wishes of the Colonial Office, Arthur would again have acceded to any request for a continuation of the suspension.

The Montreal Transcript (2 November 1839) reported that the Upper Canada banks had resumed specie payments on November 1, and commented that "the moment happens to be one

as little favourable to the measure as can well be imagined. A week - a day - may compel all the Banks in Canada to suspend their issues of specie and that as a measure of justifiable and necessary self-defense".

To return to the central theme of this section the above evidence was introduced to describe the expectations of resumption held in Upper Canada. The conclusion drawn is that after the suspension by the two remaining specie paying banks in March 1838, it was generally expected that banks were unlikely to resume prior to May 1839. It was expected that the banks would resume at that date. After the Act was extended in May 1839, (an unanticipated extension) there was some expectation of a resumption in November. This expectation would have been associated with no greater degree of certainty than the earlier expectations of resumption in May 1839.

5.4 The Upper Canada Economy During Suspension

In this section knowledge of the behaviour of monetary variables in Upper Canada is combined with the knowledge of expectations to test the validity of the hypotheses developed in Section 5.2. The hypothesis that bank issues were constrained is called the 'limited expansion hypothesis'. The data are also compared with the predictions of the 'inflationist hypothesis' suggested by Adam Shortt.

The expectations assumptions are summarized as follows: assume that there was some expectation of a suspension before it actually occurred, and having occurred it was expected to last for fourteen months. When resumption did not take place expectations were revised, and agents then expected (with a large variance) that resumption would occur six months later. The 'limited expansion hypothesis' predicts that at the time of suspension, real bank money balances would increase, returning close to their long-run equilibrium level. Nominal balances would increase even further as the banks inflated the bank money stock. The expansion was limited so that $P(t) = P^0 e$ and h^* was less than the real rate of return (of say 6%). During the period of suspension the bank money stock would gradually be reduced to its long run value (M^0). Prices in bank money would similiarly have risen at the time of suspension and would fall gradually back to the level of prices in specie, during the year.

In May 1839, there would be a second rise in the bank money stock (and similiarly in bank money prices), after the expected resumption did not eventuate, and again there would be a gradual fall in bank money and prices until November 1839. If the banks were more certain of a November 1839 resumption than the note holders, then the money stock in November would be closer to M^0 than if the bankers and the general public were equally uncertain (see Figure 5.5).

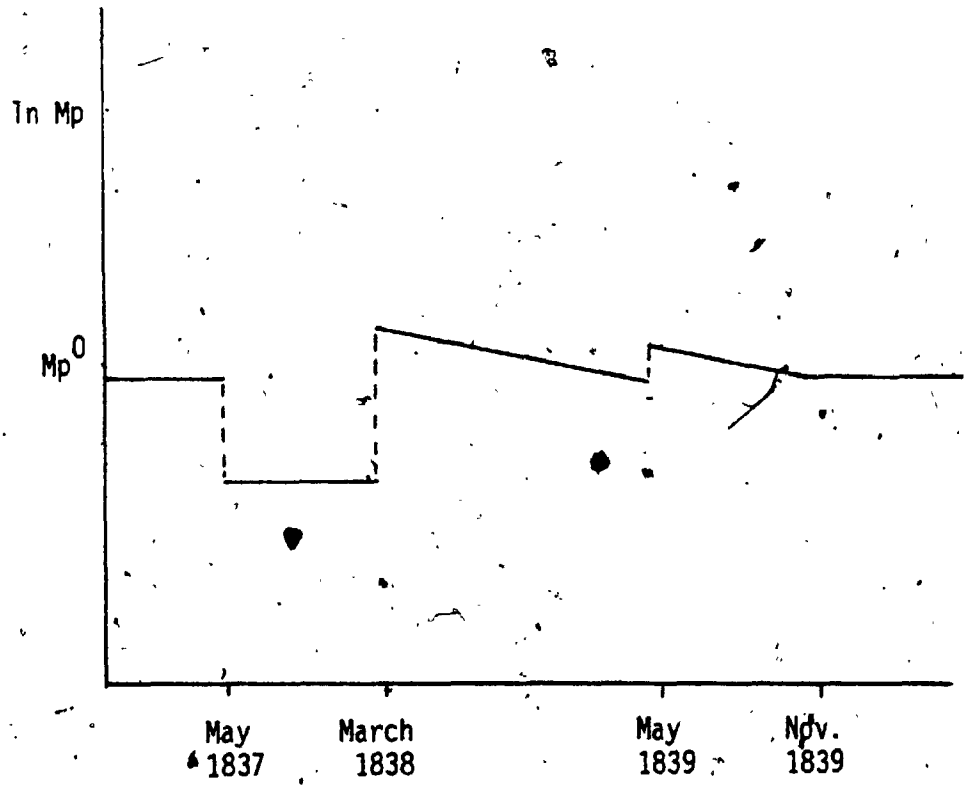


Figure 5.5

Predicted Path of Bank Money Stock in Upper Canada.

The 'inflationist hypothesis' predicts that the bank money stock would have risen to its legal limit at the time of suspension, and remained close to that level until the time of resumption, when it would return to the long-run equilibrium level Mp^{o}. Prices in bank money would have behaved similiarly, jumping slightly less than the nominal money stock initially, but requiring a significant fall at resumption.

The variable for which there is the most data is the 'notes in circulation' of the chartered banks. As shown in Figure 5.6, the bank money stock grew very rapidly during the suspension period and fell equally sharply in the second half of 1839. The behaviour of the banks can be analyzed by breaking the suspension period into four sub-periods. Immediately after suspension (that is, for approximately the first three months), each bank expanded its note issue very rapidly, at average monthly rates between 15 and 40%. After that initial growth the increase was much less rapid until about December 1838 when all three banks simultaneously had a second rapid growth spurt, which lasted until April/May 1839. By May 1839 the bank money stock was more than double its March 1838 value. This was followed by a rapid decrease in the money stock between May and November 1839 (this breakdown is detailed in Table 5.1).

The behaviour of the money stock in the first two sub-

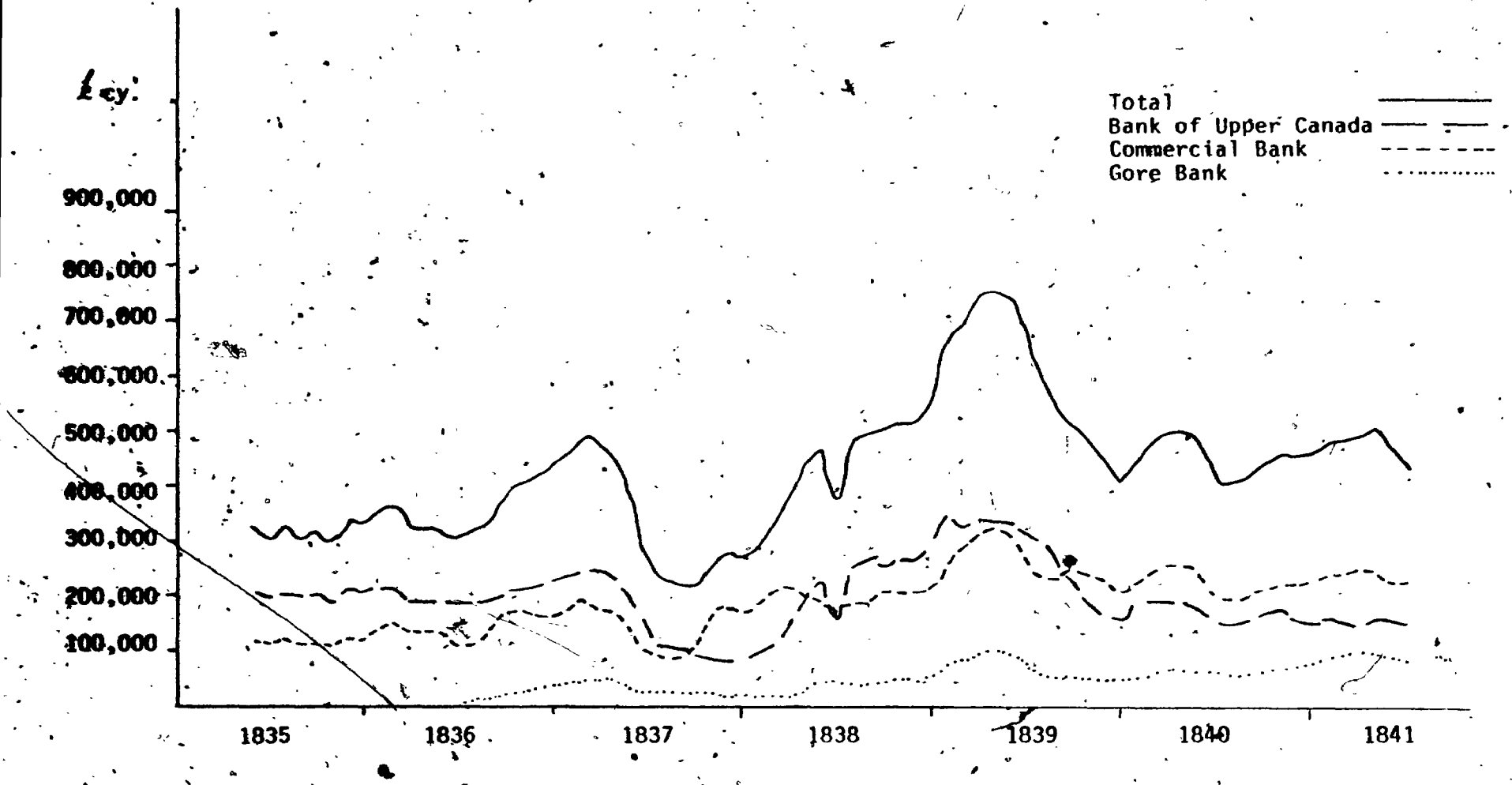


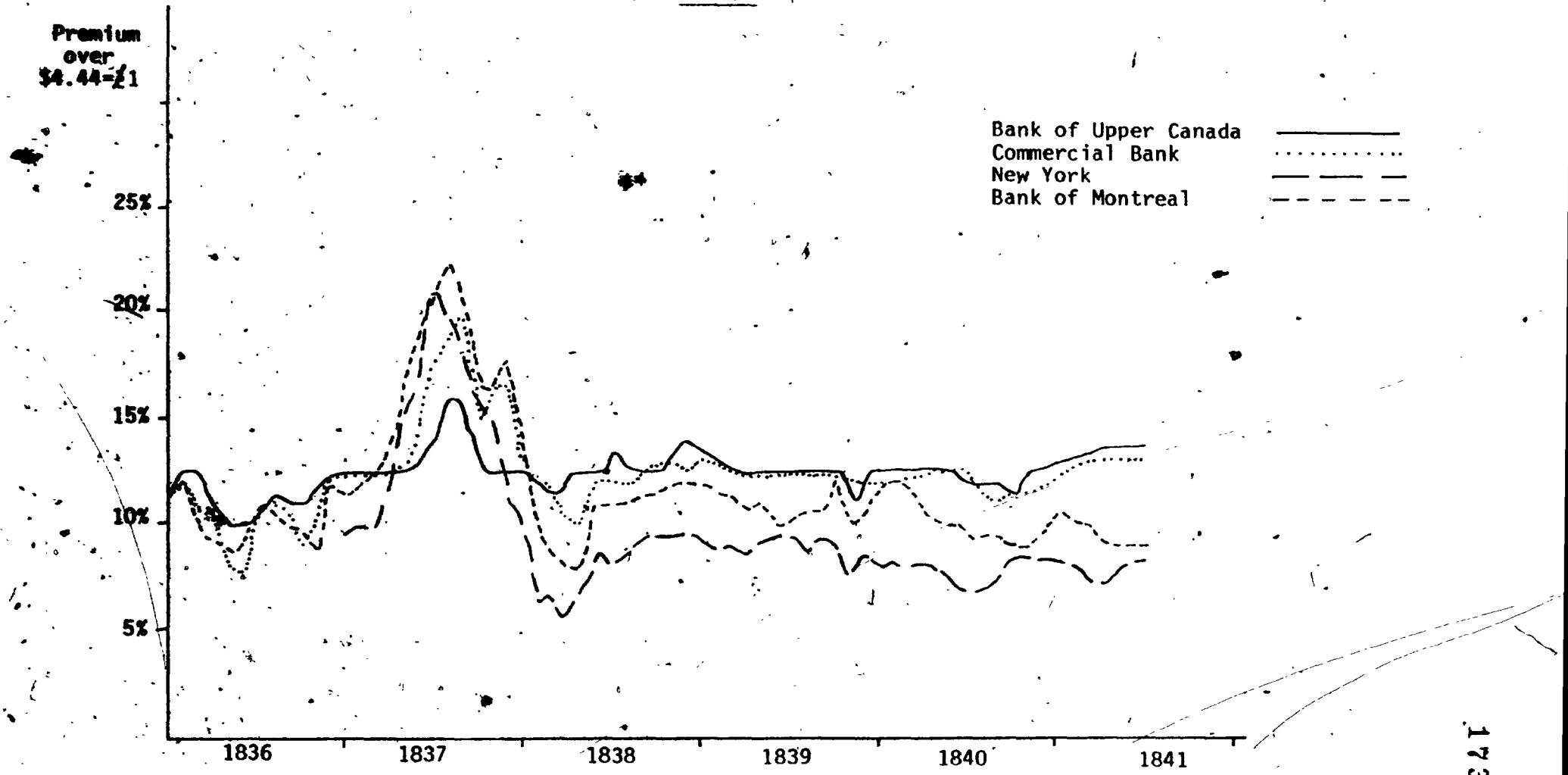
Figure 5.6: The Circulation of Bank Notes in Upper Canada.
Source: Canada, Journals, 1841 App. O

periods was similiar to that predicted by the model. The initial rapid increase after suspension reflected the fact that Upper Canadians were willing to hold bank money balances since there was no longer fear of a sudden decrease in their value. That is, the money stock pre-suspension had been below its long-run equilibrium value.

The behaviour of the bank money stock in the second half of the suspension (December 1838 - November 1839) sharply contradicts the predictions of the 'limited expansion hypothesis', and accords more closely with the predictions of the 'inflationist hypothesis'. Analysis of the cause of this difference between the actual and predicted paths of the money stock is postponed until Chapter 6.

The data on prices of goods, specie and foreign exchange in bank money is less plentiful than that on bank money. The price of foreign exchange is the selling price of bills of exchange on London by the Upper Canada banks, and in Figure 5.7 these are contrasted with the New York prices.[7] The 'limited expansion hypothesis' predicts that the margin between New York prices and Upper Canada prices would increase slightly during the period May 1838 and November 1839. The 'inflationist hypothesis' suggests that there would be a large increase in the margin between New York and Upper Canada prices. (If the banks can issue notes up to twice the value of their capital stock, the money

Figure 5.7: Selling Prices of Bills of Exchange.
Sources: Canada, Journals, 1841 App. O
New York Albion



stock would be more than double its 1836 value, and the prices of goods and bills of exchange in bank money could be expected to have a 100% premium).

Figure 5.7 illustrates that the selling price of the Upper Canada banks followed the New York rate very closely, and there is no discernible change in the margin between the two rates, during the period of the Upper Canadian suspension.

After the Lower Canadian banks resumed specie payments in May 1838, (they subsequently suspended specie payments again from November 7, 1838 to June 1, 1839) there would have been a discount on Upper Canada bank notes in that City, if there was an 'excess issue' (if nominal balances exceeded Mp^0). Again the 'inflationist hypothesis' predicts a significant discount, and the 'limited expansion hypothesis' only a slight discount, less than 6%.

The few data that exist are shown in Table 5.2. In the summer of 1838, Bank of Upper Canada notes were at a discount of between 1% and 3%. While this evidence is tenuous it lends some support to the 'limited expansion hypothesis', which predicted moderate discounts, and discounts that were higher in the summer of 1838 than the summer of 1839.

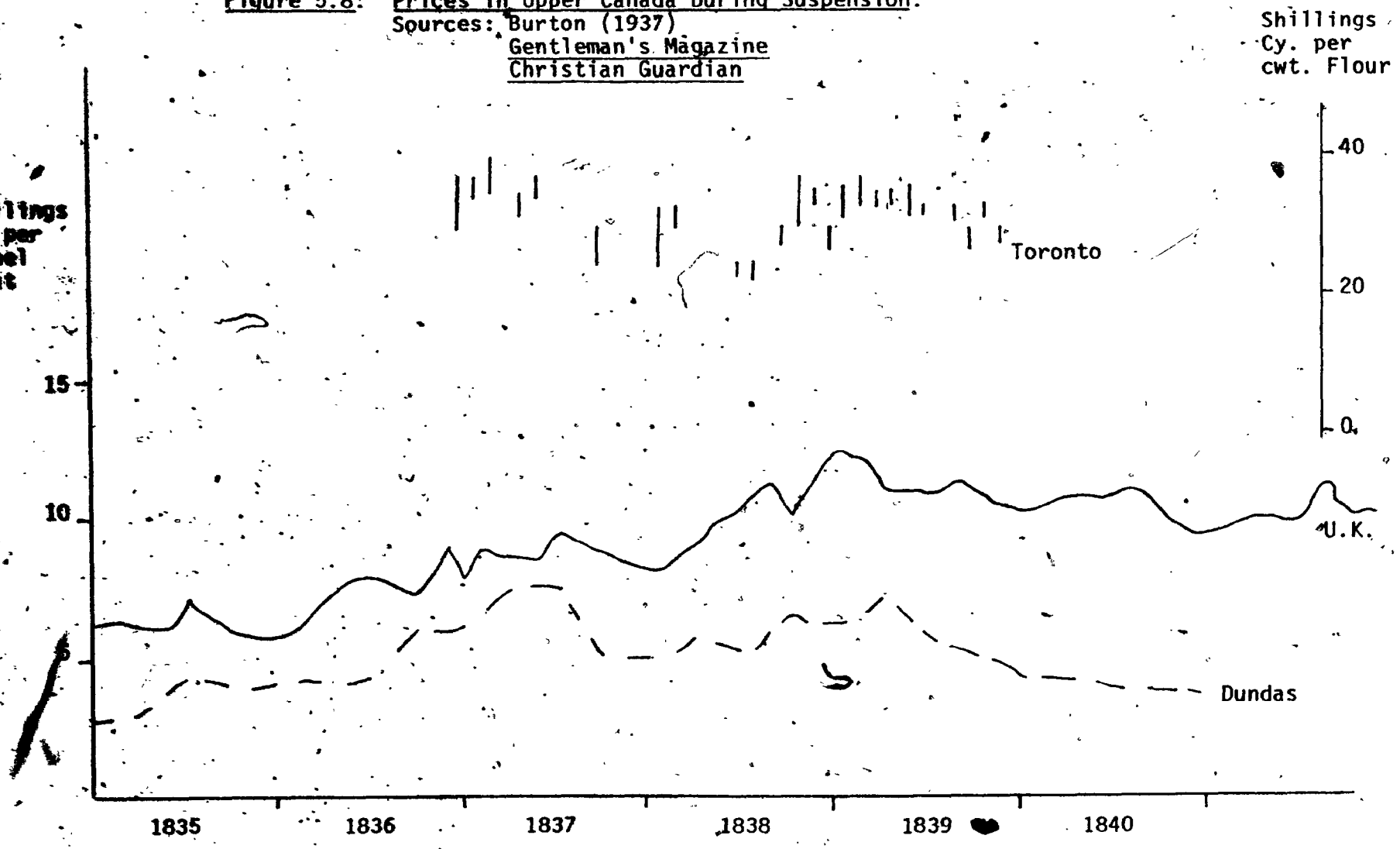
Evidence on the price of specie during the suspension is rare, however the Blue Books of Upper Canada (1838)

reported that the premium on specie was 3% during the year.

The behaviour of good's prices is similiarly hard to discern. There are scattered price quotations in contemporary newspapers in Toronto and Kingston for both export commodities (ashes, flour, wheat) and domestically consumed commodities (butter, bread, meats flour, wheat and firewood). These data are too sparse to give a very good idea about price increases. Figure 5.8 presents the available data on flour and wheat prices (the most complete data set) and shows also the Gazette price of wheat in England. The data show that prices were unusually high in the winter of 1836/7 (and this was attributed in Chapter 2 to poor Canadian harvests and the high transportation costs to Canadian ports in the winter). In the winter of 1838/9, and during 1839 the prices of Upper Canadian wheat appear to move in step with the British price. This evidence seems inconsistent with a doubling of the money stock, and doubling of prices, as the 'inflationist hypothesis' suggests.

The empirical evidence on prices supports the hypothesis that the Banks of Upper Canada did not inflate the money stock. The data on note issues however, show an unpredicted increase in the stock of bank money in the beginning of 1839. Before analyzing the causes of this increase, there is a brief discussion of the differing behaviour of the Bank of Upper Canada and the Commercial

Figure 5.8: Prices in Upper Canada During Suspension.
Sources: Burton (1937)
Gentleman's Magazine
Christian Guardian



Bank.

5.5 Bank Behaviour during Suspension

The discussion in this Chapter has been in macro-terms in that it has dealt both theoretically and empirically with variables such as total bank money stock, exchange rates, and the price level. The banking industry was however dominated by only two firms, the Bank of Upper Canada and the Commercial Bank, and while economic theory predicts that two firms will react in the same way to identical circumstances, the two banks in fact followed different strategies.

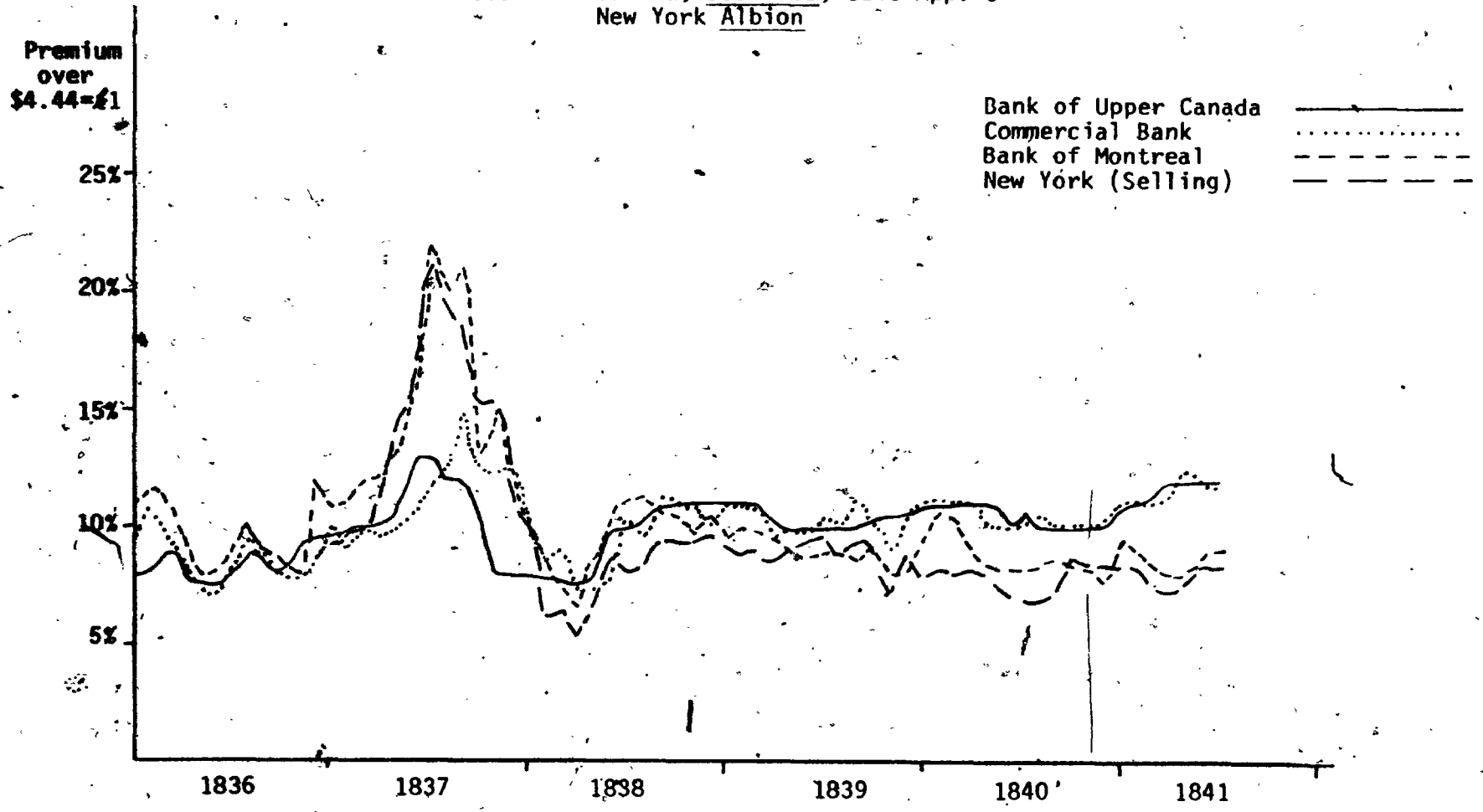
In the contemporary discussions of banking, the Bank of Upper Canada earned disapproval for two practices: firstly, it divided its assets so that the largest share was foreign exchange rather than domestic credit; and secondly it over expanded its note issue. (These changes were often confused but were independent). The Commercial Bank, on the other hand, was applauded for its consideration of the mercantile community, shown by the high share of discounts in its portfolio. The attitudes commonly displayed towards the Banks are summarized by the statement in the Colonist (17 January 1839): "The Commercial Bank has done much to relieve the difficulties under which the mercantile community labored, while the Bank of Upper Canada, on the other hand, is known to have done all in its power to increase them". In

this section I wish to discuss why the two banks might have exhibited different behaviour.

The banks' note issues were determined by the constraints described in Section 5.2, and therefore it is assumed that the size of a bank's portfolio was fixed. The allocation of this portfolio between assets depended upon the return offered by each asset and the usury laws fixed the nominal return to discounting at 6%. If the expected return to trading in foreign exchange were higher than 6% a bank would decrease its discounts and hold foreign exchange. Although the Bank of Upper Canada was accused of having an unfair advantage in the foreign exchange market, Figure 5.9 suggests that in fact it purchased exchange at market rates.

Most of the foreign exchange on London which the Banks bought was sold by the Commissariat (which sold by tender) and newspaper reports implied that the Bank of Upper Canada's advantage resulted from the tendering practices of the Commissariat. The Examiner (28 November 1838) discussed the sale of £100,000 stg. in exchange to the Bank of Upper Canada and stated that this was sold without a call for tenders. On another occasion the Commercial Bank complained that the call for tenders allowed little time for bids to be prepared and the time was up, before the call for tenders reached Kingston.[8] Finally Benjamin Smith of the Bank of British North America, at the hearings on the extension act in the Spring of 1839 stated,

Figure 5.9: Purchase Prices of Bills of Exchange.
Sources: Canada, Journals, 1841 App. O
New York Albion



> I think that those banks which are favored with the government bills of exchange on London ought to allow the public 1% on the amount of such exchange, as they get it at a low rate in consequence of its not being offered to the other banks or to the public generally, and pay for it in their own notes which are not redeemable.'

The expected return on trading in foreign exchange was greater than 6%, and banks allocated their portfolio accordingly. The Bank of Upper Canada was given differential access to foreign exchange and therefore had a lower share of discounts or domestic credit in its portfolio.

The Bank of Upper Canada was also accused of over-expanding its note issue during the suspension. There seems little support for this proposition either in the data on note issues or by looking at the discounts on Upper Canada bank notes in Montreal. In 1838 all three banks' notes were trading at the same discount, and in the fall of 1839 the Bank of Upper Canada notes tended to trade at about a 1% lower discount than the notes of the Commercial Bank and the Gore Bank.

I have shown that the profit maximizing stock of bank money was constrained during a limited term suspension. The differences in the behaviour of the banks may have been caused by different expectations of the date of resumption, different attitudes towards risk or simply different management ability.

Different expectations about the date of resumption may

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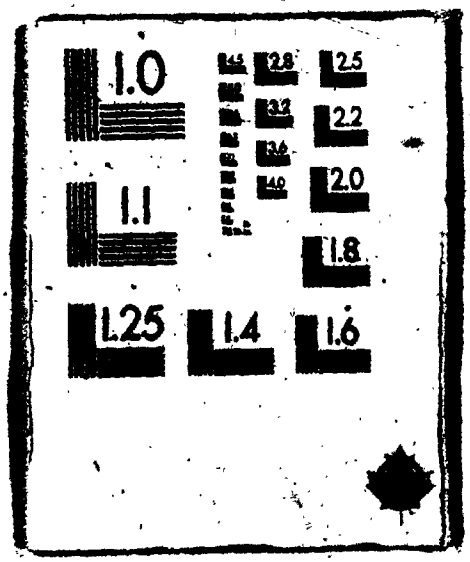


have resulted from differing abilities to influence political processes. The Bank of Upper Canada with its close ties to the Family Compact, may have had better information about the necessity of resumption.

It is stated several times that the Commercial Bank was ready to resume specie payments in August 1838 while the Bank of Upper Canada was not prepared to. Similiarly the Commercial Bank stated that it would be ready to resume specie payments in the summer of 1839, and again the Bank of Upper Canada encouraged the postponement until November 1839. If the Bank of Upper Canada expected suspension to last longer than the Commercial Bank did, the theory would predict a relatively more inflationary issue of Bank of Upper Canada notes.

5.6 Conclusions

This chapter described the limits on bank note issue in a small open economy that is not on a specie standard, but expects the specie standard to be reimposed in the short-term. I have shown that in that situation profit-maximizing banks would expand their note issue, but only by a relatively small amount; in the Upper Canadian context an increase of 6-10% above a long-run equilibrium value is predicted. If the suspension of specie payments had been partially anticipated the initial jump would have been much greater, since the initial money stock would be lower than

the long run equilibrium value.

The predictions of this model have been compared with the behaviour of the monetary sector in Upper Canada during suspension. Much of the data supports the thesis that there were constraints on the banks desire and ability to inflate the money stock. Thus price increases, and discounts on Upper Canada bank notes in Montreal, in the 3-5% range support the hypothesis. The data on the note issues of the banks however suggest that the banks did inflate the currency, and these data are more consistent with an 'inflationist hypothesis' that is based on the notion that the only constraint on bank issues was the legal constraint that notes could not exceed twice the capital stock. This conflict between fact and theory is pursued in Chapter 6.

Table 5.1

Growth Rates of Bank Money during Suspension

	Change in Money Stock	Total % Change	Average Per Month Change
1. Recovery Phase (three months)			
Bank of U. Canada	£112,363	96%	22.3%
Commercial Bank	69,821	70%	17.5%
Gore Bank	30703	230%	39.0%
2. Stable Phase (from end of Recovery to Dec. 1838)			
Bank of U. Canada	£29,765	13%	2.0%
Commercial Bank	30,871	18%	1.5%
Gore Bank	5,796	13%	2.1%
3. Expansion Phase (Dec. 1, 1838 to May 1, 1838)			
Bank of U. Canada	£71,240	27%	4.9%
Commercial Bank	125,575	63%	9.7%
Gore Bank	42,914	86%	12.5%
Total	239,727	47%	7.8%
4. Contraction Phase (May 1, 1839 - Nov. 1, 1839)			
Bank of U. Canada	£143,991	56%	
Commercial Bank	87,440	31%	
Gore Bank	46,315	66%	
Total	277,746	45%	

Table 5.2

Discounts on Upper Canada Bank Notes

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1838												
Bank of Upper Canada												2 %
Commercial												1 %
Gore Bank												
All U.C. Notes				5%	5%	4-5%		2 %				
1839												
Bank of Upper Canada										1 %	1 %	
Commercial										2-3%	2%	
Gore Bank											1 %	
All U.C. Notes							1 %					

FOOTNOTES

[1]Cited in Creighton (1970) p.314

[2]Upper Canada, Legislative Assembly, Journals, 4th Session, 13th Parliament, 1839, Appendix p. 609.

[3]Cited in the Christian Guardian (20 June 1838).

[4]Upper Canada, Legislative Assembly, Journals, 4th Session, 13th Parliament, 1839, Appendix p. 607.

[5]Ibid. p. 760.

[6]Montreal Gazette (31 October 1839).

[7]The New York price is the buying price, quoted in the New York Albion, but since it is the margin between Upper Canada and New York that is of interest, if the New York buy-sell margin didn't alter over the period, the buying price can be used to indicate whether the New York-Upper Canada margin changed.

[8]Upper Canada, Legislative Assembly, Journals, 4th Session, 13th Parliament, 1839, Appendix p. 760.

[9]Ibid. p. 765.

CHAPTER 6

THE BRITISH ARMY IN UPPER CANADA:

A STUDY OF THE TRANSFER PROCESS

The analysis of Chapter 5 failed to explain the reasons for the dramatic growth in the stock of bank money during the period December 1838 - May, 1839, and, correspondingly, the causes of its sharp decrease from May to November 1839. This chapter argues that the temporary increase in bank money stock resulted from a force exogenous to the monetary sector - a temporary rise in British military expenditures in Upper Canada. These expenditures, evinced by the Rebellion and frontier invasions, caused a large inflow of foreign exchange which led to a temporary increase in money holdings by Upper Canadians.

The first section of the chapter discusses some competing explanations for the behaviour of the bank money stock. One possible explanation is the 'inflationist hypothesis' which states that the monetary expansion resulted from the removal of the constraints on bank note issue implicit in the specie standard. Alternatively, the 'constraint hypothesis' may correctly describe the limits imposed on the banks, but the assumptions of constant real income and prices of goods in specie may have been violated, causing the observed monetary fluctuations. The competing hypotheses do not provide a complete explanation for the

behaviour of the bank money stock.

After describing the scale of the financial inflows resulting from the Rebellion, the second half to the chapter examines the process of balance of payments adjustment, in order to explain the impact on the Upper Canada economy of the influx of British exchange. This influx, combined with the rigidities inherent in the Upper Canadian economy, resulted in a temporary disequilibrium characterized by a short-run increase in holdings of bank money.

6.1 Alternative Explanations of the Monetary Fluctuations

Three alternative explanations of the changes in the money stock will be considered. The first is the 'inflationist hypothesis' described in Chapter 5. The two other hypotheses actept the premise of the 'constraint hypothesis' (i.e. that monetary expansion during suspension would be limited by expectations of resumption), but explain the monetary changes as the result of either changing real income in Upper Canada, or fluctuations in goods prices in specie.

The 'inflationist hypothesis' states that banks increased their note issues from December 1838 to May 1839 because under a suspended specie standard there were no limits on the bank money stock. The subsequent monetary contraction is explained as the banks' preparation for the

expected return to the specie standard in November 1839: Adam Shortt states: "In the course of the summer of 1839 ... the Bank of Upper Canada .... reduced its excessive note issue" (Shortt,1902; p.118).

In Chapter 5 it was argued that this theory precludes profit maximizing behaviour by the banks, and its implications for price behaviour are not borne out by the data. It was also shown there that expectations of immediate resumption (at least among the general public) were as strong in the spring of 1839 as they were in the late summer of 1839. Thus, if the decrease in bank money in the fall of 1839 reflected expectations of resumption, the increase in bank money in the spring of 1839 is inexplicable.

This point requires further elaboration. Shortt's argument could be interpreted as saying that the Bank of Upper Canada (with its superior political connections) realized that suspension would be delayed until November. There is however ample evidence that the Commercial Bank expected resumption early in the summer of 1839 (see Chapter 5). If the Commercial Bank had contracted its note issues in that Spring while the Bank of Upper Canada had expanded its issues, the evidence could be said to support Shortt. However, as Figure 6.1 and Table 5.1 show, the expansion by the Commercial Bank was even more rapid than that of the Bank of Upper Canada, suggesting that the monetary fluctuations were not caused by expectations of the

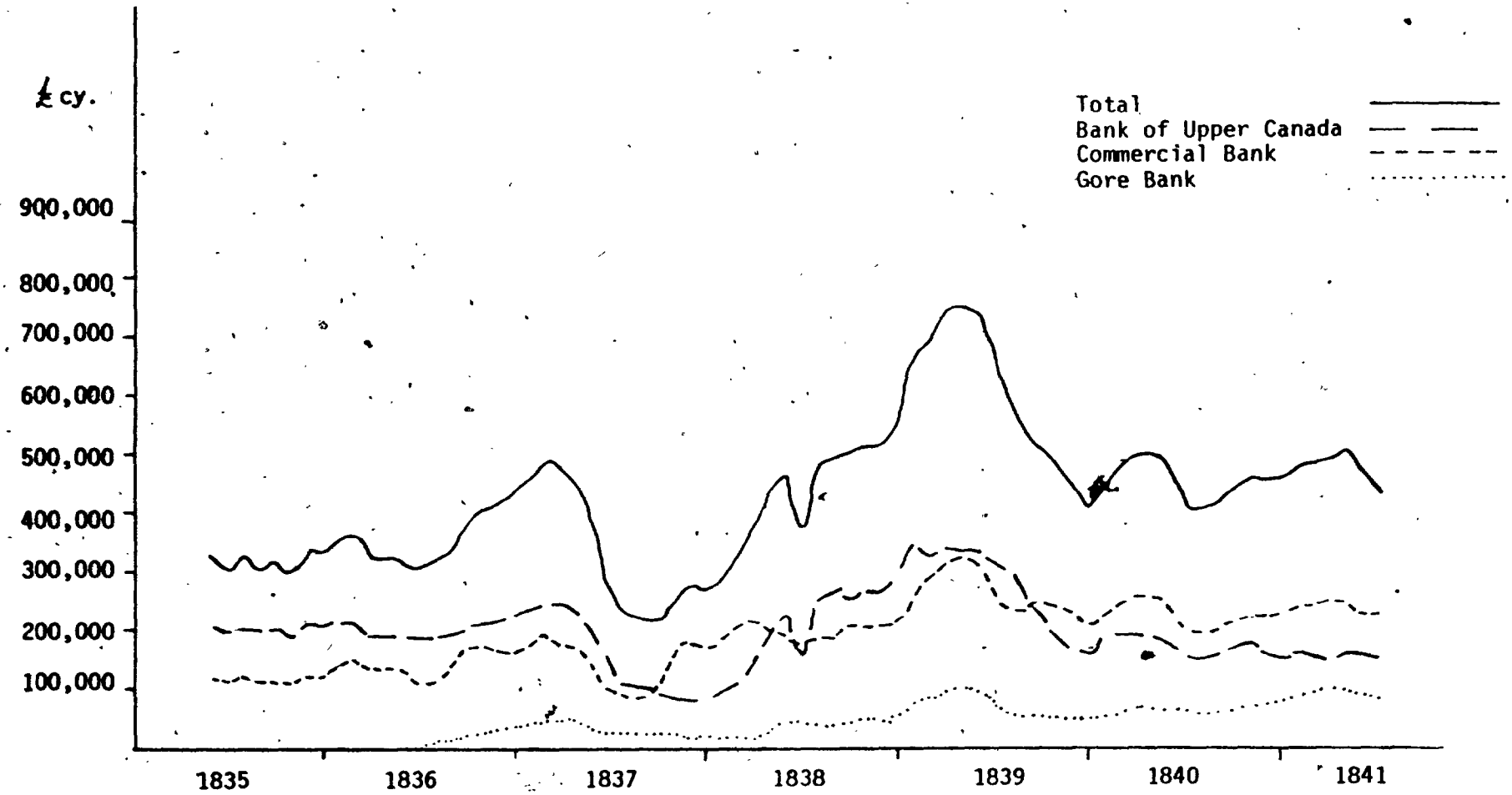


Figure 6.1: The Circulation of Bank Notes in Upper Canada.
Source: Canada, Journals, 1841 App. O

immediate resumption of specie payments.

The second hypothesis to be investigated is that real income in Upper Canada changed during the period 1838/9. It is necessary first of all to examine the impact of changing real income on the 'constraint hypothesis' and then to examine the causes and extent of real income changes in Upper Canada.

Assume that real income in Upper Canada rose early in 1839, and then fell during the remainder of the year, and assume that agent's expectations at any time of the income at the date of resumption were largely based on current income. If real income were expected to be higher than the initial level, then nominal money balances at the date of resumption would also be higher, the additional expansion depending upon the amount of the increase in real income and the income elasticity of the demand for money.[1]

The behaviour of the Upper Canada money stock mirrors the path of economic indicators for the United States. It is possible that real income in Upper Canada varied cyclically with that in the U.S., which in 1838/9 rose rapidly as a result of 'Biddle's Boom' and then fell equally rapidly.[2] In fact, however, the behaviour of the Upper Canada economy during 1838/9 depended much more closely on peculiarly Upper Canadian factors.

The recovery from the poor harvest of 1836 and fall in

commercial credit in the summer of 1837 began with the good harvest of 1837 and was aided by the expenditures of the British military in early 1838. The 1839 contraction in the British and the U.S. economies did not have a major impact on the Upper Canada economy. In the case of Britain the dominant factor in the contraction was the poor harvests of 1837-39 which resulted in low incomes and a balance of trade deficit. This raised demand for Upper Canada's major export, and improved her terms of trade, therefore it had an expansionary (rather than contractionary) impact on the Upper Canadian economy.

The U.S. contraction was a more likely source of contractionary influences. The analysis (in Chapter 3) of the contraction showed, that it was particularly serious in the sectors of the economy that were closely linked to the cotton industry. Since Upper Canada was most closely connected to the Northern commercial and industrial, and Western agricultural sectors, the contraction would have had an indirect impact. Again, the low levels of trade between the U.S. and Upper Canada (relative to that between Britain and Upper Canada) mitigated the impact of the U.S. contraction. Since the Upper Canadian monetary system was primarily influenced by the New York banking system, the stability of the Banks in the Northern states steadied the banking system of Upper Canada. Finally, it is worth noting that Kingston merchants said that the U.S. contraction had

benefited their city since the "embarassment of the money market in the States has caused several of their merchants to send goods for sale to Kingston"[3].

Therefore, the economic crises in the United States and Britain were not sufficient in themselves to generate a decrease in economic activity in Upper Canada that would halve the bank money stock.

The 'constraint hypothesis', as presented in Chapter 5, assumed that goods prices in specie were constant during the suspension. Any violation of this assumption would imply a different path for the bank money stock. Assume that prices of goods in specie (P_1) were expected to be higher at the time of resumption that at the time of suspension: $P_1^1 = P_1^1(t_r) > P_1^0$. Then, since $P_1(t_r) = P_2(t_r)$, the prices of goods in bank notes would also be higher at resumption. The rate of deflation would be the same, but the fact that the demand for nominal balances has risen, implies a greater rise in the bank money stock (see Figure 6.2).

If expectations about $P(t_r)$ depended primarily on $P(t)$ then if the international price level rose during the suspension, there would be an expansion of the bank money stock at that time. Similiarly a decline in the international price level would cause a decrease in the bank money stock. This is illustrated in Figure 6.3 where it is assumed that suspension was expected to last a year, and

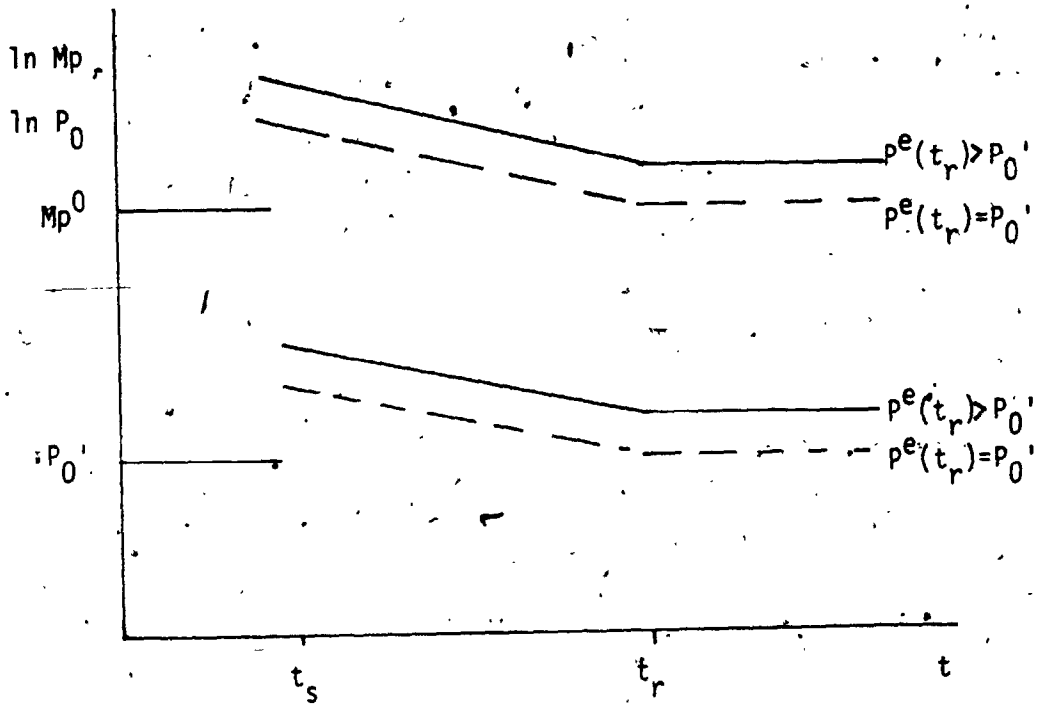


Figure 6.2
The Path of Monetary Variables if Prices are Expected to Rise.

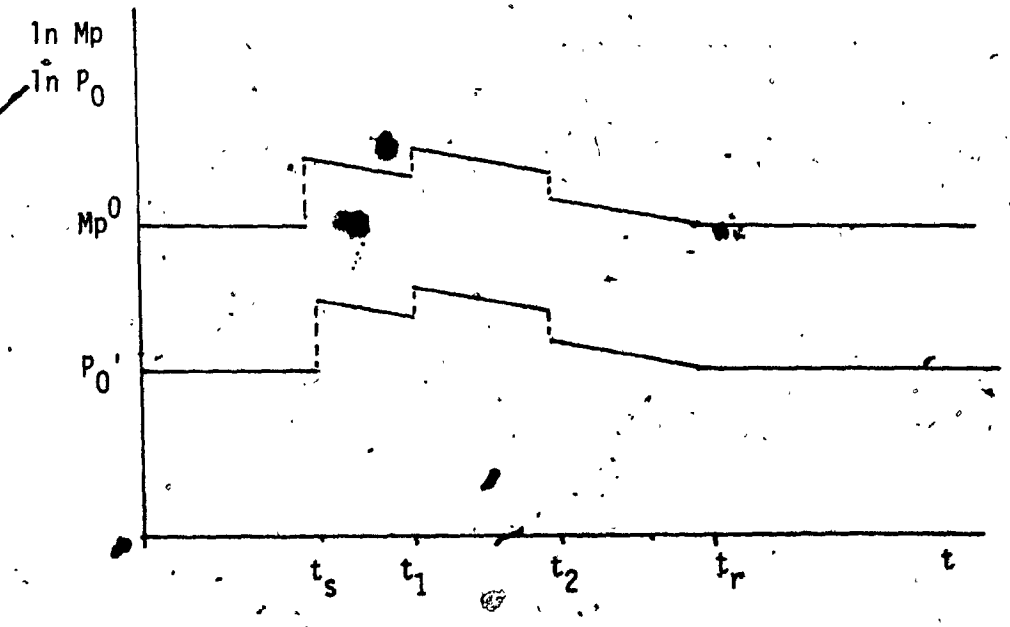


Figure 6.3
The Path of Monetary Variables if Prices are Expected to Rise and then Fall.

after four months the international price level rose, and four months later it fell.

The behaviour of general price indices for Britain and the United States is shown in Figure 6.4. In 1839 there was little movement in the British price index, but a significant fall in the U.S. index: from April to December 1839 the U.S. price level fell by about 15%. It cannot be concluded however, that this decline caused the contraction of the Upper Canada money stock in 1839. The share of the United States in Upper Canada trade was relatively small. If the fall in the Upper Canada money stock is explained by the fall in the U.S. price level it leaves unexplained the very rapid increase in the stock from December 1838 to May 1839, since there was not an equivalent rise in U.S. prices. Finally, the relative size of the two changes was very different: the fall in the U.S. price level between April and December 1839 was 15.3%, while the contemporaneous fall in the Upper Canada bank money stock was 52%.

In conclusion, the above discussion has shown that the 'inflationist hypothesis' does not provide an adequate explanation for observed monetary phenomena in Upper Canada. It also examined the possibility that the divergence between the slight inflation predicted by the 'constraint hypothesis' and the observed behaviour resulted from the violation of the assumptions of a constant world price and/or a constant real income. It was shown that although

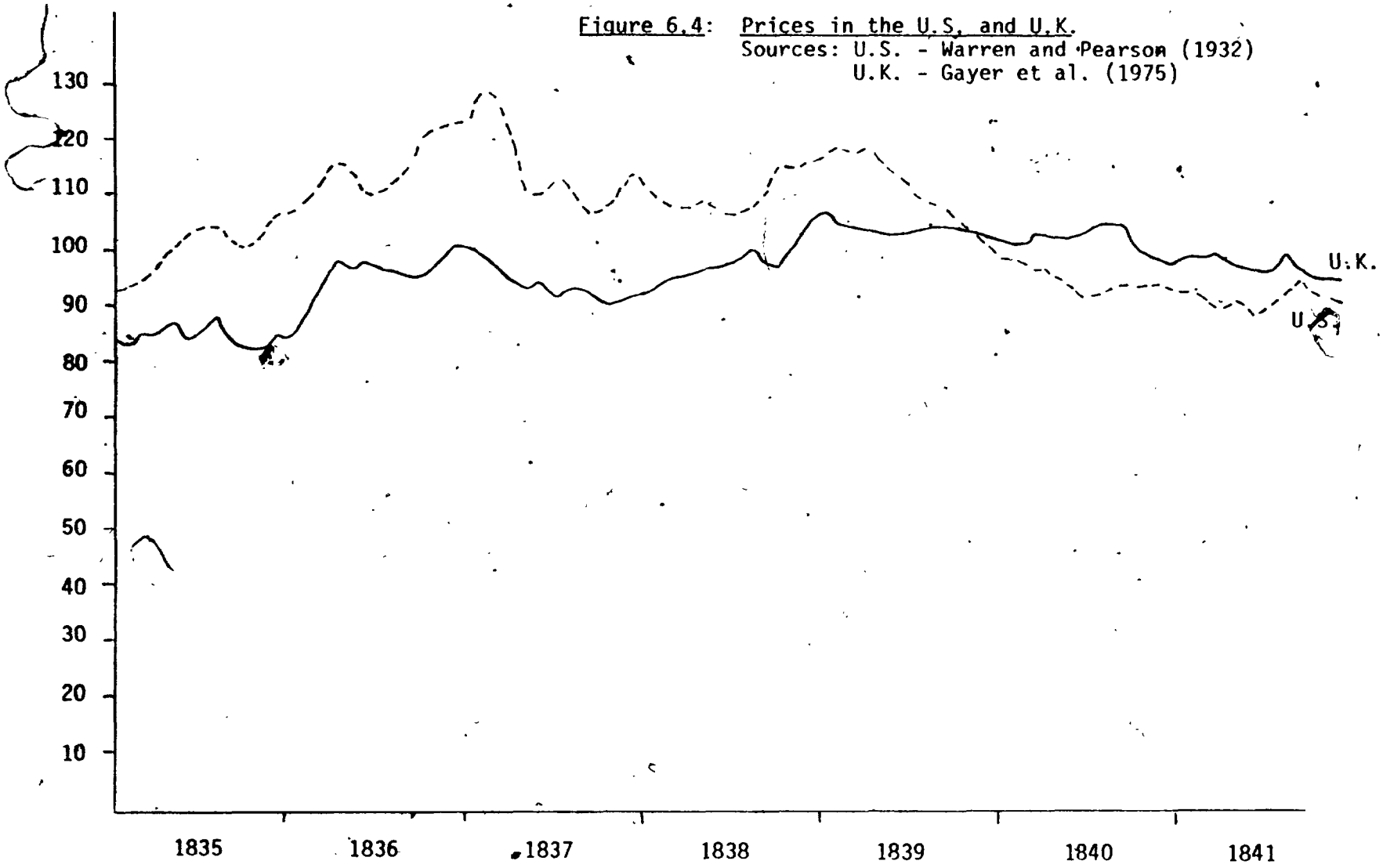


Figure 6.4: Prices in the U.S. and U.K.
Sources: U.S. - Warren and Pearson (1932)
U.K. - Gayer et al. (1975)

these assumptions were violated, the actual deviation was not sufficient to generate the observed behaviour.

6.2 The Economic Impact of the Upper Canada Rebellion

The causes of the Upper Canada Rebellion have been described in Chapter 2. The effects of the Rebellion on Upper Canada were disproportionately large when compared to its actual events; it (coupled with the Lower Canada Rebellion) provoked Lord Durham's investigation of the Canadian political system, it occasioned several skirmishes on the Canadian-American border, and it cost the British government over two million pounds. This military event had important repercussions on the financial markets of Upper Canada.

Table 6.1 presents several estimates of the expenditures of the British military in the Canadas. These are not entirely consistent with each other, but there are plausible explanations for the contradictions. The first column presents the expenditures as listed in the Blue Books of Lower Canada, and is probably the most accurate figure, since it came directly from the Commissary General in Quebec. The next four columns, present data obtained from the British military records (described in Chapter 2). These data are estimates of military expenditures made by adding up the requests of the Commissary General for permission from London to draw bills of exchange on the Treasury. These

data are compatible with the first series and are more useful in that they provide quarterly information. In the years 1832-36 the balances in the Military Chest were very large, thus it is not surprising that spending exceeded the amount of bills of exchange drawn during those years. The last two series are taken from a report prepared in London for the House of Commons (27 February 1844). During the insurrection, the grant of funds necessarily followed their expenditure, and it is possible that the statements of expenditures were delayed to match the funds.

Before discussing the economic impact of these expenditures we need to know how large they were relative to the size of the Upper Canadian economy, and where the expenditure occurred. The Commissariat's practice of keeping only aggregate records for the Canadas makes it difficult to calculate the impact of military spending on Upper Canada alone. However, the evidence in the British military records suggests that a significant percentage was spent in Upper Canada. In 1839 and 1840 (but not previously) the expenditures of the Ordnance Department were broken down by Garrison and in both years 54% of the expenditures were in Upper Canada. On the one hand, the military headquarters were in Lower Canada, and the Rebellion itself was more serious there, while on the other hand, the American threat was more serious in Upper Canada, so that more British troops were stationed there. John Cartwright (President of

the Commercial Bank) stated that the Commissariat was spending £100,000 per month in Upper Canada.[4]

The scale of the expenditures can be illustrated by a comparison with the exports of the Canadas. Data from the Blue Books of Lower Canada (shown in Table 6.2) show that average annual exports of Lower Canada were £1.2 million cy., and those of Upper Canada sent via Coteau du Lac (the port through which most exports of Upper Canada bound for the United Kingdom or Lower Canada went) were £530,000 cy. The military expenditures in 1838 and 1839 totalled £2.05 million, thus the annual inflow of foreign exchange was virtually double its usual level. This suggests that the military expenditures must have had a significant impact on the Canadian economy.

The impact of the Commissariat's sales of foreign exchange on the banking sector is clearly evident in Figures 6.5 and 6.6 which show the sales and purchases of foreign exchange by Upper Canadian banks, and bank holdings of foreign bills of exchange respectively. In both cases the exchange sales peaked four months later so that holdings of foreign exchange were (in May 1838 and March 1839) at least three times their 'normal' level. Both the timing and the scale of these transactions suggest that they were a direct result of the sale of unusual amounts of exchange sold by the Commissariat.

To sum up, the Upper Canada Rebellion resulted in a British military presence that involved significant payments by Britain in Upper Canada. These payments affected the banking system since the banks invested in a considerable volume of foreign exchange.

6.3 The Transfer Mechanism

The impact of the British military expenditures on both the real and the monetary side of the Upper Canada economy depended upon the extent to which they absorbed underemployed resources, rather than fully employed resources. If all resources were fully employed, the British expenditures would be equivalent to an exogenous increase in exports to Britain, and would be offset by an identical increase in imports. There would be an immediate (visible) trade deficit and no required monetary changes. Alternatively, if the expenditures were on goods without alternative uses, then the transaction was a simple transfer of money from Britain to the Canadas.

It would be unreasonable to suggest that the latter example is strictly applicable to Canada, but it is probable that many of the expenditures by the British military were for goods which had few alternative uses. The majority of the expenditures were upon Provisions and Forage (20%) and Expenses for Militia and Volunteer's Pay (60%). These were incurred during the winter, when hiring a militia would

probably have reduced output by less than an equal reduction in farm labour in the spring or fall.

As shown by Table 6.1 most of the military expenditures occurred in the winters of 1837/8 and 1838/9. The actual expenditures involved the sale, by the Commissariat, of bills of exchange on London to the provincial banks. The banks paid with their own notes, and these were then used by the Army to pay the militiaman or householder for services received. Since the expenditures occurred during the winter, the St. Lawrence ports were closed, and transportation of goods between Canada and Britain was prohibitively expensive.

The increased money balances would increase the demand for goods, but the rise in prices (given the fixed stocks) would be limited by the expectation of imports in the Spring. (It is probable that the increase in demand for goods would be biased towards imports, since the manufactured goods that were imported may be presumed to have had a higher income elasticity than domestically produced primary products). Note holders would then have increased their money holdings temporarily, using money as a store of value until the shipping season opened. In the spring the note-holders would purchase imports by buying bills of exchange from the banks with their bank notes.

This description of the transfer process predicts that

the sale of foreign exchange by the Commissariat would cause a temporary increase in note holding without a simultaneous increase in prices. This would be followed by a decrease in note holdings, a decrease in bank holdings of foreign exchange and an increase in imports. These predictions are tested in Section 6.4.

The hypothesis differs from traditional descriptions of the transfer process. Assume a two country world, initially in balance of payments equilibrium, which is disturbed by an exogenous requirement that Country B make an annual payment (e.g. reparations) to Country A. The transfer mechanism describes how the real transfer, corresponding to the monetary transfer is effected.

Viner's solution to this problem was that the initial payment would be made in specie, the inflow of which would drive up prices in Country A (while the outflow lowered prices in Country B). As a result demand for imports in Country A would rise, and in Country B would fall, and a flow equilibrium would be restored when the generated annual trade imbalance exactly matched the annual payments. In future years no money, only goods, would be transfered, and prices would be stable at the higher level (Viner, 1924).

This model has been widely used to analyze the impact of capital imports to the U.S. and Canada in the nineteenth century, but this application has been criticized for

assuming that such flows are exogenous whereas in fact, they were generated by an initial disequilibrium, such as interest rate differentials. In the case of Upper Canada in the late 1830s the flow of capital from Britain can reasonably be called exogenous (ignoring any possible link between the Rebellions that caused the military intervention and the economic welfare of Canadians).

The hypothesis presented here assumes that some portion of the British military payments represented a monetary transfer from Britain to the Canadas. It predicts that military payments would cause a temporary increase in money holdings, which would subsequently be decreased by a trade deficit as Upper Canadians imported goods (and enjoyed consumption levels temporarily above their long-run equilibrium levels.

6.4 The Empirical Evidence

The evidence can be placed into two categories. In late 1838/early 1839 the expenditures by the British Army clearly resulted in a temporary increase in money balances and an increase in imports as predicted by the hypothesis. In 1837/early 1838 the impact of the military expenditures on both the money stock and the foreign sector is less obvious. In reviewing the evidence, I initially analyze why the expenditures in 1837/8 would not have had as large an impact on the bank money stock and level of imports as the later

expenditures, and secondly, examine the impact of the expenditures in 1838/9.

The bank money stock rose in 1838, following the military expenditures, however this rise has been attributed (see Chapter 5) to the suspension of specie payments; the military expenditures in 1837/8 do not appear to have caused real money balances to rise. The similiarity between the winters of 1837/8 and 1838/9 is most clearly seen in Figures 6.5 and 6.6. These show that in both periods there was a dramatic increase in the foreign exchange holdings of Upper Canada banks. However, these data overstate the similiarity. In fact, the level of military expenditures in the early period was only half that of the later period. In the first quarter of 1838 £350,000 stg. was spent, compared to £600,000 stg. in the last quarter. Looking at a longer period, in the nine months October 1837 to June 1838 expenditures were £500,000 compared to £1,200,000 stg. in the period October 1838 to June 1839.

The smaller level of expenditures in 1837/8 had the same effect on the foreign exchange holdings on banks in Upper Canada as the larger expenditures in 1838/9. This occurred because in the winter of 1837/8 the Lower Canada banks had suspended specie payments and the Commissariat sold its exchange to the specie paying banks of Upper Canada. In 1838/9 the exchange was sold equally to the Upper and Lower Canada banks. Figure 6.7 shows the purchases and

Figure 6.5: Sales and Purchases of Foreign Exchange by Upper Canada Banks.
Source: Canada, Journals, 1841 App. O

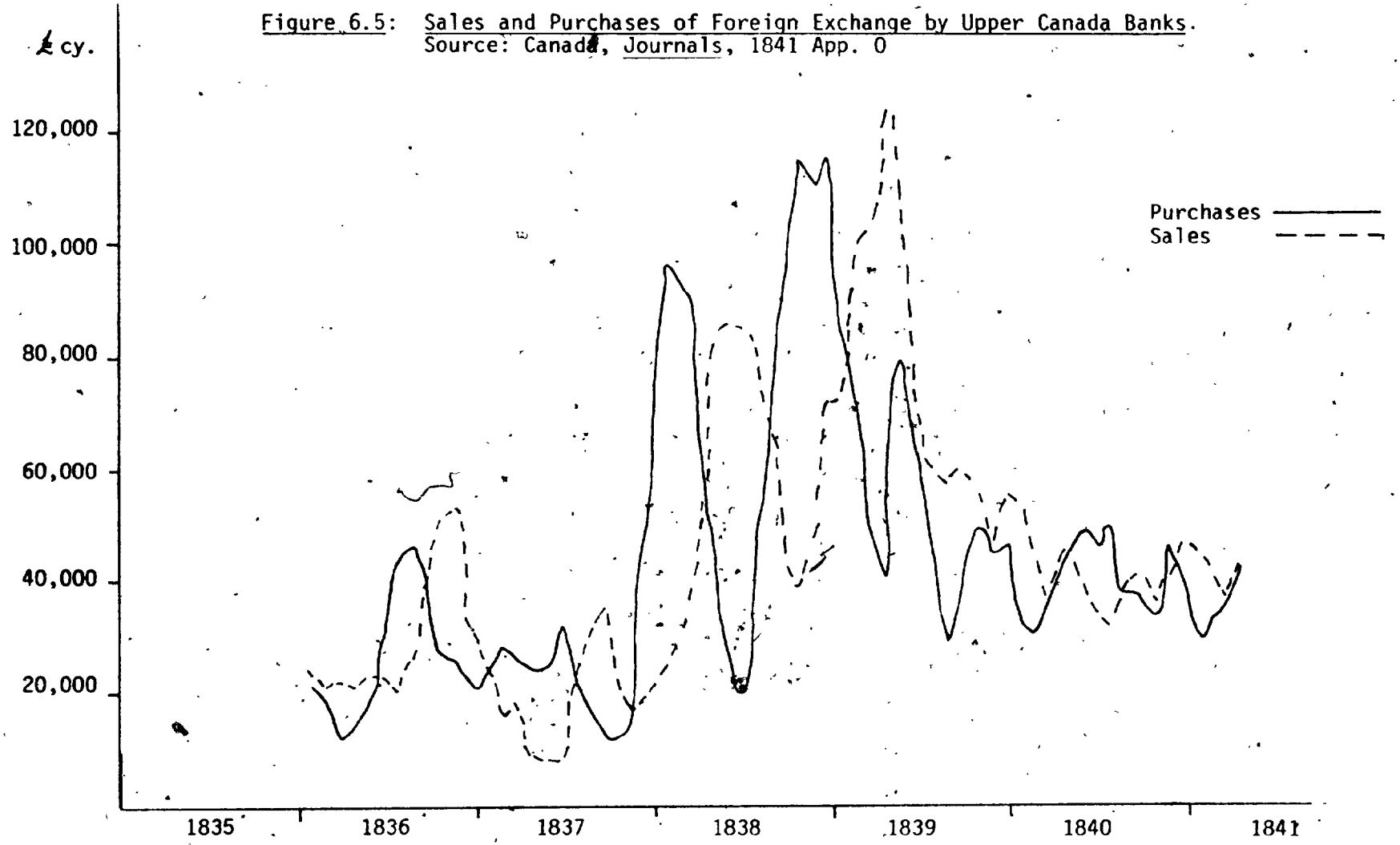


Figure 6.6: Holdings of Foreign Exchange by Upper Canada Banks.
Source: Canada, Journals, 1841 App. O

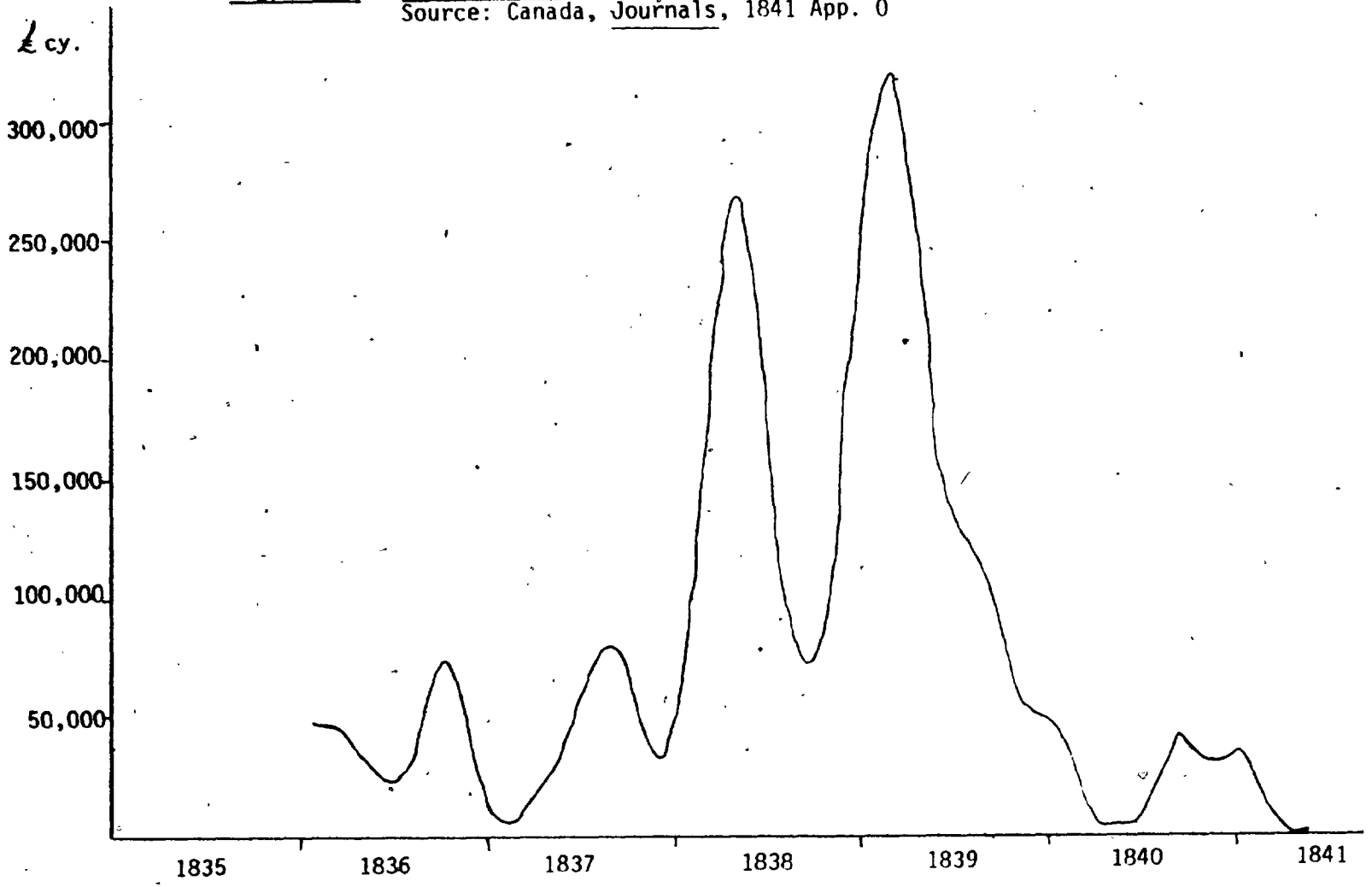
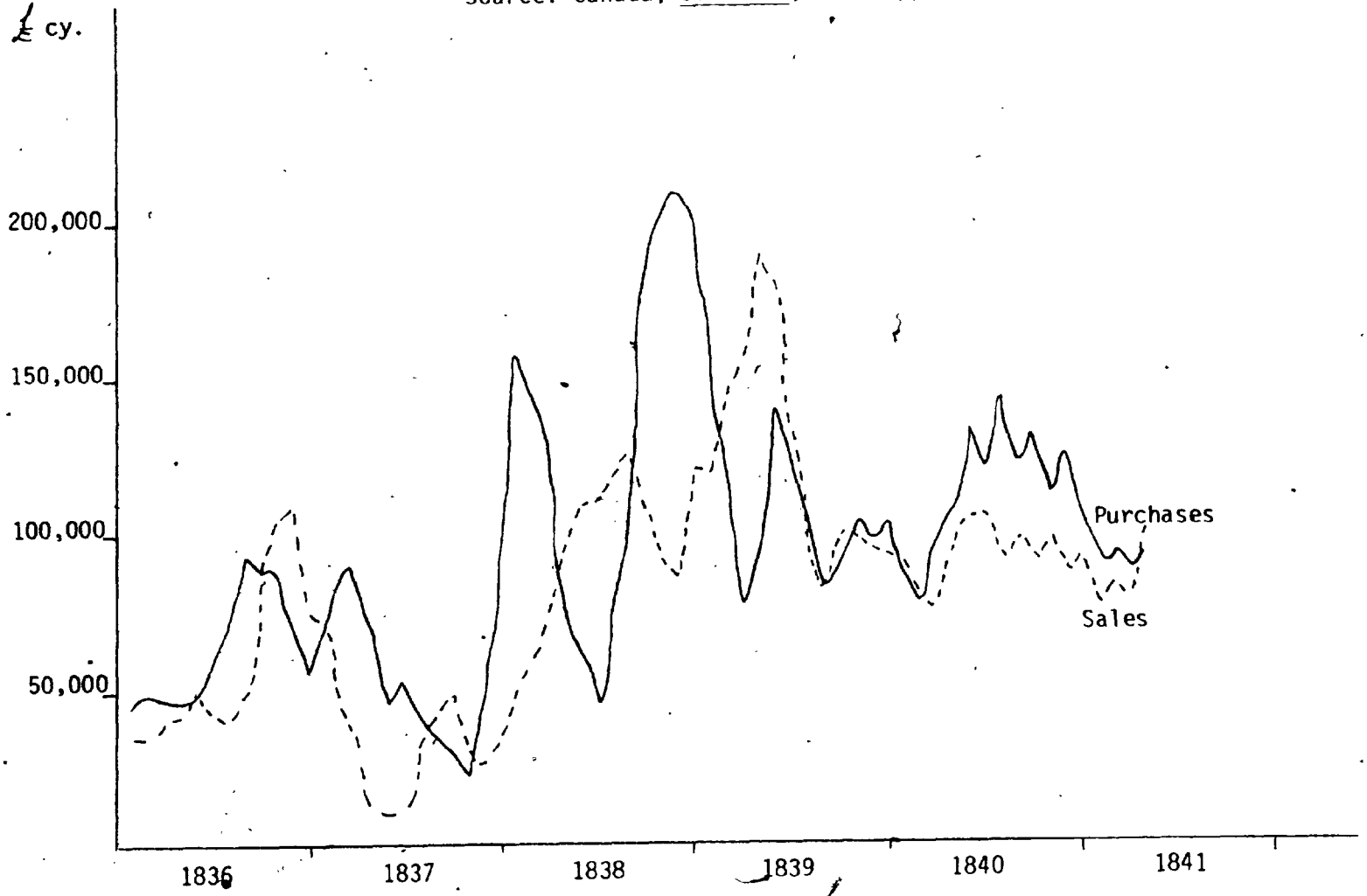


Figure 6.7: Purchases and Sales of Foreign Exchange by Canadian Banks.
Source: Canada, Journals, 1841 App. O

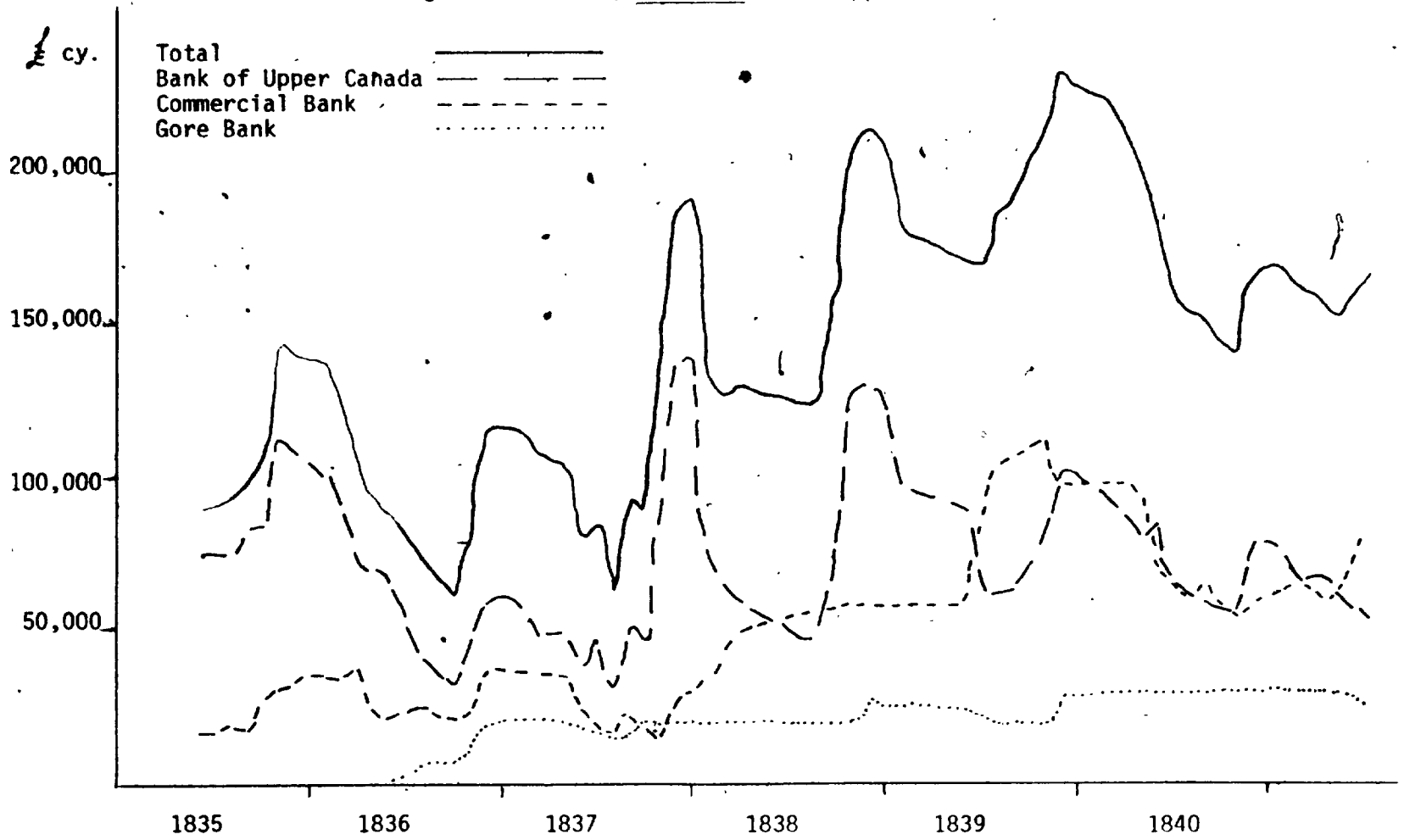


sales of foreign exchange by all the chartered banks in the Canadas and this figure shows that purchases in the winter of 1838/9 were considerably larger than those in the earlier period.

The military expenditures of 1837/8 would still have caused a rise in the demand for money balances, but in early 1838 this would have been much more a demand for specie than for bank notes. In Chapters 4 and 5 it was argued that the share of the demand for bank money relative to the demand for specie was low during the pre-suspension period. The military expenditures of the winter of 1837/8 were either paid out in specie or in Bank of Upper Canada notes that were quickly redeemed for specie.

This process can be observed in the behaviour of the reserves of the Bank of Upper Canada, and Figure 6.8 shows the path of specie reserves for the Upper Canada banks in this period. (The reasons for the basic saw-tooth pattern of reserves are discussed in Appendix 4). The usual pattern was for reserves to increase in the late fall and decrease gradually throughout the year. In 1837/8 the reserves of the Bank of Upper Canada increased as much as usual but decreased very rapidly in December 1837 and January 1838. This fall was simultaneous with the military expenditures and the Bank itself, stated that the fall in specie holdings was occasioned by the requirements of the Commissary as a result of the insurrection which resulted in large

Figure 6.8: Bank Reserves in Specie.
Source: Canada, Journals, 1841 App. O



withdrawals of specie.[5]

The military expenditures of 1838/9 were closely paralleled by changes in the Upper Canada banks' purchases of foreign exchange, and these were followed by changes in the bank money stock: from September 1838 to March 1839 net purchases of foreign exchange by the banks were £320,000, while the bank money stock increased by £239,729 over the period from December 1, 1838 to May 1, 1839. Possible explanations for both the lag and the smaller movement in bank money stock lie in the behaviour of deposits. The Commissariat sold exchange in lots: that is, £50,000 or £100,000 each time it called for tenders. If we allow that the Commissariat deposited some of its receipts until required (an assumption that cannot be confirmed since there is no monthly data on deposits), the existence of a lag between the increase in purchases of exchange, and increases in notes in circulation is predictable.

The fact that the rise in the stock of bank notes is less than the increase in foreign exchange, may also be accounted for by the behaviour of deposits. The only data on deposits are shown in Table 6.3 which is composed of information from the Balance Sheets of the Banks submitted annually to the Legislature. It suggests that deposits behaved in a similiar way to bank notes.

The hypothesis of Section 6.3 predicts that some of the

increase in the bank money stock would be eroded once the shipping began and imports could begin to arrive. Before examining the data, note that the proportionate impact of military expenditures upon trade flows would be significantly less than its impact on the banks' holdings of foreign exchange. That is, the mechanics of the military spending meant that most of it went through the banking system, while in general a large portion of the international trade of the Canadas was conducted without the intermediation of the provincial banks.

The larger merchants in Toronto and Montreal had agents in England (usually London), to whom they would consign their exports of flour, ashes or timber; the agent would fill the merchant's order for textiles or metal goods and would use the sales proceeds from the produce to repay the credit he used for buying the goods he sent to Canada. In this case, (of almost international barter), no purchase or sale of bills of exchange would be required. Trade in bills of exchange occurred when an exporter did not wish to import goods, or an importer did not deal in export items. A comparison of trade levels with the amount of bills of exchange traded in a year shows that approximately a fifth of the commodity trade involved the chartered banks. The fact that a large proportion of the military spending was intermediated by the banks is consistent with the observation that exchange dealings more than doubled while

commodity trade rose only 25% (approximately) over its trend.

Table 6.2 shows the level of imports and exports into Quebec and Montreal. In 1838 imports actually fell by approximately 19%, but in 1839 they rose by 48%. Imports remained close (5-10% lower) to the peak of 1839 for the next few years, but these were also years of considerably improved export performance.

The failure of imports to rise in 1838, as theory would have predicted is ascribed to two factors: firstly the fact that the scale of expenditures was smaller in this early period, and secondly, the increased demand for imports could initially be absorbed by a fall in inventories. The recession of 1837-8 would have resulted in unexpected inventory accumulations, and the demand for imports could have been met by drawing down inventories. If these inventories were financed by overseas credit, then in fact, the military expenditures were reflected in the capital rather than the current account of the balance of payments.

In using a one-asset model, capital flows have been neglected, however, an expanded model would suggest that the adjustment to the monetary shock would be met by a capital outflow, as well as by increased imports and increased holdings of money balances.

6.5 Conclusions

The basic objective of this chapter was to show that the increase in the bank money stock between December 1838 and May 1839 was not caused by the fact that specie standard constraints had been removed from the banks, but was caused by an exogenous event - the British military spending and consequent inflow of foreign exchange, during that period.

The size of those expenditures (£2 million in two years) was shown to be large relative both to the 'normal' level of exports and to the banks 'normal' trade in bills of exchange on London. The majority of this expenditure (£1.2 million) occurred during the period from October 1838 - June 1839, and the purchases of bills of exchange by the banks and the increase in the bank money stock reflect these expenditures. During the summer of 1839, imports were £800,000 cy. over their 1838 level, and about £400,000 cy. above (an approximate) trend value. The failure of imports to rise in the summer of 1838 (after military expenditures of £500,000 stg.) is explained in terms of high inventory levels caused by the recession in 1837.

The evidence supports the hypothesis that British military spending was the main cause of the increase in bank note issues early in 1839. Chapter 5 demonstrated that even if specie payments had been temporarily suspended, the chartered banks would not inflate their note issues, because

prices of goods in specie were constrained by expectations of resumption. Data on prices, and 'exchange' rates were found to be consistent with this hypothesis.

That hypothesis was based on an equilibrium analysis that ignored outside shocks. When we introduce the monetary shock of the military expenditures, and look at the short-run (disequilibrium) impact of that shock, then the temporary growth of the money stock in 1839 is compatible with the 'constraint hypothesis' theory.

Table 6.1

British Military Expenditure in the Canadas

(thousands of pounds sterling)

Year	Commissariat Spending	Bills requested by the Commissariat (Quarterly)				Canadian Military Expenses	Grants in Consequence of Insurr.
		I	II	III	IV		
1832	392		N/A				
1833	240				50		
1834	284		50				
1835	208	50	50		50		
1836	222			50		166	
1837	260	100	50	100	50	189	
1838	1,165	350	100	100	600	510	500
1839	1,481	200	400	200	100	1,629	1,000
1840	839					1,314	341

Sources: 1. Blue Books Lower Canada

2. British Military Records (RG1 Vols. 140-147 PAC).

3. British Parliamentary Papers Canada (Vol. 16, pp. 807-810) IUP.

Table 6.2

Trade of the Canadas: 1831-42

	Imports	Exports
1831	753,773	1,195,516
1832	1,497,068	1,170,522
1833	1,745,284	1,176,925
1834	1,201,285	1,152,662
1835	1,587,084	1,091,114
1836	1,872,544	1,321,744
1837	1,655,206	1,065,651
1838	1,361,812	1,140,403
1839	2,229,223	1,275,899
1840		
1841	1,875,947	1,581,576
1842	1,839,953	1,413,878

Source: Blue Books Lower Canada

All data are in £cy.

Imports are exclusive of those at Coteau du Lac.

1840 data are unavailable.

Table 6.3

Behaviour of Bank Deposits in 1839

	Bank of U. Canada	Commercial Bank	Gore Bank	Total
Notes 1/1/38	£ 80,079	£171,869	£18,135	£270,083
Notes 5/3/39	321,853	279,410	90,403	691,666
Notes 3/12/39	160,472	222,553	43,498	426,523
Deposits 1/1/38	£ 75,516	£42,433	£10,890	£128,839
Deposits 5/3/39	253,751	172,889	10,419	437,059
Deposits 3/12/39	113,854	87,745	7,968	189,567
1/1/38 - 5/3/39				
Change Notes	+120%	+48%	+133%	+88%
Change Deposits	+108%	+121%	-4%	+109%
5/3/39 - 3/12/39				
Change Notes	-67%	-23%	-70%	-44%
Change Deposits	-76%	-87%	-27%	-79%

Source: Appendix O, House of Assembly, Canada 1841.

FOOTNOTES

[1]In addition to the increase in the value of nominal balances at t , due to the increase in Y (t), there would also be an increase in the demand for nominal balances at time t, that would increase the expansion in the bank money stock.

[2]See the discussion of the U.S. economy in Chapter 3.

[3]Montreal Gazette (29 October 1839).

[4]Upper Canada, Parliament, Journals 13th Parliament, 4th Session. Appendix "Third Report of the Committee on Banking" p. 778.

[5]Upper Canada, State Books Volume H, p. 647.

CHAPTER 7

CONCLUSIONS

This thesis developed a model of a monetary system in which there were two monies circulating concurrently in a small open economy. The model described the determinants of the money stocks in the case where the exchange rate between the two monies was fixed, and also in the case where that exchange rate was flexible, but that flexibility was expected to be short-lived. Central to the determination of the money stocks was the behaviour of expectations about the future purchasing power of the two monies, and the possibilities for currency substitution.

With suitable modifications, this model was applied to the case of Upper Canada in the 1830s: a small open economy in which specie payments were suspended. In 1837 the monetary system of Upper Canada was 'shocked' by the public's sudden expectations of a suspension of specie payments and decrease in the purchasing power of bank money. In 1838 the banks did suspend specie payments, however during the suspension there was a large exogenous inflow of foreign exchange, so the impact of such a change had to be incorporated into the model before it could be tested against the behaviour of the Upper Canadian monetary system during suspension.

The model predicted that an expected suspension would

lead to a shift out of bank notes and into specie, as agents expected a capital loss from holding bank notes. A one-time shift in expectations would lead to a lower desired ratio of bank notes to specie, but would not cause a continuous fall in that ratio.

After the suspension of specie payments , (if the suspension were expected to be temporary), the bank money stock would rise slightly above the level it had been at prior to the heightened anticipations of suspension. This result assumes that although agents expect the suspension to be temporary, there is a high variance associated with that expectation. The expansion of the bank money stock occurs because usury laws have previously constrained the real rate of interest that the banks could earn. Given the fixed (nominal) usury rate, the banks can use the deflation to raise their real rate of return when freed of the small open economy constraints implied by the specie standard.

The amount of monetary expansion is determined by (a) the amount of the excess demand for loans at the usury rate, (b) the expected length of the suspension and (c) the extent to which it was anticipated. There is an upper bound that the implied rate of deflation (of prices in bank money) will be less than the real interest rate. If there were exogenous inflows of foreign exchange during the suspension, the model predicts that there would be a temporary increase in the bank money stock, but this would not affect goods prices in

bank money.

Applying the model to Upper Canada it was assumed that the Upper Canada population expected a suspension of specie payments by the banks and a resulting premium on specie. The model predicts that their desired bank money holdings would decrease. The fall would be a one-time event rather than a continuous decline in the demand for bank money balances. This prediction is consistent with the observed decline and subsequent stability of the bank money stock in Upper Canada.

This result implies that the internal drain on the banks resulted from the public's expectation of a suspension. The behaviour of the Provincial government, which from May to July 1837 debated passing a Bill permitting the Banks to suspend, reinforced that expectation. The run on the banks ended before the enactment of the Bill. Its passage, which meant that the banks could suspend at any time, prevented a return to previous levels of confidence in the banking system. The continuation of the low levels of bank money stock had a real effect on the economy, as it reduced the level of bank loans and because of institutional constraints on international borrowing, the total supply of loanable funds. Usury laws exacerbated this effect.

These results suggest modifications to the traditional

view of monetary behaviour in Upper Canada in the late 1830s. The hypothesis that Upper Canada would have been more prosperous if the Upper Canadian banks had suspended during the summer of 1837 is exaggerated. While a temporary suspension immediately after the U.S. suspension (over the period May 12, 1837 - June 1, 1837) might have been beneficial, it was the discussions of suspension from June 1837 until March 1838 which unnecessarily prevented a return of confidence in the banking system.

This thesis contradicts the traditional assumption that the increase in the bank money stock in 1838/9 was inflationary. The evidence of relatively stable prices and the analysis of factors influencing the demand for real bank money balances have shown that the expansion was not inflationary. Furthermore, the expansion particularly in 1839 resulted from the British military presence in the province and not from the suspension of specie payments by the banking system.

This thesis has developed a model of private bank behaviour (and therefore the behaviour of bank money stocks) in the nineteenth century, both under the specie standard and during a temporary suspension of specie payments. Testing that model with data from the Upper Canada economy during the late 1830s supports the theory's predictions, and yields a re-interpretation of bank behaviour in that era. The thesis also contributes to empirical knowledge of Upper

Canada. In testing the model new data on the behaviour of monetary variables was introduced, including monthly data on stocks of bank notes, purchases and sales of foreign exchange by Upper Canada banks and exchange rates. Additionally, the role of the British military involvement in the Province has been quantified, showing it to be more extensive than previously suggested.

Appendix 1

The British Market for Upper Canada Wheat

1 The Corn Law

The following table describes the tariff imposed by the 1828 Corn Laws in shillings per quarter on colonial and non-colonial foreign wheat.

Gazette Price	Colonial Tariff	Foreign Tariff
Under 51/-	5/-	36/8
Under 52/-	5/-	35/8
52/- - 53/-	5/-	34/8
53/- - 54/-	5/-	33/8
54/- - 55/-	5/-	32/8
55/- - 56/-	5/-	31/8
56/- - 57/-	5/-	30/8
57/- - 58/-	5/-	29/8
58/- - 59/-	5/-	28/8
59/- - 60/-	5/-	27/8
60/- - 61/-	5/-	26/8
61/- - 62/-	5/-	25/8
62/- - 63/-	5/-	24/8
63/- - 64/-	5/-	23/8
64/- - 65/-	5/-	22/8
65/- - 66/-	5/-	21/8
66/- - 67/-	5/-	20/8
67/- - 68/-	6d	18/8
68/- - 69/-	6d	16/8
69/- - 70/-	6d	13/8
70/- - 71/-	6d	10/8
71/- - 72/-	6d	6/8
72/- - 73/-	6d	2/8
Over 73/-	6d	1/-

Source: Examiner (23 March 1842)
Barnes (1930, p. 200).

2 Relation of Upper Canada Prices to British Prices

Using data from contemporary sources a Liverpool price of 67/- stg. is shown to result in a Toronto price of approximately 5/- cy. a bushel. The Upper Canada farmers argued that costs of production were 5/- per bushel, and therefore they lost money on exports if British prices were less than 67/- stg. per quarter.

British Price	67/-	stg./qr.
Deduct: Freight-Mtl. U.K.	20/8	
English Charges	5/-	
Tariff	6d	
	40/10	stg./qr.
With a premium of 10%	49/7	cy./qr.
In bushels	6/2	cy./bu.
Deduct: Freight-Mtl. T.O.	1/2	
	5/-	

Sources: Examiner (6 April 1842)
Average premium on sterling in the 1830s.
8 bushels = 1 quarter
Upper Canada, Parliament, House of Assembly, Journals, 12th Parliament, 1st Session 1835.

Appendix 2
Exchange Rates in the 1830s

The American Mint established in 1792 minted two coins: the gold Eagle, and the silver Dollar. At that time the market price (i.e. European price) of gold in terms of silver was 15:1, and as shown in Table A.1, this was the relative weights of the two coins. By 1820 the market price of gold had risen and in Europe one grain of gold would buy 15.7 grains of silver. An application of Gresham's Law is seen in the disappearance of gold coin from the U.S.: an agent could take an Eagle to Europe and buy 3885.7 grains of silver (247.5 x 15.7); returning with the silver to the U.S. Mint, he could purchase $10.46 (3885.7/371.25), and since shipping costs were approximately 2-3%, he would make a profit.

The U.S. Government decided in 1834 to return to effective' (as opposed to nominal) bimetallism and reduced the weight of the Eagle, (as shown in Table A.1), so that the relative price of gold to silver at the U.S. Mint was 16:1. Since the market price was still 15.7:1, Gresham's Law now resulted in the expulsion of silver dollars from the United States.

Britain was on a gold standard, and the sovereign (gold pound sterling) was issued at the weight established by Newton in 1717. The only other gold coin minted was the Guinea, valued at 21/- and containing 1/20 more gold than the sovereign. Small payments could be made in silver shillings which were only legal tender up to a value of 2 as they were token coins.

The exchange rate between pounds sterling and U.S. dollars from 1836 onwards is based on the gold value of (post 1834) Eagles and Sovereigns. The gold content of the coins gives a rate of exchange $4.87 = £1. However, the official par was $4.44 = £1 (as the result of a law passed in 1704) so that if the price of pounds was quoted as at a premium of 9.7%, they were actually trading at par (by weight).

The exchange rate in Upper Canada between pounds currency and other currencies was determined by the Act of 1836. That Act actually established many rates of exchange of which of course only one would be effective. The Eagle and Sovereign were rated at the same value as the Americans had used and if the shilling had not been overvalued the gold dollar and sovereign would have driven out the silver coinage. A debt of £1 cy. could be paid in 16/- stg. (in

shillings) or 16/5d stg (in gold coin), so the shilling would be used to pay all debts.

The true rate of exchange was therefore 25/- cy. = 20/- stg. Since 25/- cy. = UC$5, we have UC$5 = 20/- stg., and therefore the par of exchange was 2.6% over the U.S. par, or 12.6% over the official par of $4.44 = £1 stg.

An example may clarify these relationships: Canadian banks, although they kept accounts in £ cy., issued their notes in dollar bills. Suppose that an individual in Upper Canada held a bill of exchange on London for £100stg. If exchange rates were at mint par, an American would be willing to pay $487 for that bill. This would be quoted as an offer to buy at 9.6% over par. An Upper Canadian would offer UC$500 (or £125 cy.), in bank notes, since the bank would redeem UC$1 with 4/-stg., i.e. UC$500 with 2000/-stg = £100stg.

The impact of the Act of 1836 was that American dollars and half-dollars were sold at a premium (of 4%) in Upper Canada, and Upper Canada bank notes traded at a corresponding discount in the U.S. The overvaluation of the shilling and the operation of Gresham's Law also benefited the banks. Large denomination bank notes were more convenient as a medium of exchange than shillings: "a more effectual scheme for establishing a paper currency nominally payable in specie, but practically inconvertible, could not well have been devised".

Table A.1

United States Currency in the Nineteenth Century

	Metal	Standard Weight	Fine Weight	Value
(1) 1792 - 1834				
US Dollar	silver	416 grs.	371.25 grs.	$1
US Eagle	gold	276 grs.	247.5 grs.	$10
(2) 1834 - 1893				
US Dollar	silver	416 grs.	371.25 grs.	$1
US Eagle	gold	258 grs.	232 grs.	$10

Table A.2

Sterling-Dollar Exchange Rates: 1836-41

Coin	Fine Weight	Value
US Eagle	232 grs.	$10
Sovereign	113 grs.	£1

£1 = .487 Eagles, therefore £1 = $4.87 (gold par)

Fine Weight is the weight of gold metal in the coin as opposed to standard weight which is the actual weight of the coin.

APPENDIX 3

The household equilibrium conditions 4.9 to 4.12 are derived as follows:

$$L = U(Z_1,Z_2,S,C) - \lambda_1[Y-Mg-Mp-B-Z_1] - \lambda_2[Z_2-Mg-Mp(1-h)-B(1+r)]$$

$$= U(Z_1,Z_2,SpMp + SgMg,CpMp + CgMg) - \lambda_1[Y-Mg-Mp-B-Z_1]$$

$$- \lambda_2[Z_2-Mg-Mp(1-h)-B(1+r)]$$

The first order conditions for a maximum require:

$$\frac{\partial L}{\partial Z_1} = U_1 + \lambda_1 = 0 \qquad \ldots.(4.1')$$

$$\frac{\partial L}{\partial Z_2} = U_2 - \lambda_2 = 0 \qquad \ldots.(4.2')$$

$$\frac{\partial L}{\partial Mp} = SpU_3 + CpU_4 + \lambda_1 + \lambda_2(1-h) = 0 \qquad \ldots.(4.3')$$

$$\frac{\partial L}{\partial Mg} = SgU_3 + CgU_4 + \lambda_1 + \lambda_2 = 0 \qquad \ldots.(4.4')$$

$$\frac{\partial L}{\partial B} = \lambda_1 + \lambda_2(1+r) = 0 . \qquad \ldots.(4.5')$$

From 4.5', 4.1' and 4.2',

$$\frac{U_1}{U_2} = (1+r) \qquad \ldots.(4.6')$$

From 4.3' and 4.4',

$$\frac{SpU_3 + CpU_4}{SgU_3 + CgU_4} = \frac{\lambda_1 + \lambda_2(1-h)}{\lambda_1 + \lambda_2}$$

$$= \frac{-\lambda_2(1+r) + \lambda_2(1-h)}{-\lambda_2(1+r) + \lambda_2}$$

$$= \frac{r+h}{r}$$

$$SprU_3 + CprU_4 = Sg(r+h)U_3 + Cg(r+h)U_4$$

$$U_3[Spr - Sg(r+h)] = U_4[Cg(r+h) - Cpr]$$

$$U_3 / U_4 = \frac{[Cg(r+h) - Cpr]}{[Spr - Sg(r+h)]} \qquad \ldots\ldots(4.7')$$

To find U_1/U_3 from 4.1' and 4.4'

$$\frac{U_1}{SgU_3 + CgU_4} = \frac{\lambda_1}{\lambda_1 + \lambda_2}$$

$$= \frac{-\lambda_2(1+r)}{-\lambda_2(1+r) - \lambda_2}$$

$$= \frac{(1+r)}{r} \qquad \ldots\ldots(4.8')$$

Using 4.7' let

$$Cg(r+h) - Cpr = x$$

$$Spr - Sg(r+h) = y$$

then from 4.7'

$$U_4 = y/x \cdot U_3$$

and using 4.8'

$$\frac{U_1}{SgU_3 + Cg\frac{y}{x}U_3} = \frac{1+r}{r}$$

$$\frac{U_1}{U_3} = \frac{(1+r)}{r}\left(\frac{xSg + yCg}{x}\right) \qquad \ldots\ldots(4.9')$$

$$\frac{xSg + yCg}{x} = \frac{S_gC_g(r+h) - SgCpr + SpCgr - CgSg(r+h)}{Cg(r+h) - Cpr}$$

$$= \frac{r(S_pC_g - SgCp)}{[Cg(r+h) - Cpr]} \qquad \ldots\ldots(4.10')$$

Substituting 4.10' into 4.9'

$$\frac{U_1}{U_3} = \frac{(1+r)}{r} \cdot \frac{r(SpCg - SgCp)}{Cg(r+h) - Cpr} \qquad \ldots\ldots(4.11')$$

To find U_2/U_3, using 4.6'

$$\frac{U_2}{U_3} = \frac{1}{(1+r)} \cdot \frac{U_1}{U_3}$$

$$= \frac{SpCg - SgCp}{Cg(r+h) - Cp\,r} \qquad \ldots\ldots(4.12')$$

These conditions can be related to relative prices if we solve 4.13' for Pc, Ps . .

$$\begin{pmatrix} Cp & Sp \\ Cg & Sg \end{pmatrix} \begin{pmatrix} Pc \\ Ps \end{pmatrix} = \begin{pmatrix} r+h \\ r \end{pmatrix} \qquad \ldots\ldots(4.13')$$

Using Cramer's rule,

$$Pc = \begin{vmatrix} r+h & Sp \\ r & Sg \end{vmatrix} \Big/ \begin{vmatrix} Cp & Sp \\ Cg & Sg \end{vmatrix}$$

$$Ps = \begin{vmatrix} Cp & r+h \\ Cg & r \end{vmatrix} \Big/ \begin{vmatrix} Cp & Sp \\ Cg & Sg \end{vmatrix}$$

$$Pc = \frac{Sg(r+h) - Spr}{CpSg - CgSp} \qquad \ldots\ldots(4.14')$$

$$P_s = \frac{Cpr - Cg(r+h)}{CpSg - CgSp} \qquad \ldots\ldots(4.15')$$

Substituting 4.14' and 4.15' into equation 4.7', we have

$$U_3 / U_4 = Ps / Pc \qquad \ldots\ldots(4.16')$$

the expected result that the ratio of the marginal utilities of the two characteristics is equal to their price ratio, if agents are utility maximizers.

Appendix 4

Seasonal Influences on Bank Reserves

Figure 6.8 clearly suggests that bank reserve levels exhibited seasonal behaviour, which can be most easily explained by looking at a long run model of the market for bank money.

Assume that in a fixed exchange rate, small open economy the long-run process of monetization generates a demand for bank money function,

$$Mp(t) = Mp(t_0) + a\ t^2 \qquad A.1$$

where a is a growth rate parameter.

The supply of bank money function and equilibrium condition are,

$$Mp(t) = b\ S(t) \qquad A.2$$

$$Mp(t) = Mp(t) \qquad A.3$$

where b is the inverse of the desired equilibrium reserve ratio

S(t) specie reserves

If we further assume that there are lump-sum transactions costs in increasing specie reserves, and that bank behaviour towards risk requires $Mp(t) < b\ S(t)$, then the path of specie reserves is indicated in Figure A.1. Reserves increase periodically by discrete amounts (shown by the path S'(t)), and when the amount of reserves falls to the minimum

required level, the banks increase reserves. The length of time between increases in reserves ($t_i - t_j$) is determined by the risk attitude of the bank, and the structure of transactions costs.

Assume now that the process of monetization and income growth generates an increase in the demand for specie, by the public, then

$$Mg(t) = Mg(t_0) + c\ t^2 \qquad A.4$$

where c is a growth parameter.

If the costs of obtaining specie are still lump-sum, then we can expect individuals to obtain specie from the banks rather than directly. This implies a path for bank holdings of specie that looks like S''(t), shown in Figure A.1.

I believe that this this simple model explains most of the seasonal fluctuations in the specie reserve levels shown in Figure 6.8. The increase in specie levels are generally caused, not by an influx of domestic specie, but by imports of specie from New York. Most of these imports took place in November/December, May being the second busiest time. This corresponds precisely with the ends of the navigations season in Upper and Lower Canada. When navigation is closed during the winter, the transport would be more costly than when canal traffic allowed easy access from Toronto to both New York and Montreal. The existence of transport costs and risks would result in the inventory pattern that we observe in the data.

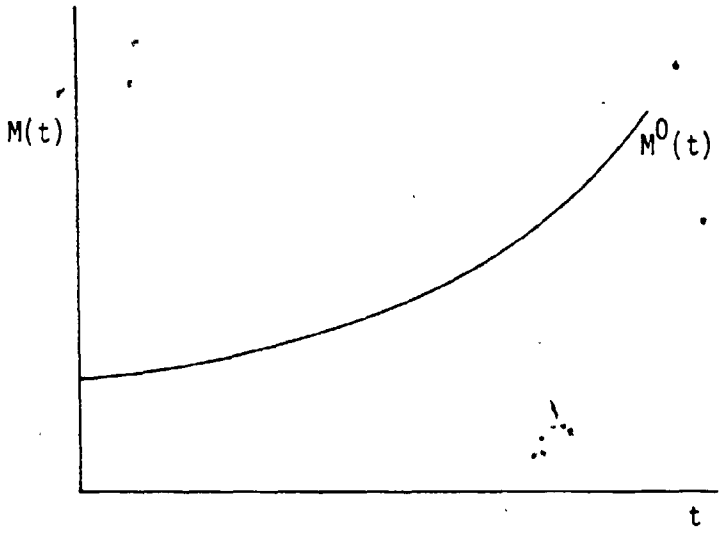


Figure A.1a

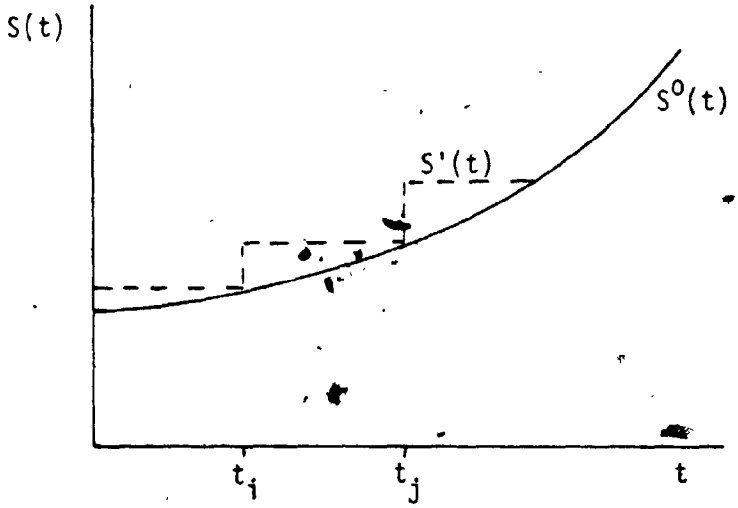


Figure A.1b

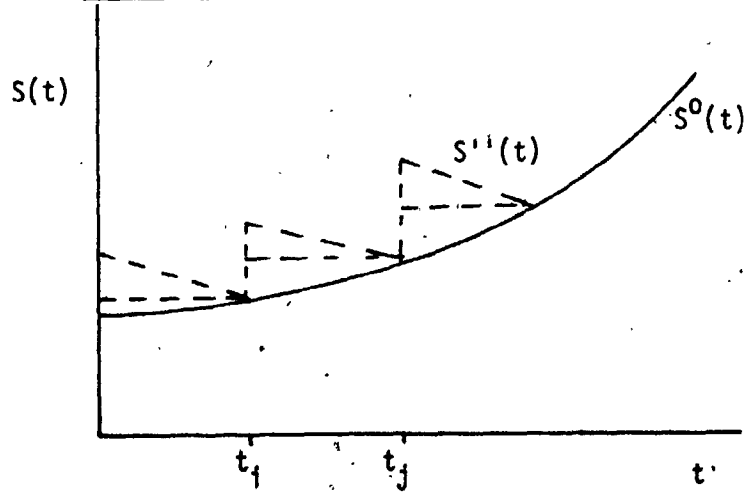


Figure A.1c

Predicted Seasonal Behaviour of Specie Reserves.

Appendix 5

Notes on Primary Sources

(a) Location of Bank Balance Sheet Materials.

The banks were periodically required to submit balance sheets to the Legislature. These were then published in the Journals of the House of Assembly. The location of balance sheets during the 1830s is shown in the following table.

	Bank of Upper Canada	Commercial Bank	Gore Bank
1830 (10P, 2S)	15/2/30 p. 55		
1831 (11P, 1S)	25/1/31 p. 31		
1832			
1833 (11P, 3S)	30/1/33 p. 117		
1834 (11P, 4S)	18/12/33 p. 65	18/12/33 p. 65	
1835 (12P, 1S)	21/1/35 p. 57	21/1/35 p. 65	
1836 (12P, 2S)	3/2/36 p. 118	1/2/36 p. 184	
1837 (13P, 1S)	16/11/36 p. 72	7/11/36 p. 89	28/11/36
1837 (13P, 2S)	17/6/37 p. 9	11/6/37 p. 47	16/6/37
1838 (13P, 3S)	1/1/38 p. 104	1/1/38 p. 48	8/1/38
1839 (13P, 4S)	5/3/39 p. 40i	1/3/39 p. 53	11/3/39
1840 (13P, 5S)	5/12/39 p. 23	9/12/39 p. 131	9/12/39

Read the fifteenth of February, 1830.
Read Tenth Parliament, Second Session.
Additional information requested by the House of Assembl

(b) Location of Provincial Financial Accounts.

The Provincial Accounts provided information on the role and size of the government; and were particularly important data in the 1830s as the Upper Canadian government verged on bankruptcy. The governments involvement in Public Works is chronciled by the list of debentures issued to finance them, which grew every year. The purchasers are also listed.

	Public Accounts	Schedule of Gov't Debentures
1830: 11 Par. 1Session	App. p.222	App. p.204
1831: 11 Par. 2 Session	App. p.1	App. p.37
1832: 11 Par. 3 Session	App. p.1	App. p.19
1833: 11 Par. 4 Session	App. p.1	App. p.85
1834: 12 Par. 1 Session	App. p.1	N/A
1835: 12 Par. 2 Session	App. Vol. 1,#26	App. Vol. 1,#8
1836: 13 Par. 1 Session	App. #2	App. #7
1837: 13 Par. 3 Session	App. p.1	App. p.169
1838: 13 Par. 4 Session	App. p.1	App. p.110
1839: 13 Par. 5 Session	App. p.1	App. p.179

Financial Year ending October 31, 1830.

(c) Newspaper Materials.

Contemporary newspapers have provided information about good's prices and the public's expectations of monetary changes. The Table below lists the newspapers used in this thesis and presents some background information on them.

Newspapers in the 1830s were widely read and provided a popular forum for the spread of political ideas. In Upper Canada, at that time, "some 30 newspapers had a combined circulation of 20,000" (Kesterton, p.25). The importance of newspapers as a means of communication is demonstrated by a comment made in 1838 by a London, Ontario resident: "Apropos of newspapers - my table is covered with them. In the absence or scarcity of books they are the principle medium of knowledge and communication in Upper Canada" (cited in Nish, p.LI).

Newspapers contained a preponderance of international news, some advertisements, serial excerpts from contemporary novels, and a little domestic news. The latter occasionally consisted of Reports of Parliamentary Debates, (there was no Hansard), comments on the impact of British Parliamentary Proceedings on Upper Canadians, and occasional comments on domestic economic matters, such as bank suspensions, currency laws etc. Finally certain newspapers also printed market prices for primary products, that were to be sold either for domestic consumption or export, during the season.

Rivalry between newspapers resulted more from their political orientation than from inter-urban competition. All newspapers had a political stance; this was usually their raison d'etre, and political bias was defined by the attitude of the newspaper towards Responsible Government. Reform newspapers favored Responsible Government, and Tory or Conservative newspapers endorsed the status quo.

Canadian Newspapers in the 1830s

	Town	Political Leaning	Political Leaning
Commercial Herald	Kingston		Tory
Kingston Chronicle & Gazette	Kingston	V. Tory	
Patriot	Toronto		Tory
Christian Guardian	Toronto		Moderate
British Colonist	Toronto	M. Tory	Tory
Examiner	Toronto	Reform	Moderate
Montreal Gazette	Montreal	Tory	Tory
Montreal Herald	Montreal		Tory
Montreal Transcript	Montreal		

As described by Nish, p. LXXX-LXXXI.
As described by Kesterton, p. 15.

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