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FOREWORD

International monetary developments of the past year have given a new importance to the financial relationships between the United States and Canada. An examination of that relationship and of Canadian experience with a floating exchange rate was undertaken at a conference sponsored by the Federal Reserve Bank of Boston in September of 1971.

This volume, made up of papers and comments of a distinguished group of conference participants, is the sixth in a series. Earlier conference volumes are listed on the preceding page. We hope this collection of papers and comments will be useful to the wide range of persons interested in the financial issues confronting the United States and Canada.

Frank E. Morris
President

Boston, Massachusetts

September, 1971

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CANADIAN-UNITED STATES FINANCIAL RELATIONSHIPS

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International Capital Markets and Canadian Economic Policy Under Flexible and Fixed Exchange Rates, 1951-1970

RICHARD E. CAVES and GRANT L. REUBER

The advantage of a title as broad as the one heading our paper is that it allows wide scope to pick among a variety of topics. We have chosen to focus primarily on the answers to four related questions:

a) How closely were capital markets in the United States and Canada integrated during the period 1951 to 1970?

b) How much of a problem has arisen from Canadian economic policy because of changes in autonomous capital flows emanating from events outside Canada or fortuitous events within — the much-discussed classical transfer problem?

c) To what extent has Canadian stabilization policy been hampered or aided by mobile capital flows in the context of the Meade-Tinbergen problem of reconciling internal and external balance?

d) How did the relationships prevailing during the flexible rate period change during the subsequent fixed rate period from 1962 to 1970? We have examined the answers to the first three of these questions for the flexible rate period in considerable detail elsewhere, and our account of them here summarizes this earlier work. [1] The vintage has been fortified for present purposes by further econometric analysis designed to reveal differences between the subsequent fixed rate period, 1962-70, and the flexible rate period on which our previous

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[1] Richard E. Caves and Grant L. Reuber, *Capital Transfers and Economic Policy: Canada 1951-1962* (Cambridge: Harvard University Press, 1971).

analysis was based.[2] In addition we explore a number of policy implications of our results to provide some sparkle for appeal to the palates of those directly concerned with practical policy applications.

Consideration of Canadian experience since the early 1950s is rewarding not only because of its direct relevance to contemporary economic policy in Canada but also because of what it may suggest about economic policy elsewhere in a world where international capital flows have become much more important and where there is an increasing disposition to countenance greater flexibility in exchange rates. In saying this we recognize, of course, that there are important differences between the 1950s and the present and between Canada and other countries, which make it important to be cautious about extending conclusions based on Canada's historical experience to the contemporary scene in Canada and elsewhere.

1. Capital Markets Under the Flexible Exchange Rate, 1951-62

An important feature of the flexible-rate period was the high but imperfect degree of capital market integration that existed between Canada and the United States. In quantitative terms, during this period a 1 percent change in short-term interest rates brought forth a corresponding change in short-term capital flows in the same quarter of about 8 percent; and a 1 percent change in long-term interest-rate differentials called forth a change in long-term capital flows of roughly 10 percent in the same quarter. It proved more difficult to estimate the responsiveness of direct investment to differential rates of return between the two countries. Some relatively weak estimates suggest some responsiveness to differential rates of return but substantially less than for portfolio flows and short-term flows: the estimated elasticity coefficient is 1.4. Much stronger evidence was found of a relation between direct investment and changes in Canadian GNP. In addition, direct investment flows seem to have been influenced to an important degree by developments in particular industries – such as resource industries – the degree of corporate liquidity, the level of domestic investment and competitive opportunities in other parts of the world. Contrary to what is some-

[2]This additional work was made possible through financial assistance kindly provided by the Federal Reserve Bank of Boston. We are indebted to Miss Deborah Driscoll of the Research Department, Federal Reserve Bank of Boston, who helped to assemble data for the period after 1961 and supervised all the computations, and to Miss Pat Skene of the University of Western Ontario, who also helped to dig out additional data and assisted to ensure the consistency of various statistical series.

times suggested by Canadian economic nationalists no evidence was found to support the view that direct investment flows are highly inelastic with respect to rates of return and other economic variables.

Further evidence of the high degree of integration prevailing between financial markets in Canada and the United States was found in the effect of U.S. interest rates on Canadian interest rates. During the 1950s it appears that Canadian interest rates were more closely linked to long-term U.S. rates via expectations than to expectations about future short-term rates in Canada.

The close but imperfect integration of financial markets in Canada and the United States was also reflected in the responsiveness of capital flows to exchange rate movements. During the 1950s investors reacted strongly to a change in the exchange rate by assuming it would be reversed, buying Canadian assets when the exchange rate fell and selling when it rose. As a consequence, capital flows tended strongly to stabilize the exchange rate. For example, a 1 percent depreciation in the exchange rate was typically associated with a simultaneous increase of about 70 percent in short-term flows and, within one quarter, of about 33 percent in long-term flows.

A major consequence of this high degree of capital integration was that both the level and the term structure of interest rates in Canada were closely linked to the United States, thereby considerably impairing the ability of Canadian authorities to establish interest rate levels independently. Allowing only for the effect of international capital flows on the supply of capital, the leverage of monetary policy on long-term interest rate levels may have been reduced by about a third. If, in addition, one allows for the effect of expectations geared to U.S. rates, this leverage may have been reduced by as much as 80 or 90 percent. Much the same applies to short-term rates. According to the evidence for the 1950s, short-term capital flows reduced the leverage of monetary policy on short-term interest rate levels by about 50 percent (the estimates range from 33 to 93 percent).

Adjusting to Autonomous Capital Flows

In our research we made a conceptual distinction between endogenous capital flows – influenced by short-term policy variables in Canada – and autonomous flows not sensitive to ordinary shifts in short-term policy.

For our purpose this latter category can usefully be subdivided into several subsidiary questions:

1. To what extent are flows of foreign direct investment complementary to and to what extent substitutes for domestic investment, both within and among industries?

2. To what degree are capital flows requited via the current account of the balance of payments in the absence of policy adjustments?

3. To what extent are capital inflows inflationary?

In order to answer these questions it is necessary to measure the marginal contribution of foreign investment to domestic capital formation and then trace through the consequences of the marginal change in capital formation for expenditure and the balance of payments. Two basic procedures were followed to illuminate these issues for the flexible rate period. First, the lead-lag relationships among various components of the balance of payments as well as various domestic variables were examined. Secondly, the relationship between direct investment and capital formation was explored with the aid of a simple investment model which allowed separately for the contribution of foreign direct investment. Without going into the details of these estimates, our conclusions may be summarized as follows:

First, the lead-lag patterns leave little doubt that over the period 1951-62 changes in the balance of trade preceded changes in long-term capital flows. This pattern is consistent with the notion of export-led growth, made famous in the staple theory of Canadian development, and with the notion that disturbances reflected mainly variations in domestic expenditure and investment prospects. It is *not* consistent with the view sometimes expressed that capital flows served as a predominant source of disturbances in Canada's balance of payments.

Secondly, our evidence indicates that a dollar of direct investment from abroad was typically associated with more than a dollar of Canadian capital formation – usually between $1.50 and $3.00. The timing of domestic capital formation did not coincide with the direct investment, however, but typically was spread out over some three quarters thereafter. When unemployment was high, less complementary domestic investment occurred and domestic capital formation was at the lower end of the indicated range; and the opposite was true when unemployment was low. The amount of complementary domestic investment also was less when the number of take-overs of Canadian firms was high. Furthermore, it tended to be low when foreign investment was directed to the mining and petroleum industries in comparison to when it was directed to Cana-

dian secondary manufacturing industries. No evidence whatever was found to support the view sometimes stated or implied by Canada's economic nationalists that foreign direct investment is largely a substitute for domestic investment.

Autonomous portfolio capital flows depress domestic interest rates, which in turn stimulate domestic capital formation. On the evidence we concluded that it probably took an extra $39 million of long-term portfolio capital and roughly $27 million of short-term portfolio capital inflows to depress domestic interest rates by 1/10 of a percentage point.

Applying these estimates to balance-of-payments and domestic expenditure multipliers we were able to estimate the extent to which capital transfers were requited without policy adjustments. Under conditions of full employment, direct investment inflows were overrequited within a year and tended to produce a payments deficit; with heavy unemployment they were underrequited. Under average conditions for the period in question they were just about fully requited via income effects. Portfolio investment both long- and short-term were underrequited leaving a large balance-of-payments surplus. This latter conclusion is consistent with the coincidence noted during the free rate period between high rates of portfolio inflows and the high price of the Canadian dollar. On this showing portfolio investment flows posed a substantially greater adjustment problem than direct investment, which again is a point of interest in the context of the debate on Canadian economic nationalism where it is frequently suggested that the country should rely more heavily on portfolio investment than on direct investment.

In the aggregate different types of capital flows tended to be mutually stabilizing, with an above-average long-term inflow being typically associated with a below-average short-term inflow. Hence, in aggregate the different types of portfolio flows compensated for each other and thus reduced the need for domestic policy adjustments. This accommodation did not operate through Canadian interest rates but through other channels which remain obscure but probably are based on institutional practices related to the transfer of funds from abroad.

Finally there is the question of the impact of exogenous inflows on domestic expenditure levels. It is clear from the evidence that direct investment flows on balance tended to change Canadian employment in the same direction as the change in the flow – raising employment when flows increased and reducing it when flows decreased. This was true even in situations such as heavy unemploy-

ment where the transfer was underrequited. Long-term portfolio inflows likewise were inflationary when they arose due to a decline in U.S. interest rates. Where, however, they were due to other disturbances, they were probably deflationary. Exogenous short-term inflows whatever their cause were nearly always deflationary.

We have not attempted to re-estimate the key relationships pertaining to exogenous investment flows for the period after 1961. Although these changed somewhat, as discussed below, we doubt that the general picture of these relationships has altered sufficiently to change fundamentally the answers we have provided to the questions posed at the beginning of this section. One reason for saying this is that our answers depend only to a limited extent on exchange rate adjustments, since a central conclusion of our analysis is that capital flows were predominantly accomplished via a combination of income adjustments and mutually accommodating capital flow adjustments. Thus, contrary to the emphasis given to adjustment of the exchange rate and terms of trade in much theoretical discussion of the transfer problem, exchange rate adjustments appear to have played an insignificant role in the transfer process during the flexible rate period.

The Impact of Capital Flows on the Effectiveness of the Instruments of Stabilization Policy

The other question to be considered is how capital flows responded to changes in domestic economic policy and how this response may have altered the effectiveness of the instruments of domestic stabilization policy. We concentrate on four instruments of stabilization policy – monetary, fiscal, exchange rate, and debt-management policy – since these remain the principal stabilization weapons in the policy arsenal of most market-oriented countries and, in addition, these instruments are directly linked through financial markets to international capital flows.

A summary of our evidence for the flexible rate period is presented in Table 1. These figures show a series of comparisons with counterfactual situations which exclude adjustments via capital flows and exchange rates. Such comparisons are derived from simulations based on the assumption that the relationships governing other responses remain the same whether or not adjustments via capital flows and exchange rates are permitted.

Starting with monetary policy we ask how Canada's GNP, balance of payments and exchange rate responded to a 1 percent increase in the money supply, and what would this response have been in the

TABLE 1

SUMMARY OF ESTIMATED EFFECTS ON GNP OF CHANGES IN FISCAL, MONETARY AND DEBT-MANAGEMENT POLICIES WITH AND WITHOUT FOREIGN CAPITAL FLOWS AND WITH AND WITHOUT EXCHANGE-RATE ADJUSTMENTS ($ MILLION)

	Without exchange-rate adjustments						With exchange-rate adjustments					
	1	2	3	4	5	6	1	2	3	4	5	6
1. *Increase in government expenditure of $100 million*												
(a) Without foreign capital flows	97	98	103	117	136	154	110	111	120	143	173	202
(b) With foreign capital flows	101	105	113	130	151	171	77	81	91	115	144	173
(c) b as a percentage of a	104	107	110	111	111	111	70	73	76	80	83	86
2. Decrease in personal income tax of $100 million												
(a) Without foreign capital flows	47	43	42	44	49	54	60	54	55	62	71	80
(b) With foreign capital flows	51	49	51	56	64	71	26	22	24	31	39	47
(c) b as a percentage of a	109	114	121	127	131	131	43	41	44	50	55	59
3. Increase in rate of growth in money supply of 1 percent												
(a) Without foreign capital flows	8.6	5.6	8.7	8.5	7.9	7.8	9.7	6.4	10.1	10.4	10.3	10.8
(b) With foreign capital flows	4.3	3.3	5.0	4.9	4.5	4.4	63.8	7.1	13.1	17.1	18.8	19.0
(c) b as a percentage of a	50	59	57	58	57	56	658	111	130	164	183	176
4. Decrease in the average term of the public debt by 10 months												
(a) Without foreign capital flows	3.9	2.3	3.6	3.5	3.3	3.3	4.5	2.7	4.2	4.4	4.4	4.6
(b) With foreign capital flows	0.2	0.1	0.2	0.2	0.2	0.2	24.7	1.5	3.3	4.9	5.6	5.5
(c) b as a percentage of a	5	4	6	6	6	6	549	56	79	111	127	120

Source: **Caves and Reuber,** *Capital Transfers, op. cit.,* **Table 8.11.**

absence of international capital flows. In the absence of exchange rate movements, our evidence suggests that a 1 percent increase in the money supply would have increased GNP immediately by about $4.3 million and additional increases of about the same size might have been expected over the next year and a half. The balance of payments might have been expected to deteriorate immediately by about $74 million, virtually all of which represented capital outflows. Some small further deterioration might have been expected in subsequent quarters.[3]

In the absence of capital flows, as shown in Table 1, the impact of the assumed change in monetary policy on GNP, assuming a fixed exchange rate, would have been about twice as great as it was. This 50 percent loss in effectiveness is mainly explained by the effect of international capital flows in ameliorating the effect of a change in the money supply on domestic interest rates.

If we assume a flexible rather than a fixed exchange rate, increasing the money supply would have resulted in an exchange rate depreciation which in turn would have evoked a response via both the current and capital accounts. Where these responses are taken into account, as shown in Table 1, the effectiveness of monetary policy is greatly enhanced, immediately and to an increased extent in subsequent quarters, both with and without foreign capital flows. Moreover, contrary to the situation with a fixed exchange rate, under a flexible rate monetary policy was substantially more effective with international capital flows than without (line 3(c), Table 1).

This same general pattern is indicated for debt management policy during the 1950s as shown in section 4 of Table 1. Under a fixed exchange rate, capital flows would have greatly diminished – indeed would have virtually eliminated – the effectiveness of debt management policy. Under a flexible exchange rate, on the other hand, capital flows greatly enhanced the effectiveness of debt management policy. Moreover, with or without capital flows, changes in debt management policy had a substantially greater impact, immediately and in subsequent quarters, with a flexible exchange rate than they would have had with a fixed rate.

Effects of an Increase in Government Spending

When we turn to fiscal policy we find quite a different pattern. Consider first an increase of $100 million in government expenditures which leads to an expansion in GNP via its expenditure effects.

[3]These estimates assume that the authorities sterilize changes in exchange reserves in the sense of not allowing them to feed back on the size of the money supply. To the extent that they fail to sterilize the change in reserves, the change in the money supply will be less than the assumed 1 percent and the effects will be correspondingly less also.

Assuming the money supply to be given, this change also has monetary effects which increase interest rates, thereby inducing changes in international capital flows.

How large these monetary effects are relative to the expenditure effects depends largely on how rapidly government revenues rise in the face of rising income to finance the increase in government expenditure. During the 1950s the monetary effects of increased expenditure seem to have outweighed the expenditure effects in the short run when the new expenditure would have been largely financed by borrowing rather than by tax revenue (assuming the money supply remained unchanged). In the longer term, however, as tax revenues increased in response to increases in GNP, the expenditure effects of increased government spending gradually overtook the monetary effects.

Without exchange rate adjustments, as shown in Table 1, this would have meant that capital flows enhanced the effectiveness of fiscal policy to a moderate extent both immediately and in the longer term since the monetary consequences would have been precluded from exercising an adverse effect on domestic expenditure via exchange rate movements, and the induced inflow of foreign capital would have constrained the increase in domestic interest rates. Under a flexible rate, however, capital flows tended to reduce the effectiveness of fiscal policy quite considerably, especially in the short run when the full brunt of the monetary effects of increased government spending was felt. Nonetheless, after six quarters had elapsed and the expenditure effects of increased government expenditure, both direct and indirect via induced exchange rate adjustments, had had an opportunity to manifest themselves more fully, the effect of the assumed change in fiscal policy on GNP was greater under a flexible rate than under a fixed rate even with foreign capital flows (line 1(b), Table 1).

Effects of Reducing Taxes

The other instrument of fiscal policy to be considered is a reduction in personal income taxes. As is evident from Table 1, the combination of capital flows and exchange rate adjustments particularly impaired the effectiveness of changes in tax policy, both immediately and in subsequent quarters. The difference in the degree of impairment sustained by expenditure and tax policy reflects the difference in the effects on the government deficit of these two types of policies. The cost to the government, in terms of its budget deficit, is

greater for a tax change than for an expenditure change because of the additional leakage through savings on the first round of expenditure, as compared to a dollar-equivalent expenditure change.

Because of this budgetary effect, under a fixed rate, capital flows which constrain the increase in domestic interest rates considerably would have increased the effectiveness of tax changes – in other words, the offsetting monetary consequences would have been considerably reduced relative to the domestic expenditure effects. Under a flexible rate, on the other hand, these offsetting monetary consequences were enhanced by increased exchange rate variations which resulted in increased expenditure leakages from the domestic income stream, thereby seriously undermining the domestic expenditure effects of tax changes on GNP.

Two general conclusions are indicated by this earlier analysis. First, given the relationships prevailing in the 1950s, international capital flows considerably increased the leverages of some types of policy and considerably reduced the leverages of other types of policy. The impact of these flows on the effectiveness of the various instruments of policy was affected to an important extent by fluctuations in the exchange rate in response to market forces. Secondly, closely integrated capital markets, judging by the experience of the 1950s, did not preclude the pursuit of independent stabilization policy goals. Rather, capital flows conditioned the manner in which the various instruments of policy needed to be deployed, singly and in combination, in order to achieve these goals more effectively.

In our earlier work, as already noted, we estimated the leverages of policy instruments by a conventional procedure[4] which involves assuming that the shift from a flexible to a fixed exchange rate alters nothing in the system except the way in which adjustment takes place in the exchange market. This assumption could well be false for several reasons, and so we were eager to explore briefly the actual characteristics of the fixed-rate regime of 1962-70 to augment our hypothetical analysis based on the operation of the Canadian economy in the earlier period. One reason is that the switch to a fixed exchange rate may alter the working of markets whose adjustment properties in turn affect the leverages of policy instruments. For instance, fixing the exchange rate should alter the supply of forward cover, making it more elastic in times when the pegged rate

[4]For another example see R. R. Rhomberg, "A Model of the Canadian Economy under Fixed and Fluctuating Exchange Rates", *Journal of Political Economy, 72* (February, 1964), 1-31.

is not generally expected to change, and thus raising the extent to which short-term capital can flow as covered interest arbitrage without prohibitively driving up the cost of forward cover. Fixing the exchange rate could also change the way the Canadian authorities react, forcing them to pull the levers of policy in response to signals different from those which they heeded when the rate was free to fluctuate. Not to be bullishly abstract about the matter, it is clear that the Canadian authorities were forced in the mid-1960s to impose various forms of suasion on Canadian borrowers, in order to protect Canada's exemption from the United States' formal controls on capital outflows. In the next section we use data for the period of the fixed rate to re-estimate and modify a number of our regression equations and test various hypotheses of this sort. In the final section of the paper we compare the observed working of economic policy in this fixed-rate period with the hypothetical fixed rate values derived in our earlier study.

2. Capital Markets Under the Fixed Exchange Rate, 1962-1970

To explore the effect of actual conditions and events during the period when the Canadian exchange rate was pegged, we both re-estimated the relevant equations from our previous study and tested a number of modifications designed to embody various hypotheses about how the general conditions of the later period changed the operation of international capital markets and of policy formation and execution. We shall briefly describe the approach taken in our earlier study to the statistical exploration of international capital flows to Canada, then consider the subsidiary hypotheses that can be tested on the fixed-rate period.

Many attempts have been made in the last few years to estimate statistically the determinants of international capital flows.[5] Their authors are invariably driven to a set of compromises in the face of potentially complex underlying theoretical models, thorny econometric problems, and data known to be subject to serious errors of both concept and measurement. We viewed the net international capital flows to Canada conventionally, as reflecting the interaction of the Canadian excess demand and world excess supply for long-run portfolio and short-run funds. We explored the interdependence of the net capital flow and the Canadian interest

[5]For a summary, see Erich Spitaller, "A Survey of Recent Quantitative Studies of Long-Term Capital Movements", *IMF Staff Papers, 18* (March, 1971), 189-217.

rate, taking into account forces determining the demand for funds in Canada: net new issues of securities in the case of portfolio flows, GNP and the merchandise-trade balance in the case of short-term flows. To keep the implied model down to manageable complexity, we neglected most aspects of the external net supply of funds to Canada, in effect assuming a supply of funds that was perfectly elastic over the relevant range. This simplification was justified by the similarity of the growth rates of Canada and the United States during the relevant period, which tended to restrict the shifts in the mixes of national securities in lenders' portfolios and made it unlikely that portfolio-substitution effects outside of Canada wielded any strong influence on the quarterly net flow of capital to Canada; we also noted that the bulk of Canadian long-term securities sold abroad were denominated in U.S. dollars, which should greatly have dampened any reluctance of U.S. lenders to shift their portfolio proportion between Canadian and U.S. securities of comparable risk. For these and various other reasons, we eschewed emphasizing the currently modish portfolio-balance approach and concentrated instead on measuring the short-term impact of Canadian policy variables.[6]

All computations described below were performed on quarterly data using ordinary or two-stage least squares technique. Statistical analysis of the flexible rate was confined to the period from the beginning of 1952 to the middle of 1961, to avoid distortions associated with the introduction and termination of that rate. The operation of the fixed rate was studied from the beginning of 1963 to the end of 1969; the starting date should exclude the uncertainties associated with the pegging of the rate in mid-1962, and the closing one was dictated by the availability of data.

Before turning to our findings on specific hypotheses about the fixed-rate period, it is useful to apply equations which were estimated in our previous study to the fixed-rate period and to the two periods together. This was done in order to gain a general impression of the change in the relevant capital markets wrought by

[6]One reason why we expected that variations in the Canadian demand for funds would dominate international capital flows, especially long-term, was our suspicion that imperfections in capital markets locked a number of Canadian borrowers into either the U.S. or the Canadian market for funds over a relatively wide range of interest-rate differentials between the two countries. This imperfection would cause the capital flow to be related to certain measures of Canadian borrowing activity, even after variations in "market" interest rates were taken into account. This conjecture was subsequently confirmed by E. Duncan Ripley, "Some Determinants of Canadian Municipal and Provincial Bond Flotations in the United States", *Review of Economics and Statistics, 52* (November, 1970), 417-426.

all forces at work in the fixed-rate period. Table 2 presents selected equations specified as in our earlier study and estimated both for the flexible-rate and fixed-rate periods, as defined above, and for the two together.[7] The Chow test was employed to gauge the significance of overall changes in the relations, and all equations but l-a reveal shifts significant at the 5 percent level. A glance at the equations themselves renders the confirmation of the Chow test superfluous. The explanatory power of the predetermined variables (indicated by their *t* statistics) is reduced in nearly every case,[8] the one conspicuous exception – the influence of average term to maturity of Government of Canada long-term debt (ATM) on Canada's long-term interest rate (CL) – involving a shift to a perverse sign. It is clear that some set of forces operated powerfully to reduce the closeness of the relation between these capital flows and interest rates and their other market determinants, or to substitute a new and overriding set of determinants.[9] To these forces we now turn.

Effect of Fixed Rate on Capital Markets

Our earlier study noted a rather considerable stabilizing role played by capital movements during the period of the flexible exchange rate. Not only did short-term capital flows (including net unrecorded transactions in the Canadian balance) move to reverse swings in the flexible rate, but so did portfolio capital flows –

[7]Results for the 1952-61 period reported here will differ slightly from those reported in *Capital Transfers* for two reasons: 1) a different computer program was employed, presumably with different rounding-error characteristics; 2) more important, some statistical series used in the earlier study have since been revised by their compilers, and all revisions have been incorporated in the re-estimated equations. None of our previous conclusions is reversed, although magnitudes are shifted modestly.

[8]The same conclusion would be drawn from the other test statistics – coefficient of determination, Durbin-Watson, F-ratio – which are not reported here.

[9]The shifts in equation 2 of Table 2 provide an example. For the period 1952-61 it was possible to secure a relatively good explanation of the movements of the Canadian long-term interest rate without taking price level expectations into account. If the equation had been designed originally to explain its movement in the 1960s, this force would clearly have demanded inclusion. (Cf. M. Feldstein and O. Eckstein, "The Fundamental Determinants of the Interest Rate", *Review of Economics and Statistics, 52* [November, 1970], 363-375.) Hence the equations for the whole period and the 1960s omit a fundamental determinant. At the same time, the average term to maturity of Canadian government debt fell steadily from 1963 to 1969, as the debt was shifted into short-term instruments in order to minimize its service cost. Hence the variable ATM picks up the influence of inflation and price expectations on CL, acquiring a perverse sign and concealing the operation of other forces. (The effect of this policy of reducing ATM is reflected, incidentally, in the steady rise of the Canadian short-term interest rate relative to the long.)

TABLE 2

DETERMINANTS OF LONG-AND SHORT-TERM CAPITAL FLOWS AND CANADIAN INTEREST RATES IN PERIODS OF FLEXIBLE AND FIXED EXCHANGE RATES[a]

Dependant variable	Period	Predetermined variables						
1. PC		CL	USL	NNS	NNSC	RS	RS_{-1}	CTS
	a. Whole	252.2 (1.31)	- 20.3 (0.89)		0.06 (0.89)			-221.1 (2.15)
	Flexible	755.4 (3.54)	-1023.4 (3.39)		0.14 (2.05)			-254.5 (3.53)
	Fixed	439.8 (1.13)	- 315.4 (0.67)		0.05 (0.40)			-580.7 (1.34)
	b. Whole	422.4 (2.20)	- 427.1 (1.79)	0.23 (4.43)		101.4 (0.10)	453.8 (0.46)	-230.7 (2.55)
	Flexible	347.7 (2.24)	- 528.2 (2.46)	0.20 (5.33)		4111.0 (4.46)	-2823.0 (3.21)	-165.0 (3.25)
	Fixed	422.1 (1.36)	- 497.4 (1.37)	0.21 (2.12)		19116.0 (1.78)	1491.0 (0.93)	-682.6 (2.15)

TABLE 2 (continued)

2. CL		NNSC	PCMS	ATM	
	Whole	.000737 (5.74)	- .0702 (3.17)	.00150 (1.19)	
	Flexible	.000184 (1.46)	- .0724 (4.81)	.00393 (4.91)	
	Fixed	- .000037 (0.49)	.0026 (0.21)	- .02173 (16.99)	
3. STK		DS	FP	BMTUS	CRS
	Whole	58.19 (0.28)	- 3999.0 (0.24)	- 0.733 (2.51)	- 3712.0 (1.27)
	Flexible	605.4 (7.86)	32459.0 (4.41)	- 0.447 (2.86)	- 3063.0 (3.09)
	Fixed	-1618.0 (3.15)	-14440.0 (0.38)	0.307 (0.67)	-12631.0 (0.82)
4. CS		FP	USS	PCMS	GNP
	Whole	- 40.34 (4.49)	0.862 (7.33)	- 0.0253 (2.14)	0.00003 (2.78)
	Flexible	- 54.35 (5.25)	0.646 (5.52)	- 0.0125 (0.88)	0.00014 (7.20)
	Fixed	- 49.04 (4.32)	1.013 (6.05)	- 0.0284 (2.70)	0.00001 (0.87)

(SEE THE FOLLOWING PAGE FOR DEFINITIONS OF VARIABLES)

TABLE 2 (continued)

[a]Seasonal dummies were included in each equation and were often significant; they are not reported here, however. Likewise, constant terms are omitted.

Brief definitions of the variables are given below; details of their construction appear in *Capital Transfers* (or in work therein cited by Lawrence H. Officer).

ATM — Average term to maturity, Government of Canada long-term debt.

BMTUS — Canada's net imports from the United States.

CL — Interest rate on long-term Government of Canada bond bearing coupon rate 2¾ percent, maturing 6/15/67-68, to 1968; subsequently, bond bearing rate 3½ percent, maturing 5/1/70. (Choice of bond issues farther from maturity would have been preferable, but was subject to practical difficulties.)

CRS — Quarterly change in spot exchange rate.

CS — Tender rate on three-month Canadian Treasury bills.

DS — Differential between Canadian and U.S. short-term interest rates.

FP — Forward premium (discount) on the Canadian dollar.

GNP — Gross national expenditure, excluding military pay.

NNS — Net new issues of long-term marketable securities.

NNSC — Net new long-term issues retained in Canadian portfolios.

PC — Net inflow of portfolio capital via net new issues and retirements of Canadian and foreign securities.

PCMS — Percentage change in money supply.

RS — Spot exchange rate (price of Canadian dollar).

RS_{-1} — Spot exchange rate lagged one quarter.

STK — Net inflow of short-term capital to Canada.

USL — Interest rate on long-term U.S. government bond bearing coupon rate 2½ percent, maturing 12/15/67-72, to 1967; subsequently, bond bearing coupon rate 3¼ percent, maturing 6/15/78-83.

USS — Interest rate on three-month U.S. Treasury bills.

apparently because the issuers played short-run swings in timing their trips to the capital market. Although the stabilizing character of capital flows with a flexible rate has been a matter of dispute among economists, consensus prevails on the view that they would be either indifferent or hostile to stability when the rate is pegged, because as the exchange rate approaches its support limits and expectation of a change in the peg becomes general, the speculators enjoy a one-way option because they cannot be disciplined by the authorities. On the other hand, a pegged rate which is floating within its support points, without any consensus of expectations on a change in the peg, might well fluctuate – and affect short-term capital flows – in the same way as a freely fluctuating rate. Hence the relation between short-term capital flows and the exchange rate is not formally predictable for the fixed-rate period, although by noting the absence of serious expectations of a Canadian devaluation between 1963 and 1969 we can build a presumption for a stabilizing role. Perhaps a purer test for speculative pressures on a fixed exchange rate, as suggested by Miller and Whitman, is the reaction of capital flows to recent changes in official reserves.[10] A recently reported rise in Canadian official reserves should increase the rate of return expected by Canadian issuers of foreign currency (especially U.S. dollar) obligations, and hence cause a speculative inflow of funds.

We explored the statistical influence of these expectational factors on both the long-term and short-term net flow of capital to Canada during 1963-69. Long-term capital flows continued to respond in a stabilizing way to swings in the exchange rate, but not to a statistically significant degree. Furthermore, long-term borrowings did not appear to be influenced by recent changes in official reserves. This is as we should expect: Canadian long-term debtors could profit greatly from a devaluation of the U.S. dollar, but changes in Canadian reserves probably fail to capture the factors governing their estimate of the likelihood of this event. The story is more interesting for short-term capital flows. We had found that during the flexible-rate period short-term capital flows were closely related to the change in the exchange rate from the preceding to the current quarter, implying that speculators bet that swings from quarter to quarter would tend to be reversed subsequently. For the fixed-rate period this form of the expectational variable would not be

[10] Norman C. Miller and Marina V. N. Whitman, "A Mean-Variance Analysis of United States Long-Term Portfolio Foreign Investment", *Quarterly Journal of Economics, 84* (May, 1970), 175-196.

appropriate; one instead would expect capital flows to be influenced by the extent of the departure of the exchange rate from its official peg. As we suggested above, the weight of market opinion did not appear to expect an exchange-rate change at any time during 1963-69, although direct evidence suggests significant nervousness about possible relative reductions in the external value of the Canadian dollar (whether due to Canadian or foreign action) on several occasions, notably in 1963, 1965 and 1968; and toward the end of the period there was some expectation of a revaluation by Canada. In any case, the average behavior of short-term capital flows continued to be stabilizing, in response to departures of the spot exchange rate from its pegged value.[11] On the other hand, the statistical evidence also suggests that short-term flows were weakly sensitive to changes in Canadian official reserves in a way that was potentially destabilizing. An increase in official reserves in the previous quarter tended, after other forces were allowed for, to be associated with an increased inflow of short-term capital during the current quarter. Furthermore, this relation grew slightly stronger when we adjusted the series of reserves changes for actions taken by the Canadian authorities in 1966-67, under U.S. prodding, to conceal the increase through purchases of IBRD bonds.[12] The effect on short-term flows of the movement of Canadian official reserves thus does seem to reflect the destabilizing potential of expectations under a fixed exchange rate.

Another capital market affected by the switch to the fixed rate was that for covered interest arbitrage, via the effect of pegging the rate on the supply of forward cover. For a period when an official peg is not expected to change, one would expect to find the supply of forward cover more elastic than for the same currency in a period when it fluctuates freely. This hypothesis requires that the extra risk of speculation in supplying forward cover translate itself into a shrinkage in the response of the supply of cover to an increase in the price (i.e., premium over the going spot rate). We found that the regression coefficient relating the flow of short-term capital to the

[11]Because most findings of our analysis of 1963-69 were negative, we chose not to clutter the text with regression equations; the preceding and other positive findings are documented in an appendix. See equation A.5. The statistical significance of this relation, in some formulations, falls a bit below the 5 percent level. Note the discussion of specification problems with this relation in *Capital Transfers,* pp. 74-76.

[12]See equation A.6. This relation was usually significant at levels between 5 percent and 10 percent.

forward premium on the Canadian dollar (or the cost of forward cover – they differ only trivially) approximately tripled in absolute value between the flexible-rate and fixed-rate periods.[13] The implied flattening of the supply schedule for cover can be counted a gain from the removal of uncertainty under the fixed rate.

Of course, the alleged advantages of a fixed rate in reducing the uncertainty of international capital transactions ought to reveal themselves in the capital markets directly. A rigorous formal test cannot be performed with the data at hand, but once again the elasticity of capital flows to interest-rate changes provides a weak test of decreased uncertainty. If fixing the exchange rate decreases the risk inherent in international lending, the elasticities of capital flows in response to interest-rate changes (or, at least, the absolute values of these responses rates) should increase in the fixed-rate period over the flexible-rate period. (Of course, the growth in the average level of capital formation [in current prices] and in the values of North American portfolios would tend to produce the same result.) On the other hand, supporters of flexible rates have often pointed out that governments regularly interfere with private capital flows in order to defend their exchange rates – and thus destroy the very certainty for which they justify pegging the rate in the first place. The argument for fixed exchange rates, to reduce the uncertainty of international transactions and maximize the worth of money as a store of value and unit of account, really applies to a single-currency area against a world of independent currencies, and not to a comparison of the adjustable peg with the flexible exchange rate. The theoretical predictions thus conflict on the effects of the fixed rate on uncertainty. There seems little doubt about the empirical results, however. The elasticity of portfolio capital flows to changes in the U.S. and Canadian long-term rates for the flexible-rate period fell in the range of 6.0 to 10.6. The corresponding calculations for the fixed-rate period give elasticities of only about 1.0 to 3.0.[14] Furthermore, the statistical reliability of the relation was greatly reduced. There can be little doubt, if one accepts these calculations, that the degree of integration in North American capital

[13]Albeit with some decline in the statistical significance of the relation. The difference between the flexible-period and fixed-period coefficients would not be statistically significant. See equations A.4, A.5, and A.6.

[14]Cf. *Capital Transfers,* Table 2.2, and equations A.1 and A.2 below. The meaning of an elasticity in our flow formulation involves some difficulties, but these should not affect comparisons of its value between the fixed-rate and flexible-rate periods.

markets was reduced in the years after Canada reverted to a fixed exchange rate. A glance beyond the statistics at the history of the period suggests that this reduced integration was due to national policies of interference with international capital flows in the name of defending the system of fixed exchange rates. Let us consider that interference directly.

Policy Choices With a Fixed Exchange Rate

At least three times in the 1960s, Canada's international capital markets were specifically affected by measures taken by Canada or the United States to defend the going set of exchange parities: (1) during the second half of 1963, the market for portfolio capital was clouded by the proposed Interest Equalization Tax, which would tax (retroactive to the date of its proposal) U.S. buyers of foreign bonds, including Canadian if the proposed exemption of Canada were not confirmed; (2) in the second half of 1964, the Interest Equalization Tax went into effect but with Canada excepted, and some catch-up of Canadian borrowing in the U.S. market was noted; (3) at the beginning of 1968, the President of the United States announced a general tightening of controls on both long- and short-term capital flows, with Canada's exemption from these (in March 1968) contingent upon certain obligations being taken by the Canadian authorities to limit transit trade to Europe in short-term capital and to convert Canada's reserves accumulation to long-term form. Quite apart from these measures, and many others of definite but less marked significance, the whole period was subject to an increasing use of suasion and "jawbone" policies by both governments, which surely did not make tranquil the lives of international borrowers and lenders.

We sought to use various statistical tools to shed light on the incidence of these restrictions. The most direct was to allow for these periods of special interference by the use of dummy variables. The proposal of the Interest Equalization Tax apparently lowered the inflow of portfolio capital to Canada by something over $100 million per quarter in the latter half of 1963, and Canada's official exemption raised the inflow in the latter half of 1964 by a slightly smaller amount. Portfolio borrowing abroad faced increased uncertainty about official interferences from mid-1963 on to 1969, and the sensitivity of Canadian borrowings to the price of long-term funds in the United States appeared to drop by roughly one-tenth

from its previous (1952-61) level.[15] Flows of short-term capital similarly suffered. In the first quarter of 1968, the tightened U.S. balance-of-payments restrictions (and other factors) apparently lowered the net flow of short-term capital to Canada by nearly $500 million. The sensitivity of short-term capital flows to the differential between Canadian and U.S. interest rates appears to have been greatly reduced, when we compare either 1968-69 or 1963-69 to the earlier period.[16] Less firm evidence suggests that the Canadian short-term interest rate was elevated by the same factors which restricted international capital flows.[17]

Another indication of the extent of policy-makers' interference in North American capital markets may lie in the fact that, while capital flows became less regular in their sensitivity to Canadian and U.S. interest rates, the correlation between the two countries' interest rates – especially short-term – was even higher in the 1960s than in the 1950s. For the same reasons that various forms of controls and suasion were being wielded against capital flows, Canadian monetary authorities may have felt increasingly constrained to keep their domestic interest rates pegged to those in the United States. This usage is consistent with a widely accepted theoretical model of policy choices, which suggests that under a fixed exchange rate monetary policy must, broadly speaking, be assigned to deal with external conditions.[18]

[15]See equation A.2. The multiplicative shift parameter used to estimate this change was significant at the 10 percent but not the 5 percent level. We tested for the corresponding effects of these disturbances on the Canadian long-term interest rate, but the effort was frustrated by more fundamental difficulties in explaining that rate after 1963. See note 9.

[16]It is probably impossible, however, to unscramble the effect of these controls from the effect of the rise of the Euro-dollar market as an alternative outlet for U.S. short-term funds; this is considered in the next section. Inspection of Canadian statistics suggests that the irregularity arises mostly from the unrecorded flows, not from recorded transactions in bank balances and Treasury bills.

[17]We also tried to test the effects of increasing uncertainties and disruptions during the 1960s by employing the Chow test on regressions run for the subperiods 1963-65 and 1966-69. This was not generally successful because of a lack of meaningful results for the subperiods separately; in some formulations, however, we secured significant results for 1963-65 but not 1966-69.

[18]An econometric problem lies behind the inference of the decreased equilibrating role of capital flows, drawn in this paragraph. The increasingly close relation between U.S. and Canadian interest rates worsens the problem of collinearity for those regression equations in which the rates appear separately. However, the inference is also supported by equations in which they are entered only as a differential. See *Capital Transfers*, pp. 116-118.

Increased Multilateral Capital Mobility

Although the fixed exchange rate and policies associated with it influenced net capital flows to Canada during the 1960s, another influence surely was the expansion of substantial international capital markets to include the major O.E.C.D. countries, after the return to convertibility in 1958. As other countries became likely destinations for capital outflows from the United States, Canadian borrowers lost something of an exclusive market position which they had previously enjoyed. If the O.E.C.D. countries are linked by a general network of interest-sensitive capital flows,[19] net flows to any one country become contingent on disturbances occurring anywhere in the system. The net flow of capital to Canada comes to depend on the Canadian interest rate and a vector of foreign rates – for which the U.S. rate may prove an inadequate proxy. The multilateral character of capital flows is apparent from Canada's balance-of-payments accounts. In 1968 and 1969 more than one-third of Canada's net transactions in long-term securities (including trade in outstanding securities) were with countries other than the United States, whereas this fraction had been quite small before. The data on short-term flows reveal not only large net outflows in the late 1960s, but also that these net flows reflect a balance of large gross flows (e.g., foreign acquisition of short-term Canadian assets, Canadian acquisition of Euro-dollar assets and U.S. certificates of deposit). For these reasons alone, we would expect a reduction in the 1960s in the explanatory power of the variables included in equations such as those presented in Table 2. Yet an analysis which subdivided the categories of capital flows finely might show high and increasing sensitivities to the appropriate yield variables, with these subsegments of the capital market remaining somewhat fragmented as a result of the forces discussed above.

Time did not permit an exploration of these segmented submarkets. We did, however, try to test the effect of this diversification and multilateral expansion of international capital markets by simple modifications of our earlier equations. Specifically, we added variables designed to capture the extent of competition in U.S. capital markets from other foreign borrowers. Into our equation explaining the net flow of portfolio capital during 1963-69 we inserted a

[19] For recent evidence, see W. H. Branson and R. D. Hill, Jr., "Capital Movements Among Major O.E.C.D. Countries: Some Preliminary Results", *Journal of Finance, 26* (May, 1971), 269-286.

measure of U.S. transactions in foreign securities other than Canadian. The relation failed to confirm this and, instead, weakly supported the implication that a portion (one-fifth to one-third) of the typical placement of Canadian net issues on the U.S. market is taken by non-U.S. lenders.[20] The Interest Equalization Tax hopelessly obscures the relation, in any case. Net flows to Canada of short-term funds must have been influenced by the rise of many new institutional forms, such as certificates of deposit in U.S. banks and placements in the Euro-dollar market. In the flexible-rate period we found it easier to explain net short-term flows to Canada as an aggregate than by individual types of instruments. The fragmentation of capital markets in the 1960s, however, due to the combined effect of rapid institutional change and spreading governmental restrictions, strongly suggests that individual types of short-term flows might behave regularly even if the aggregate did not. We experimented only with a single subdivision of net short-term flows: putting aside trade in outstanding long-term securities, we divided the remaining flows into net transactions in Canadian short-term instruments and net transactions in foreign short-term instruments (including in the latter fluctuations in unrecorded transactions). We could explain their movements only slightly better than those of the aggregate net flow: trade in Canadian instruments appears sensitive to the Euro-dollar interest rate and the cost of forward cover, and the perverse response to the Canada-U.S. short-term interest differential apparent for the aggregate flow disappears; transactions in foreign instruments could not be explained (even by the Euro-dollar rate), except for reflecting the tendency of Canadian long-term borrowers to keep a substantial portion of the proceeds temporarily in foreign funds. Probably short-term capital flows in the 1960s could be explained with greater success by further disaggregation. But the very failure of the aggregate to behave regularly, as it did in the 1950s, suggests some fragmentation of short-term capital markets.

Evidence of Adjustment Processes Over Time

In our earlier study we found that past levels of interest rates had no statistically significant influence on current flows of capital. Some

[20] This relation is often suggested in commentary in official Canadian balance-of-payments publications. The sign and magnitude of this coefficient remained stable as we varied the specifications of the equation, but its degree of significance did not rise above 25 percent. See equation A.3.

evidence was, however, consistent with a lagged influence of long-term interest rates on flows of new and outstanding long-term securities.[21] Since the policy system of the fixed rate appears overall to have disintegrated North American capital markets, we might wonder whether it has not also shifted the timing of responses of capital flows to differences in their yields. A plausible reaction of lenders and borrowers to increased uncertainty of yields is to wait longer, after any given shift has occurred, to test its persistence before acting upon it. Hence we might expect more delay in responses under the fixed rate. We found this confirmed when we checked the determinants of portfolio capital flows over the whole period 1952-69. Unlike 1952-61, portfolio flows appear to be explained somewhat more accurately by interest rates in the previous quarter than by unlagged rates.[22]

3. Implications of Experience with Fixed Rates

The main conclusions indicated by our tentative and exploratory statistical analysis of the fixed-rate period can be summarized as follows:

a) There was a significant shift in the fixed-rate period of the underlying relations which we found to determine capital flows into Canada during the period of the flexible rate (1952-61).

b) Although short-term capital flows tended to reinforce the stability of the exchange rate during the fixed-rate period, there is some evidence of their potentially destabilizing tendencies in their response to recently reported changes in Canada's official reserves. The former stabilizing tendency of portfolio flows became invisible.

c) Adoption of a fixed rate reduced the degree of capital-market integration in North America, as reflected by the elasticity of response in capital flows to interest-rate changes. This implies that

[21] See *Capital Transfers,* Table 6.4, p. 254.

[22] See equations A.1, A.2. The occurrence of adjustments over time is one of the issues raised by the portfolio-balance approach to capital movements. It has been frequently confirmed in studies employing a distributed-lag formulation. On statistical grounds, our strong preference is for testing the influence of lagged predetermined variables directly, because 1) the autocorrelation usually present in economic time-series biases the test toward acceptance of the conventional distributed-lag formulation, and 2) theoretical reasoning usually suggests that the response pattern of capital flows will not be the same for disturbances to all the variables determining them.

the adoption of the fixed rate increased uncertainty about the expected yields of international capital transactions — these yield alternatives being compounded of interest rates, exchange rate, and various rationing constraints. The result contrasts sharply to the claim sometimes made that fixed rates decrease the risk inherent in international lending.

d) Part of this increased uncertainty may have stemmed from the effect on capital and currency markets of fixing the exchange rate and thus inducing the occasional speculative flurry. Most of it, however, proximately resulted from the policies chosen by the United States and Canada to manage their fixed rates, involving the liberal use of direct interference with capital markets.

e) Clouding our statistical conclusions about the effect of Canada's fixed rate on its linkages with world capital markets is the rise during the 1960s of an increasingly complex multinational capital market, allowing more diverse opportunities for Canadian lenders and providing more competition for Canadian borrowers. These institutional changes and the broadened range of transactions undertaken by Canadian lenders surely improved capital-market efficiency in some respects, but also reduced the predictability of responses to macroeconomic policy.

f) The tentative character and uncertain results of our statistical analysis leave us unwilling to venture firm estimates of the *actual* leverages of Canada's short-term policy instruments under the fixed rate for comparison with the hypothetical ones estimated in our previous study. This is especially because the total observed changes in the interest sensitivities of long-term and short-term capital flows are probably in opposite directions: down for the former, up for the latter. Monetary policy's leverage on Canada's employment level was possibly even weaker in fact than was indicated by our earlier estimate (Table 1, line 3b): it was certainly decreased by the increased elasticity of forward cover (a relatively clear change not allowed for in our simulated estimate); and the higher elasticity of short-term flows that has probably resulted from the maturing of the Eurodollar market may have decreased it, although our computations do not confirm this. Whether the leverage of fiscal policy was strengthened is less certain, because the financing of the resultant change in the government debt could be allowed to affect the long and short ends of the capital market in varying proportions. Given the apparent disruption of long-term markets during the 1960s, changing fiscal policy and financing at the long end would probably entail reactions of GNP smaller than we estimated before (Table 1,

lines 1b and 2b). Short financing, which was in fact employed in the latter 1960s, might yield increased leverages. The overriding conclusion of our statistical analysis, however, is that the uncertainty surrounding the estimation of policy leverages was greater in the fixed-rate period than before.

These findings suggest that, by comparison with flexible rates, fixed exchange rates are not favourable to stability and certainty in international capital markets – at least for countries with Canada's capabilities for policy management in the economic context of the 1960s. Although fixing the exchange rate is not without its statistically demonstrable advantages (e.g., increasing the elasticity of supply of forward cover), the evidence points strongly, if not decisively, to a reduction in both the sensitivity and reliability of the response of capital flows to the price of loanable funds. This change, in turn, seems hardly consistent with the virtues of financial integration which have been alleged to flow from fixed exchange rates.

The negating of these virtues and the disintegration of capital markets has clearly resulted from the efforts of both Canada and other countries – largely the United States – to maintain some sort of external balance without seriously diverting their standard instruments of internal policy to this end. The reference above to Canada's policy capabilities should not be taken to imply that Canada coped especially badly with the problems of managing a fixed rate, once it was chosen in 1962. On the contrary, most of the policy interference with capital markets can be traced directly or indirectly to policies initiated by the United States. The major point emerging from this experience, especially when we note as well the expanding multilateral network of capital flows and its proliferation of possible sources of disturbance, is that effective policy formation – certainly any "fine tuning" of external balance – becomes impossible in practice when the diversity and swiftness of external disturbances increase so much. When the incidence of disturbances is so great, and the predictability of the economic system's responses to policy actions so poor, good policy marksmanship in the political setting of Western democracies becomes in practice impossible. J.E. Meade's argument for flexible exchange rates as a means of conserving scarce policy instruments appears to be as applicable now as ever.

Several interesting paradoxes mark the 1960s. The first is that at the same time that capital market integration in North America was probably diminishing, capital market integration between North America and the rest of the world was increasing considerably, especially integration in short-term markets between North America

and Europe. From an analytical standpoint this means that partial analysis focusing on Canada-U.S. relationships alone is subject to the important qualification that the broader structural environment in which adjustments between the U.S. and Canadian economies occurred was undergoing significant structural shifts. From a policy viewpoint, this paradox implies that the environment in which it was necessary to execute Canadian economic policy during the 1960s was subject to greater uncertainty.

A second paradox arose out of the fragmentation of the international capital market through a series of administrative measures emanating mainly from the United States. To the extent that they were effective, these measures discriminated against some types of capital flows as compared to others. Ambiguity about the application of these measures, their possible extension and their effects added considerably to the uncertainty surrounding both private decisions and public policy during this period. This was further enhanced by the potentially destabilizing influence of short-term capital flows on shakily pegged exchange rates. A paradox lies in the contrast between the increasing perfection of short-term capital markets for certain types of instruments (e.g., Euro-dollars) and the increasing imperfections and transactions costs in the total capital market imposed by governmental controls and suasions, which attempted to fence transactors off from particular segments of the international capital market and to keep funds from leaking from one (increasingly perfect) subsegment into another.

The third paradox is that just as these major developments in the international capital market began to evolve in the early 1960s, Canada adopted a fixed exchange rate, thereby further enhancing the uncertainty in the environment in which Canadian policy was framed and, in addition, impairing the ability of the economy to adjust easily and automatically to changing and uncertain external circumstances. In addition, adoption of a fixed rate automatically precluded the use of the exchange rate as an instrument of policy to defend the economy against external perturbations.

In May, 1970 Canada again returned to a flexible rate. Though flexible, the rate has not been left to respond freely to market demands and supplies of foreign exchange as is evident from the significant increase in official reserves during the past year. There has been occasional official intervention to dampen the degree of ex-

change rate appreciation.[23] From the standpoint of the optimal policy mix, one would have expected the change to a flexible rate to imply a major concurrent change in stabilization policy strategy to take account of the change in the leverages in the various instruments of policy because of exchange rate adjustments, as outlined above. During the latter part of the 1960s when Canada was on a fixed rate, stabilization policy relied primarily on monetary policy, aided and abetted after mid-1969 by the moral suasion variant of incomes policy.[24] Fiscal policy, though modified somewhat, remained fairly inactive in the face of changing economic circumstances.[25] Since May 1970 and adoption of a semi-free exchange rate, the money supply has continued to increase rapidly.[26] Fiscal policy remained inert until June 1971 when tax reductions were introduced as part of a series of tax reforms. Thus, we have a fourth paradox: there is little evidence of a change in stabilization policy strategy to take advantage of the shifts in policy leverage that occurred because of the adoption of a flexible exchange rate. Executing such a shift, however, may have been deterred by the adoption of a semi-free exchange rate. The flexibility of the rate may now be more nominal than real; so far, at least, it appears to have amounted to little more than a revaluation of the rate without reaping the advantages of either a fixed or a fully free rate. Hence added uncertainty surrounds the leverage of policy instruments (and their absolute values may differ for changes in different directions).

[23]From May 31, 1970 to July 31, 1971, Canada's total official gold and convertible foreign currency reserves, adjusted for changes in forward commitments, increased by about 8 percent.

[24]From the beginning of 1968 to the beginning of 1970; the percentage change in the money supply, on a quarterly basis, varied within a range of 18.4 to *minus* 2.7 percent (at annual rates).

[25]The 1968-69 budget, for example, included a 3 percent temporary income tax surtax on individuals and corporations. The 1970-71 budget did not include any tax changes.

[26]From the first quarter 1970 to the second quarter 1971, the percentage change in the money supply on a quarterly basis varied within a range of 7.6 and 20 percent (at annual rates).

APPENDIX

Here we present selected results of our statistical analysis of the 1963-69 period and of the fixed and flexible-rate periods together. The following regression equations illustrate the bases for the positive conclusions about the fixed-rate period set forth in the second section of this paper. Constant terms are omitted, and seasonal dummies are reproduced only when significant at the 10 percent level or more. Symbols are as defined in Table 2; the definitions of additional variables are given as they appear. For test statistics we show the coefficient of determination, corrected for degrees of freedom, and the Durbin-Watson statistic.

We consider first the determinants of net flows of portfolio capital to Canada (excluding throughout trade in outstanding securities, which for the flexible-rate period we found should be treated as a short-term flow). Either for the whole period (1952I - 1961II and 1963I - 1969IV) or for the fixed-rate period (1963I - 1969IV), lagging the interest-rate variables by one quarter improves the t values of the coefficients without significantly changing their magnitudes (in most specifications). For the whole period:

$$PC = 426\ CL_{-1} - 435\ USL_{-1} - 288\ CTS + 0.235\ NNS + 56\ Q1$$

(2.69) (2.29) (3.24) (4.88) (1.75)

RSQC = 0.643
DW = 1.559 (A.1)

The reduced sensitivity of capital flows to interest rates was tested by means of multiplicative dummy variables. Since our analysis concentrates on Canadian borrowers, the reduced sensitivity would presumably be revealed in their reactions to changes in the U.S. long-term interest rate. Setting the dummy variable D = 1 for 1963III through 1969IV and at zero before then, we secure for 1952-69:

$$PC = 430\ CL - 350\ USL + 84\ D.USL - 221\ CTS + 0.043\ NNSC + 87\ Q1$$

(1.99) (1.19) (1.73) (2.19) (0.64) (2.35)

RSQC = 0.501
DW = 1.835 (A.2)

We tested for the effects of increased competition in the United States for Canadian long-term borrowers by adding a measure of U.S. transactions in foreign long-term securities other than Canadian, taken from the U.S. balance-of-payments statistics. This variable (USFS, defined so that an outflow from the United States is negative) took a sign inconsistent with the hypothesis and consistent instead with the hypothesis that a portion of Canadian new issues in the United States are purchased by non-U.S. lenders. (It also destabilized the magnitudes of other coefficients.) For 1963-69:

$$PC = 939\ CL_{-1} - 1019\ USL_{-1} - 0.273\ USFS - 958\ CTS + 0.019\ NNSC$$

(2.73) (2.44) (1.09) (2.37) (0.16)

RSQC = 0.457
DW = 2.088 (A.3)

The increased elasticity of the speculative supply of forward cover can be shown by the decreased sensitivity (1963-69) of the forward premium on the Canadian dollar to the determinants of the demand for forward cover (cf. *Capital Transfers,* p. 135, eq. 3.25):

$$FP = -0.0106\ DS + 0.00003\ BMTUS + 0.0000002\ GNP - 0.00053\ PCMS - 0.0011\ Q1$$

(4.27) (0.98) (2.20) (3.45) (1.91)

RSQC = 0.431
DW = 1.383 (A.4)

The same conclusion can be drawn from the increased size of the regression coefficient of short-term capital flows on FP in equations A.5 and A.6.

We tested the effects of speculation regarding the exchange rate on short-term capital flows during 1963-69 by means of two variables. The deviation of the spot exchange rate from its official par value (DRSP) appears in equation A.5, where it is significant at the 10 percent level and implies that speculative flows were on balance stabilizing. In equation A.6 we entered changes in official reserves, lagged one quarter, and adjusted for purchases of IBRD bonds under-

taken by the Canadian government in 1966-67 to conceal the increase in its reserves (ORM_{-1}). This variable worked slightly better than the unadjusted series for reserves changes, and both suggest that the response of short-term flows to reported (last-quarter) changes in Canada's official reserves was destabilizing. Both equations also include the differential between the Canadian short-term interest rate and the Euro-dollar interest rate (DRS); it is always correctly signed and usually significant, as in equation A.6.

$$STK = -1250\,DS + 77866\,FP - 0.215\,BMTUS + 610\,DRS - 27210\,DRSP$$

(2.49) (1.38) (0.48) (1.92) (1.79)

RSQC = 0.640
DW = 2.436 (A.5)

$$STK = -1063\,DS + 112243\,FP - 0.404\,BMTUS + 786\,DRS + 0.390\,ORM_{-1} - 185\,Q1 - 413\,Q3$$

(2.22) (2.16) (0.89) (2.61) (1.76) (1.79) (4.38)

RSQC = 0.650
DW = 2.275 (A.6)

Note the significant and perverse relation between STK and the differential between Canadian and U.S. short-term interest rates. The differential on Treasury bill rates widened in favor of Canada from 1967 on, but Canada experienced a substantial net short-term outflow during 1967-69.

It seems clear that different interest rates and types of short-term capital flows did not move together in the 1960s, as they did in the 1950s. Time allowed us only one test of the effects of disaggregating STK. We formed a series (SKC) representing recorded transactions in Canadian short-term instruments – Treasury bills, bank deposits, commercial paper – and another (SKF) aggregating recorded transactions in foreign instruments (mainly bank deposits) and the balancing item in the Canadian payments statistics, which we thought might reflect Canadian acquisitions of foreign short-term

instruments. SKC was regressed in equation A.7 on variables which have been defined previously. The regression of SKF (A.8) includes unlagged portfolio capital flows (PC), to test the hypothesis (confirmed in our earlier work) that Canadian long-term borrowers in the short term leave a significant portion of their proceeds in foreign currency.

$$SKC = -174\,DS + 357\,DRS + 60517\,FP + 0.017\,GNP - 0.038\,BMTUS - 0.055\,ORM_{-1} - 107\,Q2 - 181\,Q3$$

(0.82) (1.68) (2.32) (1.68) (0.22) (0.66) (2.54) (4.86)

RSQC = 0.483
DW = 2.005 (A.7)

$$SKF = 283\,DRS + 44915\,FP - 0.829\,PC - 15110\,DRSP_{-1}$$

(0.73) (0.72) (2.52) (0.79)

RSQC = 0.375
DW = 1.669 (A.8)

DISCUSSION

RONALD W. JONES

Professors Caves and Reuber have produced a first-rate paper on Canadian experience with international capital markets during the 1952-69 period. No doubt Bill Hood, who was originally scheduled to discuss the paper, could provide interesting detailed remarks on the Canadian scene. Having been hastily drafted in his stead, I must rely on one of the first principles of international trade theory, that of comparative advantage. I shall confine my remarks to the points of interest to a theorist.

The greater part of the paper is devoted to a summary statement of the research on capital movements during the years in which Canada's exchange rate was allowed to float that is included in their recent book, *Capital Transfers and Economic Policy: Canada, 1951-62.* Clearly one question they have examined in detail has to do with the classical transfer problem. This is indeed appropriate given Jacob Viner's famous book on transfer in Canada some decades ago. Standard theory suggests that when country A makes a transfer to country B, there must, for equilibrium to be restored, ensue a corresponding deficit in B's current account matched by a surplus in A's. The real question is whether the income and spending flows implicit in the transfer suffice by themselves to create the required surplus or deficit or whether further changes are required in the terms of trade or the exchange rate. There is an "orthodox" point of view which maintains that the transferor (country A) will "probably" suffer a depreciation in its exchange rate or a worsening of its terms of trade. I have recently defended the opposite, "anti-orthodox" view of the "probable" changes in the terms of trade. It is therefore of interest to note that in the Caves-Reuber study transfers

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to Canada seem to have been accomplished with only insignificant changes in the exchange rate.

However, two points are worth noting. First, the study of lead-lag patterns suggests that changes in the balance of trade tended to *precede* changes in long-term capital flows, which departs from the standard theoretical model. The second point has to do with the simple underlying model of transfer wherein it is demand changes at home and abroad that dictate the required adjustment. To the extent that direct foreign investment is involved, the current account would presumably reflect the consequent changes in production patterns in Canada, albeit with a lag.

One of the more intricate parts of trade theory concerns the effects of various policy levers on levels of economic activity. What makes this subject somewhat complex is the number of comparisons that are being made: monetary vs. fiscal policy, in a system of fixed rates vs. flexible rates, with vs. without a high degree of international capital mobility. In keeping all these distinctions straight it will be useful to have the Caves-Reuber numerical estimates for Canada of how policy is affected by the assumption made about exchange rates and capital mobility.

Perhaps the basic underlying question that runs throughout the paper is what evidence can this period in Canadian history contribute to the standard comparison between fixed and fluctuating exchange rates. Of course the Canadian case, like most others, involves a comparison of floating rates with a system of the adjustable peg. Commercial transactors, investors, and speculators could never be certain that during the fixed rate period the exchange rate would have to remain fixed at the old rate. The evidence cited by Caves and Reuber as to the role of capital movements is impressive, especially as it seems to point in a direction opposite to traditional beliefs. Specifically, during the period of floating rates capital movements displayed a high degree of responsiveness to exchange rate variations, in a stabilizing direction. There was revealed to be a presumed expectation that any change in the exchange rate would be followed by at least a partial movement back to some kind of "floating norm." Also noted was the great sensitivity of capital flows to interest rate differentials under the flexible rate system. It was in the 1950s that Canadian and American capital markets seemed most integrated. The supposed advantage of fixed rates, in removing a large degree of uncertainty in the operation of international capital markets, is quite properly contrasted in the Caves-Reuber system with the fact that in order to maintain a fixed exchange rate it is

often necessary for the authorities (in Canada or, more frequently, in the United States) to intervene directly in capital markets to support the fixed rate of exchange.

To conclude my remarks, let me carry this kind of argument one step further – into the current account. It is fashionable to argue, in the defense of fixed rates, that it serves to minimize the uncertainty which ordinary exporters face in their commercial dealings. This is, in my view, too facile a conclusion. It tends to ignore the role which a fluctuating exchange rate can serve as a "shock-absorber" to changes in foreign prices of commodities. This is especially important in those cases in which pressures on the exchange rate stem primarily from differential rates of inflation at home and abroad. Consider the case of an importer at home, concerned over future domestic prices of the commodity he is purchasing abroad. Suppose the general rate of inflation in the foreign country exceeds the home rate and that, on this account, there is pressure for the home country's exchange rate to appreciate. If it does, the domestic price of imports remains more stable at home than in the alternative case in which authorities intervene to hold the exchange rate constant despite the differential impact of inflation.

DISCUSSION

ROBERT A. MUNDELL

The issues that seemed relevant ten years ago are still alive today but require adaptation to the different pace of the world of the 1970s. We can look back now on the Canadian experience since 1945 and see the two and a half decades in much better perspective than we could five or ten years ago. Rather than address myself to particular arguments raised by the analysis of Professors Caves and Reuber, I want to draw attention to those particular issues.

Canadian Exchange Rate Policy

Canada's exchange rate policy has been dictated in large part by events outside her own economy. Canada revalued in 1946, and devalued in 1949 when the British devalued. It let the rate float up during the Korean War boom. A flexible rate followed with a high value of the dollar until it was talked down in 1962, and the rate fixed at 92.5¢ until May, 1970. Then we went back to a flexible rate and the dollar was allowed to float upward again. Now, giving the central banker a little credit for some common sense, we have to ask why these big changes in the system occurred. I think that one factor has dominated the choice of exchange systems. It has not been the pleadings of the academic economist nor the theory of exchange rates. Exchange rate policy was made thousands of years before the theory was developed, at least in mathematical or econometric form. Basically, the rate system chosen has been determined by the pragmatic facts of the markets and the expectations of the economy at the particular time.

After the War, presumably, tremendous inflationary pressures were developing, and Canada evolved the idea of appreciation as a

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defense against foreign or world (mainly U.S.) inflation. International inflation was a fact that could be avoided only by revaluation. Fear of unemployment in 1949 after the British devalued was an important factor that determined devaluation then; why import the U.S. recession? During the U.S. recovery in '50 and the beginning of the Korean War, inflationary developments appeared. The basic choice was either inflation or appreciation, and Canada opted for appreciation. The whole of the Bretton Woods world has been a grand dollar area since the war in the sense that the U.S. dollar was the intervention or key currency. Inside that area was the sterling area, the franc area, and the escudo area. Because the United States produced the bulk of the world's output, its currency was the dominant world currency, and because of the closeness of economic relations between Canada and the United States, Canadian exchange rate policy has been determined by the U.S. business fluctuations.

Unemployment and Inflation

Between 1958 and 1962, unemployment was the major important economic issue both in the United States and in Canada. Could Canada avoid imported depression by letting the rate go down? The Finance Minister talked the rate down, and then fixed it at 92½ cents. In the 1960s doubts about correct policy developed. If Canada had foreseen the world inflation of 1965-1970, she could have spared herself by letting the rate float upward. However, Canada held the rate and thus accepted the world inflation until 1970. By that time prospects for stopping inflation internationally did not appear any better than in the preceding years; the fight against inflation had been lost and new inflationary expectations had set in. It was then that Canada decided to cut loose from the mainstream of developments in the world price level by letting the rate again float upward. In hindsight, that policy was very sensible. Canada voluntarily did in 1970 what the other major countries were forced to do a year and a half later. She should have done it earlier.

Effectiveness of the Policy

This, I feel, is the common sense of Canada's policy. I do not think one can ignore the price level developments I have just mentioned. The exchange rate system has really been very important: first, for the integration of capital markets in 1960, and

then for the whole question of the stabilization of the U.S. or the Canadian economy. In the 1950s, the argument for flexible exchange rates was based fundamentally upon the need for immunizing oneself against the foreign price cycles. But throughout the 1950s, Canada's unemployment cycle, by contrast, was more or less the same as that of the U.S., if anything, a little worse. Thus in the 1950s, employment fluctuations in Canada were not immunized from those in the United States despite the flexible exchange rate policy. In the 1960s, there was no immunization from the U.S. business cycle under fixed rates, but we had always expected that. The idea behind flexible rates was to get away from duplicating what was going on in the United States. Whether it did not work because the exchange rates did not move that much, or because employment cycles are determined by factors more fundamental than the exchange systems or even monetary policy, is a question that is still unanswered.

My own view in this matter is that when we talk of the effectiveness of one or the other policy we should ask: effectiveness for what? How effective is fiscal policy? How effective is monetary policy? The cirterion in answering these questions is generally its effect on GNP. How much will it control GNP? Now it should alter *money* GNP because it has to affect price level developments. The ability of the exchange rate to insulate a very open economy from foreign inflation or deflation is surely indisputable. But we have to separate money GNP into price and output components. How effective is a floating rate in controlling *real* variables? Monetary policies would be far more effective in determining money GNP under flexible rates than under fixed rates. The confirmation of that is very striking and gratifying in the work of Caves and Reuber.

What isn't clear though is how effective the choice between monetary and fiscal policies is in determining the division of the changes in GNP between real and nominal variables. That leads us to a major policy question. If we really believed – and I doubt it – that the exchange rate was an effective measure for correcting unemployment, would anyone deny that the correct policy for Canada today would be a big devaluation? If there is too much unemployment in Canada, would logic not demand that we lower the Canadian dollar to 90 cents, or 70 cents, or 60, or 50 cents? Of course there are obvious constraints in the formation of monetary policy. There are costs of changing the exchange rate, including costs of rescaling debts and altering taxes. Suppose for a minute that changing exchange rates would change employment to a large extent. The costs of changing it would have to be taken into account. If a big

change in the exchange rate has a big cost, that could be one reason why one would object to the change. The theoretical literature ignores transactions costs including the cost of changing the tax system. But I am more concerned about a deeper issue.

The theoretical literature has been weak on the question of wage rates. In the past it always assumed rigid wages. The reason why expansionary monetary policy was always assumed to affect the real economy was the assumption, taken over from Keynes, that money wages were rigid *downward*. But we have moved into a world of increasing money wages and prices and, as Keynes put it in one of the less-read chapters in the *General Theory*, the danger of monetary policy is that it invites a race between the printing press and the trade unions. In this kind of world, the model based on rigid wages is inappropriate. If money wages are flexible, it cannot be assumed that inflationary monetary policy combined with exchange rate depreciation will affect unemployment. The unit of account in the *General Theory* is money wages and for monetary policy to change employment it has to change the money supply per unit of wages. In the short run this may be possible, but if the "short run" is less than, say six months or even three months, can a policy based on it be seriously considered? I doubt it.

Canada has a flexible exchange rate now and, as a result of letting the rate float in 1970, had the best record on inflation in the whole world. From May, 1970 to May, 1971 the rate of price increase in Canada was lower than that of any other country. Why? Because the brunt of the world inflation was taken up by appreciation of the exchange rate. We seem now to have moved into a world in which we can have a clear separation of real and nominal variables, but the real variables are not affected by the money supply to the same extent that they once were (or we thought they once were) and may even be perversely affected.

Let me be precise about what I am saying so that you will know whether I am precisely wrong or precisely correct rather than simply imprecisely confused. In a flexible rate system, will a 20 percent increase in the money supply increase employment? Will a 70 percent increase in the money supply increase employment? Under fixed rates, of course, it would be impossible to have such changes in the money supply; immediately capital would flow out, and the Canadian dollar would have to be given massive support. But under flexible rates, you can have it, and the exchange rate will depreciate. Now, if the Canadian rate depreciates by 20 percent and there is no change so far in the real money supply, with money wages remaining

constant, you get a reduction in real wages and an increase in employment, yielding a clear net expansionary effect. But, if at the same time you have a 20 or 30 percent increase in money wage rates, then there is no dependable basis for an increase in employment. All you would have would be a scaling effect on everything, except for the uncertainty effects of the instability of policy that would have been introduced. For employment to increase it is necessary to have an increase in the money supply per unit of wages.

Need for a New Wage Theory

We need a theory of wages that determines what the exchange rate and employment are going to be after the money supply is increased. Wage contracts in a fairly large economy, where the contracts are made at different periods, take some account of expected inflation. They may anticipate inflation. So that if you got an increase of 20 percent in the money supply and a reduction in the exchange rate of 20 percent, you may also get a 30 or 40 percent increase in wages over this period that is largely anticipatory since wage contracts are made often for more than one year. Quite apart from that, no big changes in the money supply can take place without affecting expectations a great deal, causing an increase in the velocity of money, or a reduction in the real value of cash balances. As a result, if you have a 20 percent increase in the money supply, you will not ordinarily have a 20 percent increase in prices. There will be a velocity effect at work, as portfolios are shifted out of fixed money contracts, into assets that afford better protection against inflation – assets like commodities and stocks. Then you may have a 30 or 40 percent increase in prices. Here the structure of lags become important. The measures taken will very quickly induce a very large anticipatory change in the exchange rate. Prices will react to the exchange rate, and wages will react to prices. Wages may thus overshoot. So an increase in the money supply could turn out to raise real wages temporarily at least and *worsen* the level of unemployment. This is not an aberration or a vague possibility; it is a standard case once we move beyond the very short-run Keynesian model. And so we can accept that monetary policy affects nominal income but it may not affect real income at all. Real income may go in the other direction. Governments can no longer rely on money illusion to cheat workers of income shares they regard as their due. Confidence in governments rests on the belief that special groups are being treated fairly, and if this confidence breaks down labor – management conflict will increase.

As an empirical matter I think we are going to move increasingly and steadily in the direction where we cannot rely on monetary policy to correct unemployment except insofar as the policies alter the real burden of debts and the marginal spending propensities of debtors differ from those of creditors. Even if it isn't completely true for the U.S. economy, it certainly is true for many of the European economies. Money illusion is disappearing from the system as the residue from past exploitation of it is used up. On the continent of Europe much money illusion has been knocked out of the system by the cynicism that past inflation and devaluations generated.

There are two types of money illusion – that which concerns the impact of exchange rates on price levels, and that which concerns the impact of price levels on expected wage rates. Money illusion may still exist in the Manchester factories probably because the British still have a lot of money illusion in their system due to several hundred years of stability of the pound sterling. Stability is built into the tradition of the English character. Most other countries don't have that. They don't have that money illusion or belief in the pound. The British have had three devaluations in the past three hundred years, but they have all taken place since 1931!

Need for a Flexible Tax System

In a world from which money illusion has disappeared there is another reason why monetary policy and flexible rates may work in a perverse direction. The fiscal structures in the economy are not inflation immune. Every time you change the exchange rate by a substantial amount, you must change the whole tax system, if you have a progressive tax system and want to preserve the same real tax structure. This is especially true for small economies. If you have a 10 percent increase in the money supply, prices, wages, and everything else, you will probably have a 12 percent increase in taxes and fiscal tightness. With that, a deflationary budgetary policy effect is automatically worked into an expansionary monetary policy. This means that a flexible exchange rate system increases transactions costs. Every time the exchange rate changes to any fundamental extent, you have to have a tax reform. Without a tax bill you are changing the real tax structure. In that case you are not measuring only the effectiveness of monetary policy but a precise monetary-fiscal policy mix. You have a combined financial policy at work here. So you would have to have the Parliamentarians on hand, if you had a really flexible rate and you were doing fine tuning on

the tax structure. You would have to work the Parliamentarians very hard to have a new bill every few months. This may not be important in the United States, where the home currency is also the world unit of account, but it is important in other countries. Constantly adjusting the tax bill, you need a flexible tax system. A great many things have to become flexible under flexible exchange rate schemes.

There is another point about flexible rates I want to raise again. It is a theoretical point. It would have been interesting to look and see whether the direction of policies becomes reversed, when you shift from a flexible to a fixed rate. In a 1960 paper (see my *International Economics,* Chapter 11), I found that the cycles of interest rates and real terms of trade revolve in different directions when the system is shifted from fixed to flexible rates. The exchange rate adjusts to the balance of payments and monetary policy adjusts to correct the level of employment under a managed flexible rate system, but moves in the opposite direction under a fixed rate system. That has important implications, depending on the degree of capital mobility and the degree of integration of capital markets. The more integrated are capital markets the "better" a system of fixed rates will be, assuming that capital mobility and financial integration are desirable.

Exchange Rates – Relatively Less Important

However, the gist of what I am saying can be summed up in the statement that the choice of exchange system is far less important than commonly realized, having their impact mainly on price level developments, in the models which have analyzed them, but that the frictions in the system left out of economic models – tax, debt, wage and expectations effects – are more important than is commonly realized or at least discussed. (There is also the "Gulliver" – or as our Prime Minister puts it – "elephant" problem which has to do with the theory of dominant currencies, referred to below.) Consider the U.S. surcharge. Does the Canadian exchange system really make that much difference in terms of the issue of the surcharge? The surcharge is a real change, and the exchange rate, as I have argued, is a monetary change with only incidental and possibly perverse real effects, if everything adapts at the right speed. But a general surcharge on imports is equivalent to an equal devaluation combined with an equivalent export tax. Classical theory tells us that no exchange rate change that will achieve a new equilibrium cancels out the effects of the surcharge. In Canadian policy, another aspect to be considered is that many countries in the world, trying to protect

themselves against U.S. policy, have moved to the idea of putting export subsidies on to cancel out the surcharge's effects. The surcharge for the United States, combined with an export subsidy equal in amount to offset the employment effects of that in other countries, is equivalent to a direct income transfer equal to the tariff proceeds from foreign countries to the United States. It is difficult to see why that kind of transfer should be made to the United States. It is reverse foreign aid. That won't help the United States achieve its $13 billion turnaround in its balance of payments, and neither will the reduction in foreign aid. It will do the opposite. *Foreign aid improves the U.S. trade balance;* it doesn't worsen it. The only way the United States can get a turnaround of the extent required in its $13 billion goal is by increasing transfers abroad. Foreign aid is one way to get an increase in domestic expenditures abroad. For this purpose the adjustment mechanism under either fixed rates or under flexible rates works perfectly. The United States lends or gives away $13 billion more. Foreign countries increase their spending by $13 billion. Americans reduce their spending by $13 billion, resulting in a change in the trade balance. Obviously, there is a transfer burden at work here, and the terms of trade may have to alter somewhat. That has all been so clearly worked through in the literature that it hardly needs to be discussed. That is the only way in which you can effectively get the required turnaround. It is not fundamentally a monetary problem. That is dealing with the issue in the wrong way. The exchange rate issue, then, is a red herring, not just with respect to Canadian policy, but with respect to policies of Europe, Japan and the United States.

I really do not think it matters a great deal whether Canada fixes the rate or keeps on flexible rates, except in terms of Canada's interest in insulating itself from unwanted inflation or deflation abroad. Is the world rate of inflation the right rate of inflation for Canada? If the world economy inflates at 10 percent a year and Canada does not want that (which is certainly the case), then it should stay on flexible rates and let exchange rates go up by 10 percent a year. That is the problem the Europeans have been having. The Germans had not wanted inflation, and in trying to resist it they have suffered surpluses, and the United States has pressured them into more appreciation. Similarly, appreciation in Japan will cause deflation there, and a slowing down of the rate of wage expansion.

But a system of freely floating rates raises other kinds of problems in a dominant dollar world. If all countries float exchange rates independently in a world where the United States is such a dominant

part of the world economy with the U.S. dollar acting as the world money in the sense of the world unit of account, then the Balkanization of the currencies outside the United States will lead to an increase in the importance and power of the U.S. dollar in the world economy! That will not lead to any improvement in the U.S. balance of payments. Rather, it will become worse because if all central banks move out of the markets, then the commercial banks will move in to fill the functions left vacant by the central banks. The central banks fix the rates as a kind of "socialistic" intervention in the economy in the field of money. They fix the rates and centralize the foreign reserves of the public, thus economizing on the seigniorage cost of holding foreign reserves. If the central bank drops these activities, the commercial banks will step in and perform exactly those same functions. They may do it more or less efficiently. If the banks are very big, they may do it more efficiently. Each of the big banks like Chase, First National City, Bank of America, are bigger, in terms of their total assets, than the Bank of France and the Bank of Italy put together. We're moving into the world of the multi-national bank, in which central banks are far less important. It is a world which is entirely based upon the dollar system. No exchange system can protect itself from that. This fragmentation of all the currencies in the world does not result in an even gain for all the countries involved. It is a gain in which some currencies will rise and some will go down with respect to the dollar.

The Theory of Dominant Currencies

The only currency useful for capital accounts would be the dollar because, even with substantial rates of inflation, the stability of the dollar would be greater than that of most other currencies in the world. The uncertainty connected with the dollar will be less than that of any other country in the world. The theoretical basis for this is in the theory of money. What made gold and precious metals optimal money for large transactions internationally was the fact that the annual changes in the quantity produced was a very small proportion of the quantity held, yielding lower variance of the dollar. In the theoretical literature, a restricted application of this theorm can be found in Marshall's *Money, Credit and Commerce* and in Keynes' *Treatise;* it has to do with the responsiveness of the marginal efficiency of money to changes in the quantity of money. In both the *Treatise on Money* and in the *General Theory,* the thing that becomes money is that asset for which the marginal efficiency

declines least when its quantity is increased. Hence gold in the Middle Ages, the pound in the 19th century, and the dollar today. If we now think of a world of currencies, then the question is: Which money, from a world of monies, becomes the best money? It will be that money whose marginal utility declines least when its quantity increases. In nearly all circumstances, that would be the currency of the biggest economy. To illustrate this point, imagine interest rates on one axis, and currencies on the other. Suppose everybody in the world was alike, except for a cartel formed by one group of people using a given currency. When you add all the currencies up, you see immediately that, in the change, the marginal utility of the biggest economy will suffer the smallest reduction. It is a short step from this theorem to build dynamic learning behavior into it since once one currency gets accepted its monetary properties grow and grow, cannibalizing, in a leukocytation process, all the others.

The *theory of dominant currencies* therefore shows why the strength of the dollar is so great, having more than ten times the transaction domain of a country like Canada. So how do you combat that kind of financial juggernaut? The best thing may be to accept it simply because it is hard to invent an alternative. We must live with the fact that we're in a dollar-dominated world and try to make the dollar perform its *world money* functions better than it has thus far and make sure that a disproportionate share of the gains go to the U.S., at the expense of other countries, or to commercial banks in general at the expense of the body politic. However, if the United States cannot follow a stable monetary policy or will not exercise its power to constrain the spillover of its monetary system into the rest of the world an alternative money to the dollar would have to be created, based on a union of the currencies of the smaller countries. Canada cannot do much in this respect alone. The Europeans have been moving in the direction, of a monetary bloc toward the creation of an alternative to the dollar. Whether they can create one big enough to take over some of the properties of the dollar without moving further in the direction of political integration than the body politic will permit is the major question mark.

I have now strayed far beyond my proper role here, but all things are connected. In terms of Canadian monetary and fiscal policy, an acceleration of the money supply is not really going to solve Canada's current problem of unemployment partly because of its effect on wages and partly because of the impact on fiscal tightness. More drastic fiscal policy action is needed to offset fiscal tightness. In this connection it should be observed that the high value of the

Canadian dollar did not create unemployment in Canada; our unemployment cycle began before the rate floated. It was only the *first derivative* – the rate of change in the exchange rate – that had a transitory effect for a few months on Canadian unemployment. No tariff policy in Canada can offset the U.S. surcharge. No retaliative measures would be useful for Canada to employ except perhaps lowering tariffs on products from non-U.S. countries. Canada might make some agreement for a mutual reduction in tariff barriers with the Prospective Ten common market countries. In order to prevent the unemployment that has been created by the U.S. surcharge, Canada might divert trade away from the United States, and increase trade with other markets. They could do the same in the currency field and perhaps form a coalition of currencies with Europe. That would involve a basic reorientation of Canadian policy, toward integration with Europe rather than integration with the United States and it would be a drastic departure from the direction of Canadian policies in the past. As Caves and Reuber pointed out, the 1960s showed poorly integrated capital markets, caused, to a great extent, by the uncertainty of the U.S. policy: the interest equalization tax, the voluntary credit restraint program, etc. This policy set, combined with sudden expansions and contractions of the money supply – stop-go monetary policies – has forced other currencies to dance to the tune of the Federal Reserve Board. It has not been a harmonious one.

It is an unpalatable situation, and the rest of the world has to examine the question of whether or not the United States can be relied on in the future to exercise responsible, better informed leadership in monetary matters. Whether our answer is yes or no more constructive, positive action outside the United States is required, either to support the United States in a continuing leadership role or to create an alternative in the event that leadership falters or becomes inimical to the enlightened self interest of the rest of the world.

Structural Changes in the Canadian-American Balance of Payments

ANDREW F. BRIMMER

Almost exactly one year ago, I spoke on roughly the same topic in Montreal.[1] A number of observers on both sides of our border (but particularly in Canada) found that paper interesting enough to comment on it rather extensively. While I was naturally flattered by this reaction, I also noted the lack of enthusiasm among some Canadians with respect to my views on the issues I raised. In fact, not a few commentators thought I was simply wrong.

This paper is intended to update and to extend the discussion of several of the questions considered in that paper as well as to discuss a number of developments that have occurred since then. Last year, I noted several basic shifts in Canada's payments situation -- particularly with respect to trade flows and the long-term capital account. I observed that, in the last half of the 1960's, Canada experienced a sharp swing from a large deficit to a sizable surplus with the United States. Simultaneously, a weakening occurred -- at least temporarily -- in its formerly strong surplus with the rest of the world (especially with industrial countries other than the United States). Canada's current account and its overall payments balance generally strengthened during that period. Observing these changes, a year ago I asked whether the shifts were permanent or transitory.

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I am indebted to several members of the Board's staff (especially to Messrs. Robert M. Dunn, Jr., Robert Sammons, and Samuel Pizer) for assistance in the preparation of this paper.

[1]See "United States-Canadian Balance of Payments: Prospects and Opportunities", presented before the First National Conference of Canadian Bankers, sponsored by the Institute of Canadian Bankers, September 28, 1970.

Canada's long-term borrowing in the United States was quite heavy in that period, producing sizable increases in Canadian reserves, and raising the question of whether Canada really needed to be -- or ought to be -- as dependent on external capital as it had been in earlier years. The role of Canadian borrowing in the U.S. capital markets was of more than cursory interest to us at the time because of our precarious balance-of-payments situation.

This occasion provides an opportunity to take another look at the structural transformations which appeared to be present in the U.S.-Canadian balance-of-payments a year ago to determine whether they are continuing or have instead been reversed.

In the meantime, of course, a watershed has been crossed in the balance-of-payments policies of both countries. The Canadian Government's decision at the end of May, 1970, to allow the Canadian dollar to float has proved to be somewhat more than transitory. The U.S. measures announced in mid-August of this year have resulted in at least temporary changes in the payments system. While I certainly would not join the host of obituary writers for the Bretton Woods system, it does seem to me unlikely that we will simply reinstate without significant modification the balance-of-payments arrangements that have been in place for more than a quarter of a century. On the other hand we do not want to overlook the success of the system of the previous period in providing a framework in which restrictions on world trade were greatly reduced and in which the resulting rapid growth of trade provided a crucial impetus for the recovery of Europe and Japan. Having said this, I must also hasten to add that I do not want to contribute to the flood of speculation on the future payments system that is likely to emerge.

In the wake of the recent U.S. actions, we have seen once again that steps taken to deal with U.S. global problems have a direct and perhaps disproportionate effect on Canada. I believe it is important to note, however, that beyond the immediate difference in view on the 10 percent surcharge on U.S. imports, there is a basic common interest between our two countries in achieving a more viable structure of exchange rates, reductions in trade barriers generally, and a less rigid environment for balance-of-payments adjustment. If the U.S. initiative succeeds in generating some forward motion on these questions, we will be able to judge more clearly whether any given exchange rate relationship is appropriate.

It is not my purpose here to consider how the immediate differences in the economic policy objectives of our respective governments can be resolved. That task remains the province of the governments themselves, and we must be careful to avoid treading on their preserves and thereby prejudicing their activities. Rather, I would address myself to several issues relating to Canadian-American financial relations that are of interest to economists generally as well as to those with responsibilities for public policy.

This range of issues can be posed in terms of several questions:

- Is Canada's current account surplus transitory ? If it is, one might consequently expect Canada to remain fundamentally an importer of capital.

- On the other hand, if Canada's current account situation has fundamentally changed, has Canada about reached a stage in its development where it might become a net exporter of capital in the long-run?

- If changes in exchange rates ultimately are assigned a greater role in maintaining the balance-of-payments in equilibrium, would it still be desirable to foster special trading arrangements -- such as the automotive agreement -- which significantly shift the trade balance in the direction of one country or the other?

Before turning to a further discussion of these questions, it might be helpful to review briefly recent trends in the balance-of-payments of our two countries.

Recent Trends in the U.S. Balance-of-Payments

Although the United States had a payments problem in the early 1960's, the situation then was reasonably hopeful. An increasingly strong trade and current account showed some signs of being sufficient to cover a normal volume of capital outflow. In 1960-64, the United States had an annual trade surplus averaging $5.4 billion, a statistic which evokes a sense of nostalgia in 1971. But from 1964 on, the widely discussed inflationary pressures in the United States, together with increasingly effective production capabilities in other industrial countries, brought a swift deterioration in our trade account. Of course, we also had the burden of large foreign military

expenditures. Increasingly tight controls over capital outflows, however, probably helped somewhat to reduce the overall payments deficit, and the United States also benefited from a larger inflow of foreign long-term capital.

As late as a year ago, we had some confidence -- or at least hope -- that our balance-of-payments problems could be dealt with through the orthodox approach of reducing excess demand and thereby improving our international price competitiveness. The results for 1970 and early 1971 ended this hope. Although the recession of 1970 combined with considerable inflation abroad to produce a modest current account gain, the lessening of monetary restraint called for by domestic considerations caused a large reflow of previous capital inflows, and the overall accounts showed a $9.8 billion deficit in that year. (See Table 1 attached.) Thus far in 1971, particularly since the first quarter, the trade account has deteriorated -- despite the continuing lack of excess demand in the United States -- and continuing large capital outflows made the situation intolerable by summer. Clearly we could not expect to recover through demand management the losses in competitiveness that had accumulated in the 1960's. Our absolute levels of costs and prices were too far above those of our competitors.

Once this situation became clear, it led to the conclusion that the set of exchange rates facing the United States was no longer viable. The appreciation of the Canadian dollar after May, 1970, certainly helped. Unfortunately, to correct the deficit in the American balance-of-payments will require more pervasive adjustment, and we have had to move to encourage exchange rate changes for other surplus countries. The extent to which inflation continues in the United States -- despite unemployment -- as well as in the economies of many of our major trading partners, makes it difficult to foresee success for the orthodox adjustment mechanism for anything but rather modest imbalances. It certainly was not successful for the United States. And I know that those responsible for economic policy in this country tried, however imperfectly, to make it work until the domestic output and employment implications of its use became unacceptable.

Recent Trends in the Canadian Balance-of-Payments

The Canadian payments situation since the mid - 1960s has been considerably happier. The Canadian current account went from deficits of about $1 billion in 1965 and 1966 to a surplus of $1.2

TABLE 1

UNITED STATES BALANCE OF PAYMENTS
(U.S. $ MILLIONS)

	1964	1965	1966	1967	1968	1969	1970	First Half 1971[1/]
1. Trade	+6,831	+4,942	+3,927	+3,859	+ 624	+ 660	+ 2,110	- 771
2. Services	- 985	- 647	- 1,517	- 1,720	- 1,010	- 1,559	- 1,666	+ 284
3. Current account (1+2)	+5,846	+4,295	+2,410	+2,139	- 386	- 899	+ 443	- 487
4. Long-term capital	- 5,818	- 6,109	- 4,024	- 5,335	- 963	- 1,980	- 3,482	- 3,960
5. Current account plus long-term capital (3+4)	+ 28	- 1,814	- 1,614	- 3,196	- 1,349	- 2,879	- 3,038	- 4,447
6. Short-term capital[2/]	- 1,562	+ 525	+1,833	- 222	+2,990	+5,581	- 6,782	- 6,797
7. Total capital (4+6)	- 7,380	- 5,584	- 2,191	- 5,557	+2,027	+3,601	- 10,264	- 10,757
8. Official settlements balance (3+6)	- 1,534	- 1,289	+ 219	- 3,418	+1,641	+2,702	- 9,821	- 11,244

1/ Seasonally adjusted.

2/ Including errors and omissions.

Source: U.S. Department of Commerce, *Survey of Current Business.*

TABLE 2

CANADIAN BALANCE OF PAYMENTS
(U.S. $ MILLIONS)

	1964	1965	1966	1967	1968	1969	1970	1971 -I.Q.
1. Trade	+ 650	+ 109	+ 208	+ 525	+1,276	+ 799	+2,876	+ 730[1/]
2. Services	- 1,043	- 1,157	- 1,286	- 988	- 1,375	- 1,497	- 1,633	- 381[1/]
3. Current account (1+2)	- 393	- 1,048	- 1,078	- 463	- 99	- 698	+1,242	+ 349[1/]
4. Long-term capital	+ 760	+ 801	+1,083	+1,256	+1,535	+2,097	+ 780	+ 268[2/]
5. Current account plus long-term capital (3+4)	+ 367	- 247	+ 5	+ 793	+1,436	+1,399	+2,022	
6. Short-term capital[3/]	- 31	+ 394	- 338	- 775	- 1,112	- 1,338	- 557	- 361
7. Total capital (4+6)	+ 730	+1,195	+ 745	+ 481	+ 423	+ 758	+ 223	- 94
8. Official settlements balance (3+7)	+ 337	+ 147	- 333	+ 18	+ 324	+ 60	+1,466	+ 48[4/]
MEMORANDUM								
Average exchange rate (U.S. cents per Canadian $)	92.7	92.7	92.8	92.7	92.8	92.9	95.8	99.5

1/ Seasonally adjusted. The comparable first quarter 1970 results were: trade +691 m, services -385 m, and total current account +306 m.

2/ The capital account and reserve changes are not seasonally adjusted. Hence, those accounts do not balance for the first quarter.

3/ Including errors and omissions.

4/ Excludes SDR allocation.

Source: Statistics Canada

billion in 1970, and it has been doing approximately as well thus far in 1971. (See Table 2.) Despite the improving current account, Canada continued to import large and increasing amounts of long-term capital through 1969. However, this inflow has declined since then -- in part because of government policy designed for this purpose and thus to restrain upward pressure on the exchange rate. From 1965 to 1969, rapidly increasing outflows of short-term capital maintained approximate equilibrium in the overall balance-of-payments, and these flows probably masked an increasingly undervalued Canadian dollar. Canadian reserves were relatively stable in 1967 and 1969 and rose sharply only in 1968.

In 1970, the emerging Canadian surplus -- with its implication of an undervalued Canadian dollar -- became far more apparent. Partly in response to this situation, on June 1 last year Canada returned to the floating exchange rate system of the 1950's. The extent of the basic shift in Canada's balance-of-payments has been indicated quite directly by the market's appreciation of the Canadian dollar from 92½ U.S. cents to 98½ cents since June 1970. The fact that the Canadian current account remained in surplus despite this appreciation is even more striking. The Canadian recession of that period was only slightly deeper than that in the United States, so Canada's cyclical situation probably provided only a limited source of upward pressure on the current account and the exchange rate. In my own mind, this outcome raises some fundamental questions about Canada's historic role as a sizable recipient of net capital inflows. As we know, these inflows have been used to finance current account deficits which were viewed as a necessary source of real resources for Canada's development. I will return to this issue in a few minutes. But before doing so, we should make a brief review of the Canadian-American bilateral balance-of-payments.

Canadian-American Balance-of-Payments in Perspective

One has to begin a discussion of this topic by asking why we ought to be interested in bilateral payments patterns between Canada and the United States. There are two reasons for our continued interest in this subject. The first is historical. Obviously the worsening U.S. payments position with Canada had something to do with the overall U.S. payments problem which led to the measures adopted in August. Second, in looking ahead, we cannot assume that the exchange rate system which will grow out of the current negotiations will necessarily solve all of the U.S. or Canadian payments problems.

Hence we must retain a continuing interest in recent bilateral payments patterns as a guide to potential problems.

Canada has enjoyed an amazingly consistent record of improving trade and current account balances with the United States since the mid-1960's. As shown in Table 3, Canada's trade account with the United States showed a deficit of $965 million in 1965. The balances improved in each of the following five years to reach a surplus of $1.1 billion in 1970. Canada's current account began its year-by-year improvement in 1966, rising from a deficit of $2.0 billion in that year to only $59 million in 1970. Both the size of the improvement in Canada's position (or the worsening of the U.S. position) and the consistency of the pattern over a five-year period are impressive -- or quite discouraging, depending upon one's point of view.

Despite this improvement in Canada's current account with the United States, Canada continued to raise large amounts of long-term capital in our market through 1969. This flow declined in 1970, and apparently so far this year it has been further reduced. Short-term capital flowed from Canada to the United States in increasing amounts between 1965 and 1968. This was partly due to policies aimed at fulfilling the requirements of the Canadian-U.S. reserve agreement of 1963. Following the modification of that agreement in December 1968, the Canadian outflow was reduced sharply in 1969 and 1970.

Canada's overall payments balance[2] with the United States improved greatly in the last half of the 1960's, rising from a deficit of $1.5 billion in 1965 to a surplus of $626 million in 1970. This was accomplished in a consistent pattern of year-by-year improvements. The approximately $2 billion swing in the bilateral account against the United States in a five-year period represented an important part of our generally unfavorable payments experience. Thus, it undoubtedly contributed to the deterioration in the U.S. international position which made the mid-August measures inescapable.

From the U.S. point of view, I should note that about 83 percent of the improvement in Canada's trade balance in the last half of the 1960's was in trade with the United States. Since about 70 percent of Canada's trade is typically with the United States, this does suggest a relative concentration of Canada's gains in trade with the United States. The largest proportion of this improvement resulted from the effects of the 1965 automotive agreement -- which have been variously estimated at between $1 billion and $1.5 billion. In

[2]That is, current and capital account combined, excluding official monetary flows.

TABLE 3

CANADIAN BALANCE OF PAYMENTS WITH U.S.
(U.S. $ MILLIONS)

	1964	1965	1966	1967	1968	1969	1970	1971-I.Q.
1. Trade	- 749	- 965	- 922	- 527	+ 231	+ 341	+1,094	+ 306[1/]
2. Services	- 901	- 959	- 1,080	- 821	- 1,086	- 1,122	- 1,153	- 429[1/]
3. Current account (1+2)	- 1,650	- 1,924	- 2,002	- 1,348	- 855	- 781	- 59	- 122[1/]
4. Long-term capital	+ 939	+1,024	+1,236	+1,153	+1,052	+1,491	+ 918	n.a.
5. Current account plus long-term capital (3+4)	- 711	- 900	- 766	- 195	+ 197	+ 710	+ 859	
6. Short-term capital	+ 578	- 619	- 394	- 878	- 1,179	- 502	- 233	n.a.
7. Total capital (4+6)	+1,517	+ 405	+ 842	+ 275	- 126	+ 989	+ 685	n.a.
8. Overall balance (3+7)	- 133	- 1,519	- 1,160	- 1,073	- 981	+ 208	+ 626	n.a.
MEMORANDUM								
Average exchange rate (U.S. cents per Canadian $)	92.7	92.7	92.8	92.7	92.8	92.9	95.8	99.5

1/ Seasonally adjusted. The comparable first quarter 1970 results were: trade +163 m, services -$414 m, current account -$251 m.

Source: Statistics Canada

my opinion, that agreement certainly turned out to be something less than an unmixed blessing for the United States. But, since we agreed to it, we can hardly complain (at least not very loudly) about the consequences. On the other hand, I think it is appropriate to wonder whether Canada now feels able to live without the transitional arrangements. At a distance, one might expect that any resulting loss of automotive exports would produce a somewhat lower exchange rate -- which in turn would improve prospects for other Canadian export industries.

In looking at Canadian trade performance from a U.S. point of view, two important points should be made. First, there is no evidence of Canadian discrimination against the United States of the type sometimes alleged for Japan and Europe. Second, statistics which have become available since a year ago indicate a reversal of the trend toward a worsening of Canada's trade position with the rest of the world. This trend, which appeared particularly in the 1969 data, was sharply reversed in 1970 when Canada's trade balance with the rest of the world improved by about $1.3 billion. The United States may not be happy about our trade developments relative to Canada, but we cannot argue that Canada has arranged her trade policies to discriminate against the United States or to ignore export opportunities in the rest of the world.

This conclusion obviously leads to the question of the U.S. 10 percent surcharge and its application to Canada. We are sensitive to the implications of this move for Canadian exports in general and for some Canadian industries in particular. We have not reversed our fundamental orientation toward free trade. I can assure you that we are not happy with the necessity of adopting such an unpleasant, if temporary, posture with respect to our payments problems. While we do not enjoy asking Canada to be patient, we do hope that the seriousness of our payments problems will be appreciated.[3]

The seriousness of the surcharge for Canada, however, should not be overestimated. It is calculated that about 25 percent of Canada's $11 billion of exports to this country is affected by the surcharge. This means that an even smaller percentage of Canada's total exports (perhaps one-sixth) is affected. In addition, the fact that Canada is now on a floating exchange rate means that any significant decline in exports of dutiable goods probably will be largely offset by the effects of the resulting depreciation of the Canadian dollar on other

[3]It is worth noting in passing that Canada applied a similar surcharge in the midst of payments difficulties in 1962, and the United States was not exempted.

export and import competing industries. That view, of course, looks at Canada as a whole. I realize that the primary difficulty in the surcharge for Canada is its impact on particular areas: it hurts certain narrow sectors of the economy and regions of the country, although its net effect on the economy as a whole may be quite limited. We can certainly understand Canada's concern over these industries and regions. Yet, I think it is also helpful to emphasize that the surcharge is not quite the general disaster for Canada that some press reports have suggested.

Lessons of the Recent Canadian Balance-of-Payments Experience

As indicated above, one of the issues concerning Canada's payments experience which I raised a year ago, and which is even more relevant now, is the question of Canada's continuing need for net capital inflows and hence for heavy use of the New York capital market. Many Canadians have long held the view that the country's potential saving was so low relative to the need for capital that it could not possibly develop without large amounts of foreign capital, and hence without free access to the New York capital market. This argument was quite compelling when Canada had a small population and much lower levels of per capita income. However, after a decade of vigorous economic growth, it is not quite so convincing today.

Canada's large current account surplus in 1970 meant that Canada was actually a net exporter of capital in that year, counting reserve accumulation as a capital export. The same results thus far in 1971, in the face of the appreciation of the Canadian dollar, suggest that Canada may well become *fundamentally* an exporter of capital to the rest of the world. Although this is admittedly a long view, and the implied payments pattern may not develop after world exchange markets settle, it does seem fairly unlikely that -- in the near future and even at relatively full employment -- Canada will again run a sizable current account deficit which would require financing through long-term capital inflows. The effect of the automotive agreement and the rapid growth of Canada's oil and gas exports have fundamentally changed Canada's payments situation to a degree which has not been generally recognized. In my opinion, continued failure to recognize this change might lead to seriously incorrect prescriptions for Canadian balance-of-payments policies.

The trend of long-term capital inflows into Canada can be traced in data published by the Bank of Canada. In 1965, net new Canadian issues amounted to Can. $2.5 billion in all currencies, of which Can.

TABLE 4

CANADA: NET NEW BOND ISSUES (PAR VALUES, IN CANADIAN $ MILLIONS)

	Total	Canadian $	Payable in	
			U.S. $	Other non-Canadian Currencies
1965	2.3	1.6	0.7	---
1966	3.4	2.4	1.0	---
1967	4.1	3.3	0.7	0.1
1968	4.3	2.9	1.0	0.4
1969	3.5	2.0	0.9	0.6
1970	5.0	4.4	0.6	---
1970, Jan.-June	1.3	0.9	0.4	---
1971, Jan.-June	2.8	2.6	0.2	---

Source: Bank of Canada, Statistical Summary, August 1971.

$2.3 billion were bonds. (Table 4.) Bonds issued in Canada accounted for Can. $1.6 billion (or about 70 percent of total bonds). Just over one-quarter (30 percent) of all bonds sold was denominated in foreign currencies -- all of which was in U.S. dollars. By 1969, total bond flotations had climbed to Can. $3.5 billion, of which Can. $0.9 billion (or 26 percent) were payable in United States dollars. In 1970, total bond sales rose further to Can. $5.0 billion, but sales in foreign currencies dropped noticeably -- to only Can. $600 million (about 18 percent), all in U.S. dollars.

More recently, in trying to reduce upward pressure on the exchange rate, the Canadian Government has requested that Canadian borrowers avoid raising funds in foreign markets and instead borrow at home. The result has been a sharp decline in Canadian bond flotations in New York and other foreign markets. In the first six months of 1971, total flotations of Canadian bonds were $2.8 billion, compared to $1.3 billion in the same period of 1970. Of the 1971 volume, only $0.2 billion (about 7 percent) was raised abroad -- all of which was in U.S. dollars. In contrast, in the first half of 1970, flotations denominated in U.S. dollars amounted to $0.4 billion, representing 31 percent of the total.

It should be noted that the sharp improvement in Canada's current account in recent years of necessity implies an increase in Canadian savings relative to domestic investment. In 1970, this was in part the result of the recession, which restrained the normal growth of capital equipment expenditures. At the same time, however, Canadian personal savings grew by $541 million in 1970 while personal disposable income rose by only $3,038 million. This represents a marginal propensity to save of 18 percent. This hardly sounds like an economy in which savings are not growing rapidly enough to finance normal development. On the other hand, it should be noted that the increased savings were not helpful to a recessionary economy, which would have benefited from more consumer demand.

Although Canada may no longer need sizable net inflows of capital to finance current account deficits, the question remains of the role of New York as a financial intermediary between Canadian borrowers and lenders. Ideally, Canadian financial markets would intermediate between the apparently different liquidity and safety needs of Canadian savers and investors, and this may be occurring to an increasing degree. The request by the Canadian Government that borrowers stay away from New York has forced an increasing amount of long-term financing into the Canadian markets. This has probably resulted in these markets growing and broadening more rapidly than they otherwise would have. About $2.6 billion of new bonds were sold in the Canadian markets in the first six months of 1971, compared to $0.9 billion in the same period of 1970, and $0.5 billion in 1969. From the U.S. point of view, this is a desirable development. Whatever the international payments system of the future, we are likely to be more comfortable about our payments situation if the pattern of short-term capital flows from -- and long-term capital flows to -- Canada is reduced in importance.

The final question which I would like to explore against the background of recent Canadian experience relates to the automotive agreement. If the new international monetary arrangements do assign a more important role to exchange rate changes as an adjustment tool, special trade arrangements such as that agreement may not necessarily be ideal for the country gaining relatively more exports. When such arrangements shift the trade balance significantly in the direction of one country, the effect must ultimately be an appreciation of that country's currency and potential injury to its other export and import competing industries. One might ask whether Canada would have been forced to float its exchange rate in 1970 if

the automotive pact had been designed to leave the overall balance of trade largely unaffected. Again, at a distance, it appears that a sizable share of the adjustment problems now facing the Canadian economy as a result of the 6½ percent appreciation of the Canadian dollar might be traced to the trade balance effects of the automotive agreement. This suggests that it might be better not to design future free trade arrangements between Canada and the United States with the aim of affecting the trade balance. This should leave the exchange rate and the interests of other industries relatively unaffected.

Lessons of the Recent U. S. Balance-of-Payments Experience

As far as the United States is concerned, there are a number of lessons to be drawn from its unhappy payments experience of the last few years. The most obvious of these is the danger of allowing inflationary trends to go unchecked and to become entrenched in the form of expectations. Once the excess demand pressures of 1965-68 had gone on for a year or so, large corporations and labor unions began to act on the basis of a shared expectation of further inflation. Consequently, collective bargaining agreements increasingly failed to reflect accurately labor market conditions. When fiscal and monetary restraint was finally applied, this set of expectations was not broken. This had the effect of greatly worsening the trade-off between unemployment and inflation with which national policy had to cope. Our inability to reduce significantly -- and quickly -- the rate of wage and price inflation -- and to do so without unacceptable levels of unemployment -- had a great deal to do with the deterioration of our payments situation in 1970-71. We have some hope that the wage and price freeze of August 15 and the measures which are to follow it will finally break the inflationary expectations which have plagued us.

Although the United States will undoubtedly remain a net exporter of capital in the years ahead, another lesson of recent years is that unrestrained capital outflows can put enormous pressure on our payments situation when our competitive situation is not strong enough to produce the offsetting current account surpluses. The same conclusion obviously holds for military expenditures abroad. Although the various restrictions which we have applied to capital flows (including the Interest Equalization Tax, the Voluntary Foreign Credit Restraint Program, the Foreign Direct Investment Regulation, etc.) helped to restrain our deficits, they were not sufficient to offset

the effects of increasingly inappropriate exchange rates. Thus, as many observers foresaw, it became increasingly necessary to consider measures of the variety adopted on August 15.

Finally, I would like to mention a view of the U.S. payments situation which has recently received some attention. It has been said that we ought to take an entirely passive approach to the problem and allow the surplus countries to adjust their own positions. The problem with this passive approach is that surplus countries other than Canada have been very hesitant to act. The result has been that decisions have been made only in periods of serious crisis. This hardly encourages well thought-out permanent solutions. Instead, it produces an *ad hoc* patchwork that may provide only temporary assistance. Too often inaction by governments in the face of serious imbalances has encouraged normally stabilizing short-term capital movements to become destabilizing and to generate pressures which eventually threaten to produce a monetary crisis. In far too many cases it is only then that the governments have acted.

It is clear that the United States has to be involved in -- and take considerable responsibility for -- the adjustment mechanism, hopefully to reduce the tendency of the system to drift from crisis to crisis.

Concluding Observations

Before closing, I want to reemphasize my awareness of the need -- ultimately -- to look at Canadian-U.S. balance-of-payments relations in a much broader context. While our bilateral relations are important, the crucial trade and payments issues between our two countries eventually merge into the problems currently facing the international payments system as a whole.

In my opinion, the most pressing need at the moment is for a much better understanding among the major industrial nations with respect to the fundamental goals of the payments system, and better coordination of national goals in the areas of international trade, investment, and aid. I certainly would not want to play down attempts to negotiate new exchange rates or to promote institutional changes. But I would not be optimistic about the long-run viability of such arrangements unless there is a broad consensus on goals. It is not obvious that such a consensus exists at this time.

On the record, it is clear that a basic goal of the United States with respect to the current efforts at reform is to assure that the payments system which emerges is not based on the prospect of a continuing

and sizable U.S. payments deficit. This objective should also be one of the fundamental goals of our trading partners. It means that, as a group, those countries with sizable trade surpluses cannot have as their goal for the payments system a continuation of such surpluses. I realize that the reduction or elimination of a long-standing payments surplus involves complex and difficult adjustments within an economy. Yet, one of the clearest lessons of the last year or so is the impossibility of a continuing structural imbalance in the world's payments system. In my opinion, surplus as well as deficit countries must face the domestic adjustment problems involved in returning the system to equilibrium.

Even when a compatible set of goals is worked out by the major industrial countries, we will still have only a limited ability to forecast payments trends and consequently to make the necessary adjustments to reach our shared objectives. Obviously we need better forecasting techniques and better arrangements for making prompt adjustments when reasonable payments goals are not being attained. Future payments shifts must not be allowed to become entrenched imbalances as has too often occurred in the past.

The current uncertainty in the payments mechanism and some features of the U. S. response to its problems are undoubtedly disturbing to Canada and to our other major trading partners. Nevertheless, the present period also provides opportunities as well as problems. We have the opportunity to improve fundamentally the payments system with which we have lived for a quarter of a century -- and which has served us well during most of those years. Now we have a chance to make reforms which will end -- or at least greatly ease -- many of the problems which have plagued us in recent years. I certainly hope that the current impasse will not either produce basic divisions among the industrialized countries or foster hurried arrangements aimed at a return to normalcy -- without acceptance of the need for basic reform. If we are successful in this course and finally do produce fundamental improvements in the payments system, the inconveniences and costs to Canada -- and to other countries -- of the current situation will be far outweighed by the benefits of increased international trade and investment.

DISCUSSION

RONALD I. McKINNON

Not knowing when a copy of Governor Brimmer's September 1971 paper on Canadian-American relations would arrive, I spent some time perusing his 1970 paper which he gave in Montreal almost exactly a year ago. I understand the paper created a furor by suggesting that Canada might reduce its trade surplus with the United States and also limit flotations of Canadian bonds in New York. Apparently the advice was heeded. New flotations of Canadian bonds in American dollars have fallen off rather sharply in the past year at the behest of the Canadian government. The effect of the appreciation in the Canadian exchange rate of June 1970 may still cause a significant change in the Canadian trade balance. The evidence isn't yet in. Nevertheless, Canada did make these two major moves to reduce its balance-of-payments surplus in line with official American desires.

Governor Brimmer notes approvingly this change in Canadian policy in his paper of September 1971. Notwithstanding, the American government imposed the surcharge on Canadian imports despite these fairly strenuous efforts by Canada to maintain balanced international accounts. It may well be that Canada is the unintended victim of American economic policy oriented toward Europe and Japan, but such indirection in American policy is no less unfair or severe for certain segments of the Canadian economy where unemployment is significantly higher than it is in this country.

Governor Brimmer's principal economic hypothesis is that the Canadian balance of payments may have undergone a structural change over the past six or seven years. The current account deficit has disappeared because the surplus in the balance of trade is now sufficient to pay for the return flow of interest and dividends on

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American investments in Canada. Consequently, there is a greatly reduced need for Canada to float long-term bonds in the New York money market on a net basis.

To use the jargon of international trade, Canada has changed from being an immature debtor which is still absorbing foreign capital net, to being a mature debtor which is paying the service costs on past investments without the aid of new capital inflows. I agree that Governor Brimmer's mature-debtor hypothesis may now hold for Canada and would like to spell out the reciprocal implications for the United States. If Canada is to behave as a mature debtor, so should the United States behave as a mature creditor.

American policy makers have the unfortunate habit of switching their focus of concern in the balance of payments to whichever accounting measure of the deficit looks the worst. In the late 1950s and early 1960s, the "liquidity" deficit was the main preoccupation of policy makers and their concern spawned the restrictions on capital outflows which have driven financial and banking business away from New York to the Eurodollar market centered in London.[1] The fact that the United States was enjoying rather large trade balance surpluses at that time – say over $6.8 billion in 1964 – was glossed over and not allowed to shift official attention away from the liquidity deficit. *Now* there is a surprisingly nostalgic tendency to look back favorably on the large trade balance surpluses of the early 1960s and to view the current rise in American imports relative to exports with excessive alarm. In his 1970 paper, Governor Brimmer suggested that $5 billion may be the desired "sustainable" size of the American trade balance surplus over the long run.

In view of the tough bargaining stance being taken by American negotiators regarding appreciation in foreign currencies, it would seem that the administration now has an inappropriate and unrealistic target of $5 or $6 billion for its trade balance surplus, much like its earlier unfortunate appraisal of the desirability of eliminating the liquidity deficit. The consequence is likely to be deleterious for worldwide commodity trade – with the very real danger of a trade war to the ultimate disadvantage of the United States and much greater disadvantage of her trading partners.

A mature creditor country is one that accepts a decline in its trade balance as the natural consequence of the return flow of interest and

[1] I notice that the latest revision of B of P accounting by David Devlin of the Department of Commerce in June 1971, *Survey of Current Business*, relegated the old liquidity definition to a minor role.

dividends on past investments, coupled with some net liquidation of these investments as capital scarcity abroad is reduced. Given the large and growing current earnings on overseas American investments, it is now really unthinkable to go back to a trade balance surplus as large as those of the early 1960s. To do so is to foreclose the opportunities for countries like Canada to repay their past debts without incurring new ones. In short, an overall American trade surplus of the order of $1 or $2 billion is more consistent with the structural changes that have occurred in the balance of payments, as described by Governor Brimmer, than is a trade surplus of $5 or $6 billion. Even this target of $1 or $2 billion trade surplus could, optimally, be reduced in the future, depending on whether or not the return flow of interest and dividends increases. With countries like Canada which are particularly heavily indebted, the United States should be prepared to accept a bilateral American deficit in commodity trade with equanimity.

What does the acceptance of the role of mature creditor imply for current American policy toward exchange rates and the import surcharge? Although difficult to assess, there does seem to be a cyclical imbalance in the American trade accounts due to domestic inflation. However, fairly modest correction in exchange rates with movements of 10 percent or less in the yen, franc, and the currencies of other smaller countries seems sufficient to balance their price levels with those in the United States, whereas countries like Germany and Canada would seem to have already appreciated sufficiently.[2] Such relatively modest discrete changes in the present, coupled with the provision for more continuous gradual appreciation in high growth countries in the future, should be sufficient to induce the United States to remove its import surcharge. It is all too easy to overestimate the amount of exchange-rate adjustment that is really needed. Canada has had significant experience with over-reacting to foreign imbalances with three fairly large discrete adjustments – appreciation, depreciation, and appreciation – in the later 1940s and early 1950s.

However, the government of the United States may have decided not to play "mature" creditor, but rather to play "mercantilist" instead. In which case large exchange rate changes – of the order of 15 percent – would be required to restore the large trade-balance

[2]A statistical analysis of recent price level movements, which is the basis for these assertions, can be found in R. McKinnon, "Monetary Theory and Controlled Flexibility in the Foreign Exchanges," Princeton *Essays in International Finance*, No. 84, 1971.

surpluses of the 1960s. This neo-mercantilism seems to ignore the structural changes in international payments which were the focus of Governor Brimmer's paper. I am afraid other important trading countries – many of whom are potentially *mature* debtors – cannot accept a more or less permanent deficit in their current account balances. Paradoxically, this outbreak of neo-mercantilism in the United States could well imperil the safety of the huge extant American investments overseas, and even those on this continent. With the import surcharge, the President's newly revised proposals for textile quotas of a day or two ago, and other tax measures biased against foreigners, American mercantilism would already seem to have significantly damaged the liberal trading environment of the postwar period – and Canada is more dependent on liberal trading arrangements than is the United States.

DISCUSSION

JOHN F. HELLIWELL

Governor Brimmer's stimulating paper is divided roughly into halves, the first assessing recent history, and the second drawing lessons from that history. The first half has three sections, the first two dealing with recent trends in the U.S. and Canadian balance of payments, and the third viewing the bilateral balance in perspective. The second half also has three sections, drawing lessons alternately from the Canadian and U.S. experiences, topped off with some concluding observations. My comments follow the same pattern, but I shall take most of the history as read, and concentrate more on the lessons to be drawn from it.

A. The History and Perspective

1. Recent Trends in the U. S. Balance of Payments

Governor Brimmer's reaction to the recent U.S. balance-of-payments history has a slightly surprised air. He suggests that U.S. analysts had more hope than did most outside observers that the deflationary policies applied in recent years would have by now eliminated the U.S. balance-of-payments deficit. Observers who have not been surprised by the continuing deficit are not particularly prescient; they merely have a more healthy respect for the length of the lags in the price and wage adjustment processes. Given the length of these lags, earlier action would no doubt have been desirable; given that the policy responses were delayed, a greater willingness to ride through an extended period of deficits would have been desirable. I shall discuss later how I think policies could have been developed to make that ride reasonably comfortable.

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2. *Recent Trends in the Canadian Balance of Payments*

In viewing the recent Canadian experience, Governor Brimmer is struck by the continuing Canadian current account surplus in the face of a 6 percent revaluation since June 1970. Governor Brimmer has attempted to interpret this evidence as heralding a new role for Canada as an exporter rather than an importer of capital. Some of us who have been playing with quantitative descriptions of trade relationships are more inclined to the explanation that trade flows respond with some lags to changes in relative prices, and that the full balance-of-payments consequences are achieved after even longer lags.

In order to get some idea of the size and time distribution of the effects of a revaluation of the Canadian dollar similar to that occurring after June 1970, we have run simulations using RDX2, a large (over 140 behavioural equations) quarterly model of the Canadian economy. In addition to possessing detailed policy response mechanisms, and many interactions between aggregate supply and demand, the model has almost 40 behavioural equations explaining international trade and capital flows, the majority of these equations relating to flows between Canada and the United States. Thus the model is an appropriate vehicle for simulating exchange rate changes. We ran the experiment by suppressing the endogenous determination of the exchange rate, and using as exogenous values 1.030 in 4Q63 (compared to the official peg value of 1.081 and the actual value of 1.079 in 4Q63) and 1.010 thereafter. The simulation was started in 4Q63, and ran until 4Q68 to allow the results to play themselves out over a full five years. The very tentative results quoted will compare the solution values for the revaluation run with those from a control solution run over the same period of history.

In the first quarter, the Canadian dollar value of goods and services exports to the United States drop by $16 million, and imports drop by $15 million. Thereafter the price effects start to take a stronger hold; so that over the first four quarters, current account trade of goods and services with the United States is $39 million per quarter more in deficit under the revaluation. The average is only slightly higher, $55 million, over the whole sample period, because the increasing price effects in the trade account are offset, during the middle of the simulation period, by reductions in real imports caused by the decline in domestic activity and prices. The Consumer Price Index (Base 1961=100) is 1.5 points lower on average, and 2.6 points lower by the end of the simulation period. The unemployment rate is higher by an average of .2 percent over the five year period, and the

main business quarterly wage rate is about 2.2 percent lower by the end of the period. Some built-in policy responses came into play, increasing Federal government employment and decreasing interest rates as prices and employment sag. The net effect of all the changes in employment, prices, personal taxes and transfer payments is that aggregate real disposable wage income is slightly higher, after five years of revaluation, than in the control solution.

As for the overall balance-of-payments effects, it is notable that the declines in Canadian demands for investment funds, and decreases in the cost of capital, lead to large induced changes in capital flows. The balance on trade and long-term capital account between Canada and the United States shows an average deficit of $47 million/quarter for the first four quarters (compared to an average of $39 million for the trade account alone), but a much larger average of $110 million/quarter for the whole five year period (compared to $55 million for the trade account alone). This becomes $148 million/quarter if we look at the balance of trade and long-term capital accounts between Canada and all countries. The corresponding average change for the first four quarters is $75 million. It should be noted that the drop in capital inflows is itself responsible for a subsequent decline in the deficit on current account, because the model explains the links between capital account flows and the subsequent debt service payments.

The results I have quoted are not strictly applicable to the 1970 revaluation, principally because we are now dealing with a larger economy and smaller dollars. Nevertheless, they do indicate that we should not be surprised if the effect of the 1970 revaluation on the Canada-U.S. long-term bilateral balance totalled no more than $200 million (on an annual basis) by the middle of 1971.

3. *Canadian-American Balance of Payments in Perspective*

In this section, Governor Brimmer is concerned chiefly with two topical issues – the auto pact and the effects on Canada of the U.S. measures of August 15th.

When assessing the trade effects of the auto pact, Governor Brimmer, like most other observers, measures only the change in the flows of vehicles and parts. A more thorough investigation of the trade effects of the pact would include an assessment of Canadian imports of machinery, as well as the dividends and unremitted profits of Canadian subsidiaries of U.S. auto firms. Governor Brimmer goes on to question the role of the transitional arrangements under the auto pact. The more important of these arrangements apply to the division of production between the countries and to restrictions on

the freedom of Canadian individuals to import cars duty-free from the United States. It might be argued that some guarantees about the maintained minimum levels of production in Canada may be a necessary feature of an agreement involving an industry in which the entire North American production is concentrated in the hands of three U.S.-controlled firms. However, that issue is not relevant at the present time, because the Canadian share has far exceeded the guaranteed minimum. I agree with Governor Brimmer that the other feature of the transitional arrangements is unnecessary and inefficient. If Canadians had free access to U.S.-made cars, the most striking consequences would probably be a reduction in the price of Canadian-made cars and some reduction in the profits of the Canadian subsidiaries of the U.S. car firms. Consumers and governments in the two countries have little to gain from this aspect of the pact since it merely permits the firms to undertake a profitable exercise in discriminating monopoly. It is not clear, however, that the removal of this transitional provision would shift much production from Canada to the United States, but it would reduce the profits and consequential dividends flowing from Canadian subsidiaries to U.S. parents.

In dealing with the effects of the August 15th measures, Governor Brimmer first notes that there is no evidence of Canadian discrimination against the United States of the type sometimes alleged for Japan and Europe. Nor is there any recent evidence to support his suggestion of a year ago that Canada has arranged her trade policies at the expense of the United States and in favour of the rest of the world. Why then apply the surcharge to Canada? The only argument stated by Governor Brimmer is of the "you did it to us" sort – because Canada applied a similar surcharge to the United States, amongst other countries, in 1962. However weak the rationale for the Canadian policies may have been, this is not a strong parallel to draw. In 1962 Canada was fending off a speculative attack in an attempt to hold a fixed rate relative to all countries. In the present circumstances, the U.S. policy is intended to be a temporary spur to force others to liberalize their trade and capital flow policies, and to realign their exchange rates. To my mind, it is bad politics to apply such measures equally to all countries, including those with flexible exchange rates and trade policies more liberal than those of the United States herself. The lesson for countries not presently offending seems clear–if you are to be treated as an offender when you are not, then you might as well offend to pick up any benefits going and to acquire a position from which to bargain. Beyond their

particularly unsatisfactory stance in relation to Canada, the August measures seem a rather sloppy as well as dangerous exercise in international bargaining. Since particular targets have not been set for countries involved, or for groups of countries, in terms of either exchange rates or the removal of trade restrictions, no one knows what has to be done in order to get the surcharge removed. Thus, there is no effective and realistic incentive for trade liberalization. More on this later.

The second reason why the surcharge may be applied equally to Canada and to other countries is unstated by Governor Brimmer but is stated in GATT. That treaty is more offended by trade restrictions that discriminate between countries than by those applying to all countries equally. Since the surcharge is not easily applied as a delicate instrument of persuasion on particular countries, it seems an unsuitable tool in the current circumstances. In addition, the use of a trade restriction for the supposed purpose of achieving trade liberalization invites a cynical smile.

Governor Brimmer's final comment on the application of the surcharge to Canada is that it only applies to about one-sixth of total Canadian trade, and the exchange rate will presumably float to help the adjustment process. But given the costs and lags in this adjustment process, it is surely not in anyone's best interest to shift resources from a surcharged to an unsurcharged industry in response to a temporary surcharge.

B. *Lessons and Conclusions*

1. *Lessons of the Recent Canadian Balance-of-Payments Experience*

Governor Brimmer's first lesson is that if Canada is likely to move into a position of capital account balance or deficit, then it is appropriate that Canadian financial markets should intermediate so that Canadian borrowings in the New York market can be reduced. This reiterates a similar suggestion he made in his paper a year ago, that if Canada's capital markets were well developed, Canada would not be lending short and borrowing long, vis-a-vis the United States. In a world of flexible or uncertain exchange rates, it would be very surprising if a net balance on capital account also meant that gross flows would be zero. When account is taken of exchange rate variance and the resulting desires of traders and others to match currencies in which their rates and payments are due, it is quite natural that firms in one country should wish to issue bonds in the currency of another country. Unless the U.S. bond market is

strikingly less efficient than the European market for U.S. dollar bonds, it is likely that continuing use of the New York market by Canadian firms will be desirable. As U.S. interest rates come to be more in line with world rates, in the hoped for world of freer capital movements, it may also be feasible for U.S. firms to raise money in Canadian bond markets. From Operation Twist on, the various U.S. policies designed to insulate U.S. long rates from world rates have been doomed by the increasing integration of world capital markets. The history of the last decade, in which the United States has been lending long and borrowing short, is evidence more of the distortions caused by the Interest Equalization Tax and other U.S. balance-of-payments policies than of inefficiencies in private capital markets.

There are no doubt many inefficiencies in the Canadian capital market and the removal of some might help to reduce U.S. long-term capital flows to Canada. For example, the large tax concessions to the extractive industries, mainly controlled by foreign firms, lead to over-investment in those industries, adding to the incentive for U.S. firms to develop Canadian resources, and hence to add (at least temporarily) to the U.S. balance-of-payments deficit.

Governor Brimmer's second lesson, drawn from the auto pact, is that future bilateral trade arrangements would be better if they increased trade without altering its balance. This conclusion takes no account of the efficiency considerations which presumably underlie any advantageous free trade arrangement. Why should we constrain the reallocation so that production has the same country distribution as before the shift? Granted, any extensive shift will require a facilitating exchange rate adjustment, and consequent adjustments in other industries; and the deal should only be on if the long-term efficiency gains exceed the adjustment costs. It would be strange if the existing tariff structure in each industry had a zero net effect on the trade balance in related goods and services relative to the situation in the no-tariff world – indeed, any country establishing a tariff surplus hopes to improve its balance in the commodity concerned.

Both of Governor Brimmer's lessons involve restrictions on the extent to which economies should trade in goods and capital. As such, they seem inconsistent with the stated basic U.S. goal of establishing a system geared to increase international trade and investment. No doubt political considerations are likely to restrict the acceptable amount of economic interdependence, but we should make sure that any necessary restrictions are designed to achieve the political aims at the least cost in terms of foregone efficiency.

2. *Lessons of the Recent U.S. Experience*

The main lesson drawn here is that if inflationary trends become entrenched in expectations, then interest equalization taxes and related paraphenalia may help, but only Draconian measures of the August 15th variety would turn the tide. Here too I think that Governor Brimmer is unduly surprised by the lags in price and wage formation. Given that policy makers found themselves with a legacy of unemployment and inflation, why are measures of the August sort inevitable consequences? Governor Brimmer's argument against benign neglect is that surplus countries are generally very hesitant to act. Under this argument, the measures of August are only more rational than passivity if they cause other countries to adjust in a quicker and less painful way. I believe that if gold had been completely dethroned earlier, by cutting trading between central banks, and cutting any official support of private production, and if the IET and the balance-of-payments programmes were scrapped, then the U.S. authorities could safely have let other countries choose whether or not to accumulate liquid claims on the United States for a longer or shorter period prior to the inevitable revaluation of their own currencies. The kind of pressures created by the August measures are such as to make many countries more resistant to realignment of exchange rates. More importantly, they may render impossible any agreement on a more rational system of continuing adjustment.

3. *Concluding Observations*

Here Governor Brimmer emphasizes that the most pressing need at the moment is for a better agreement among industrial nations about the fundamental world payments mechanism. He states a basic goal of the United States with respect to reform efforts to be that any emerging payments system must not be based on a continuing U.S. payments deficit. This implies, he concludes, that countries with sizeable trade surpluses cannot have as their goal for the payments system continuation of such surpluses. Quite so. But in the light of these requirements it is disappointing that Governor Brimmer's paper throughout uses terminology that makes trade surpluses "good" and trade deficits "bad". Mercantilism lives on. Even more disappointing is the announced U.S. aim of achieving a $13 billion balance-of-payments turnaround from deficit to surplus. Who is to be the deficit country? To conclude my comments I must note the major gap in the paper. The bright side of the present crisis is announced to be the opportunity to "improve fundamentally the payments system with which we have lived for a quarter of a century", but there is no

discussion about the features of the basic reforms that Governor Brimmer thinks necessary. Without firm statements of the purpose and nature of reform, there can be no progress to that end. In the meantime we are stuck with trade restrictions masquerading as tools to build a freer system.

APPENDIX

The following section was prepared by Professor Helliwell after the conclusion of the conference.

The Effects of Revaluation on Trade and Capital Flows between Canada and the United States

1. *Introduction*

This note explains some of the assumptions and results of simulating the Canadian quarterly model[1] RDX2 for a five year period (4Q63-4Q68) of assumed revaluation of the Canadian dollar relative to the U.S. dollar (and all other currencies). During the historical period 2Q62-2Q70, the Canadian exchange rate (PFX), measured as the number of Canadian dollars required to purchase one U.S. dollar, had a par value of 1.081. The revaluation simulation was performed by suppressing the equations for net private and official demands for foreign exchange (which interact to determine the exchange rate), and setting the exchange rate equal to 1.03 in 4Q63 and 1.01 in each subsequent quarter. For the five years 1Q64-4Q68, the value of 1.01 represents a revaluation of the Canadian dollar of approximately 6.2 percent on the average actual value of the exchange rate during that period.

The lowering of the price of foreign exchange (PFX) has numerous direct and indirect effects on private decisions and public policies in Canada, the United States, and other countries. The simulations we have performed thus far involve only the Canadian model RDX2, so that domestic prices, expenditure, and public policies in countries other than Canada do not alter in response to the change in the value of the Canadian dollar.

Further experiments are underway in which RDX2 and the MPS model (formerly the FRB-MIT-Penn model) are solved simultaneously to depict the interactions between the two economies in

*I am grateful to Fred Gorbet and Ian Stewart for collaboration in running the simulation described in this note, and to Jillian Broadbent for assistance in interpreting the results.

[1]The model is presented and explained in J.F. Helliwell, H.T. Shapiro, G.R. Sparks, I.A. Stewart, F.W. Gorbet, and D.R. Stephenson: *The Structure of RDX2*. Ottawa, 1971. (Bank of Canada Staff Research Studies, No. 7).

greater detail.[2] We expect that the full effects of revaluation on the Canadian economy will not be altered much by the inclusion of the U.S. model in the simulations. The situation is dramatically different, however, if we wish to determine the total effects of the U.S. August 15th measures on trade and capital flows between Canada and the United States. Many of the August measures have their primary points of impact within the U.S. economy rather than directly on the trade flows. Any realistic simulation of the total effects of the package therefore requires each of the major policy changes to be put into the U.S. model, or into the trade equations linking the two models, so that both direct and indirect trade and capital flow effects can be assessed by the combined solution of the pair of models.

In the meantime, we can use the Canadian model on its own to suggest some of the consequences of Canadian revaluation on the assumption that the trade effects are not large enough to trigger major changes in the U.S. economy.

The three remaining sections of this note discuss some of the relevant features of RDX2 (in section 2), the main characteristics of the results (in section 3), and how the results might be made more directly relevant to the revaluation of the Canadian dollar since May 1970 (in section 4).

2. *Some Effects of Revaluation in RDX2*

This brief discussion will be concentrated on those features of the model most important in the transmission of the effects of revaluation. The estimated equations of RDX2 are based on data samples ending in 4Q68 and starting usually in the mid-1950s.

2.1 *Trade Equations for Goods and Services*

There are five equations for movements of goods from the United States to Canada, all estimated in terms of 1961 Canadian dollars. The categories treated separately are crude materials, energy fuels, food and beverages, autos and parts, and all other. These categories were chosen in connection with Project LINK (concerned mainly with forecasts of multilateral trade flows), and provide a much more even split for U.S. imports than for Canadian imports. During the 1958-68 fitting period for the equations, the residual import category (mainly manufactures) comprised more than 60 percent of Canada's imports of goods from the United States. The equation for

[2]The main features of the links between the two models, and of the planned simulations, are described in J.F. Helliwell, H.T. Shapiro, G.R. Sparks, I.. Stewart, and F.W. Gorbet: "Comprehensive Linkage of Large Models: Canada and the United States," Chapter 10 in R.J. Ball, ed. *International Linkage of National Econometric Models*, Amsterdam, North-Holland, forthcoming.

this large category treats imports as an input to the domestic productive process; the main explanatory variable is the product of a weighted average of domestic expenditure components, the ratio of the domestic output price to the price of imports, and the degree of domestic capacity utilization. There is an additional impact from Canadian investment in machinery and equipment. The equations for the imports of other categories are fairly similar. The weighted average of domestic expenditures (based on input/output information on the import content of final demand categories) differs in each equation, and the role of capacity utilization varies. The U.S. rate of capacity utilization enters directly only in the equation for crude materials. Northward flows of autos and parts are determined only by Canadian consumer expenditure on motor vehicles, variables reflecting U.S. auto strikes, and the increasing degree of integration brought about by the Canadian-U.S. auto pact.

The southbound flows of goods are split only two ways – exports of motor vehicles and parts, and all other exports of goods from Canada to the United States. The main export equation is driven by U.S. gross national product, capacity utilization, and relative prices. As with the equations for Canadian imports, the capacity utilization variables multiply the demand variables, so that the marginal propensity to import is directly influenced by capacity utilization.

There are seven equations for service flows between Canada and the United States, all estimated in current dollars. Four of these are straightforward equations for travel payments, and for freight and shipping payments, from each country to the other. Then there are separate equations for dividends and for interest payments from Canada to the United States, based on the relevant rates of return and detailed accounting of the elements of indebtedness.The much smaller northbound flows of interest and dividends are modelled by a single equation.

Trade in goods and services between Canada and countries other than the United States is depicted by eight stochastic equations. There are separate import and export equations for goods, interest and dividends, freight and shipping, and travel payments.

Table I summarizes the effects of the exchange rate in the equation for trade flows, and the related trade prices, linking Canada and the United States. The figures provide some basis for comparison with the simulation results reported in the next section.

2.2 *Capital Movements*

Capital flows of several sorts – new issues of provincial and municipal bonds, new issues of corporate bonds, trade in outstanding

TABLE I

PARTIAL EFFECTS OF REVALUATION ON TRADE FLOWS BETWEEN CANADA AND THE UNITED STATES

All changes are measured with respect to PFX, the Canadian-dollar price of U.S. dollars.

	Elasticity of constant-dollar (Can.) trade flow	Elasticity of Trade Prices	Elasticity of current-dollar (Can.) trade flow	Change in quarterly trade flow, in millions of current Can. dollars resulting from a 1% decrease in PFX
Canadian imports from the U.S.				
goods	-.46	.66	.20	-2.6
services	-.34	0	-.34	2.1
total	-.42	.44	.023	-.5
Canadian exports to the U.S.				
goods	.63	.30	.93	-10
services	.79	0	.79	-3
total	.67	.22	.89	-13
Exports-Imports				-12.5

NOTE: The calculations supporting this table are based on the effects of changes in the exchange rate operating through the trade price equations and trade flow equations explaining movements of goods and services between Canada and the United States. The lags in the price effects are assumed to be fully worked out, but no indirect effects are taken into account. That is, these figures are based directly on the trade price and flow equations, holding constant Canadian domestic final demand, capacity utilization, domestic prices, employment, and so on. The elasticities have been calculated using the sample mean values for trade flows and other variables. The flow changes in the last column are based on average quarterly flows in 1964 to permit closer comparison with the simulation results.

bonds, direct investment, and trade in outstanding shares are modelled for transactions involving Canadian assets and securities traded between Canada and the United States. For transactions involving U.S. assets and securities, there are equations for Canadian direct investment in the United States and for net trade in U.S. bonds and shares. The capital flows in both directions are influenced heavily by rates of return, net wealth, and financing requirements in both countries. The equations are designed to have reasonable long-run tendencies; for example, if wealth and rates of return are constant, and net requirements for funds are zero, then capital flows will cease when the necessary portfolio adjustments have been completed. On the other hand, continued net business requirements for funds in the two countries will lead to continued long-term capital flows in both directions across the border. If revaluation leads to a reduction in Canadian investment expenditure and interest rates, there will be induced decreases in capital inflows and increases in capital outflows.

There is less detail in the explanation of long-term capital flows between Canada and other countries, chiefly because appropriate wealth, expenditure, and rate-of-return variables are not available for the heterogeneous "other countries" category.

2.3 *Domestic Supply and Demand*

Revaluation acts on the domestic economy initially by decreasing the real value of exports and increasing the real value of imports, thus altering domestic incomes and the balance between aggregate supply and demand. The chain of repercussions can only be explained by reference to some of the mechanisms brought into play in these circumstances. There are two main aggregate supply concepts in RDX2, one based on current levels of employment, average hours, and capital, and the other based on normal hours and a typical unemployment rate. The latter supply concept is used as the bottom half of the main index of imbalance between supply and demand. The main aggregate demand variable is equal to business output less unintended inventory accumulation. Any decline in net exports leads initially to some unintended inventory accumulation and some reduction in output. The total reduction in demand leads first to reductions in average hours worked, then to reductions in employment and investment. The drop in aggregate demand relative to supply puts downward pressure on prices, money wages, and the marginal propensity to import. The drop in employment leads to lower real wage rates. The combination of lower real wages and a higher unemployment rate leads to less immigration and more

emigration. These induced migration flows are very important in the operation of the model; if the migration equations are suppressed the effects of revaluation on the unemployment rate are very much greater (about 50 percent greater in the third year of revaluation).

The induced declines in Canadian prices and capacity utilization naturally lead to increases in Canada's exports and reductions in imports, thus tending to reduce the induced trade deficit. However, the increasing slack in the Canadian economy leads to a number of expansionary changes in government policies, as described below.

2.4 *Government Sector Responses*

Any drop in income and employment leads to cuts in personal and company taxes, increases in unemployment insurance benefits, and other endogenous changes in the tax and transfer system. RDX2 also has a number of government employment and expenditure equations. In general, the provinicial and municipal expenditure equations depend on demands for services, relative costs, and the availability of finance. The federal equations depend more upon the values of policy target variables. For example, federal employment is increased when the unemployment rate is high, and federal nonwage expenditure is increased when there is a decline in the expected rate of change of consumer prices.

Monetary policy is also endogenous to RDX2. The interest rate on short-term government securities is treated as the focus of policy actions, and is determined chiefly as a function of recent rates of inflation, recent rates of increase in bank lending, and the U.S. short-term interest rate. The central bank is then assumed to provide the quantity of bank reserves required to support the chosen rate of interest. When running the revaluation simulation, we cut the link between the balance of payments and the domestic money supply. Thus we are assuming that any reduction in foreign exchange reserves brought about by the balance-of-payments deficit does not lead to any change in domestic monetary policy. Alternatively, we might have assumed that monetary policy would be specifically directed toward defending the lower price of foreign exchange. This would have required a much tighter monetary policy than was employed in the control solution. In our simulation, the deflationary effects of the revaluation lead to lower interest rates, presumably intended to cushion the downward movements, relative to the control solution, in prices, expenditure, and the size of the banking system.

Thus the net effect of government policies, in our simulation, is to maintain the levels of incomes, output, prices and employment higher than they otherwise would have been. Sooner or later, the

continued loss of foreign exchange reserves implied by these policies would cause the policies themselves to be altered, until balance on trade and capital accounts was eventually achieved at the new exchange rate. Further discussion in this vein follows a description of the simulation results.

3. *Features of the Simulation Results*

The results reported here (and in the revised version of my comments on Governor Brimmer's paper) differ slightly from those reported at the conference. The chief difference lies in the results for the unemployment rate, which increases less in the present version. The reason for the difference is that the latest results are based on a version of RDX2 in which both immigration and emigration are endogenous, thus cushioning the effects of revaluation on the unemployment rate.

The results reported here will be in terms of differences between the control solution and the revaluation solution. The dollar flows are seasonally unadjusted, and are measured at quarterly rates, in millions of dollars. The constant-dollar flows are measured at 1961 prices. It may be helpful to provide some bench-mark figures describing the scale of the Canadian economy during the simulation period. The average quarterly value for gross national expenditure 4Q63-4Q68 was 15,300 million current dollars. Current dollar imports of goods and services averaged $3,570 million, of which $2,515 million were from the United States. Current dollar exports of goods and services averaged $3,490 million, of which $2,190 million were to the United States. In 1961 dollars, total exports of goods and services averaged $3,015 million and imports averaged $3,120 million.

Charts 1 to 8 illustrate some of the more interesting features of the simulation results. Chart 1 depicts the changes in current dollar trade flows between the United States and Canada. Shown are Canadian exports and imports, net exports, and the net balance on trade and long-term capital account. The growing difference between the two balance lines indicate the size of the induced Canadian deficit on capital account. New direct investment inflows to Canada and new issues of Canadian business bonds are initially not much affected by the revaluation, because the declines in fixed capital expenditures are offset by unintended inventory accumulation and reduction in profits, so that net requirements for new funds are not much altered. Later on, however, investment in fixed assets and inventories drops substantially, and direct investment inflows drop sharply, influenced also by the lower supply price of capital in

Chart 1

CHANGES IN CANADA - U.S TRADE AND CAPITAL FLOWS

(Millions of Current Dollars)

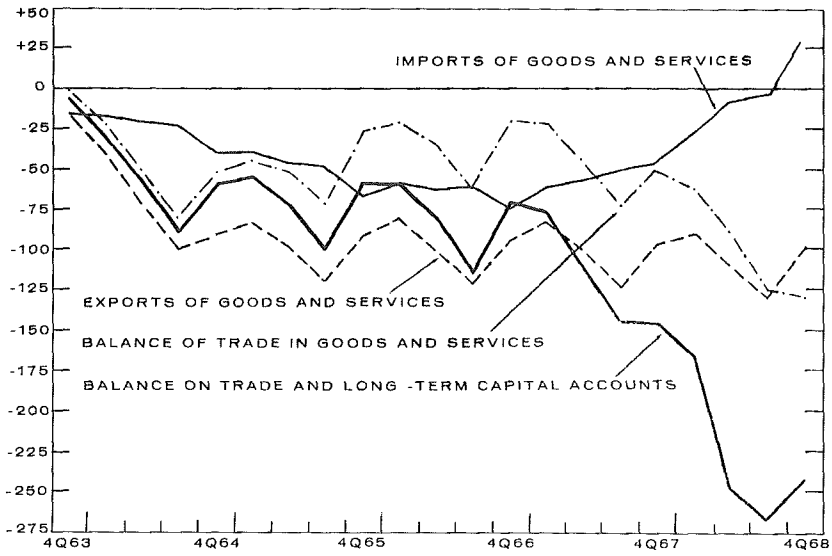


Chart 2

CHANGES IN TOTAL CANADIAN TRADE AND CAPITAL FLOWS

(Millions of Current Dollars)

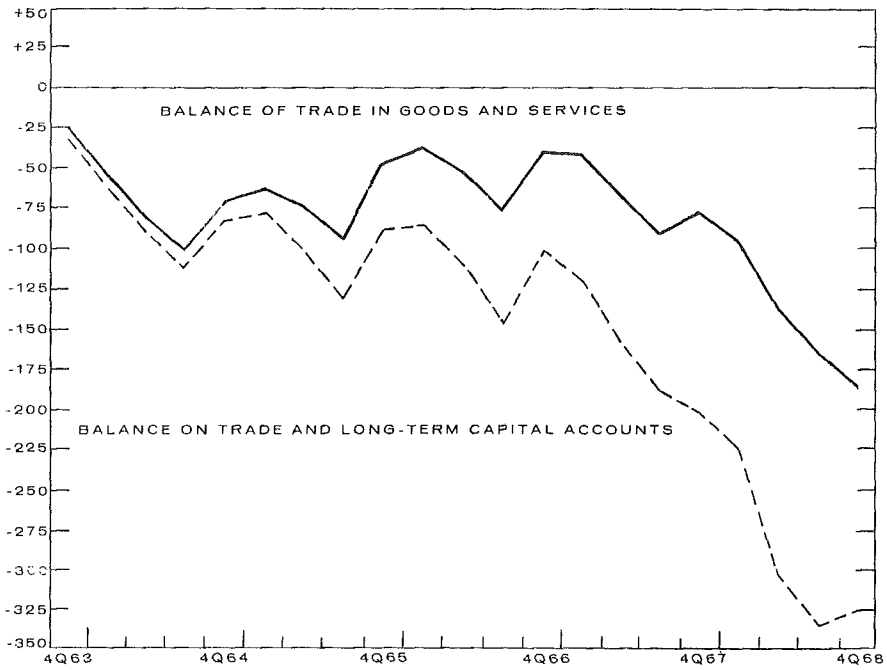


Chart 3

CHANGES IN TOTAL REAL TRADE FLOWS

(Millions of Constant 1961 Dollars)

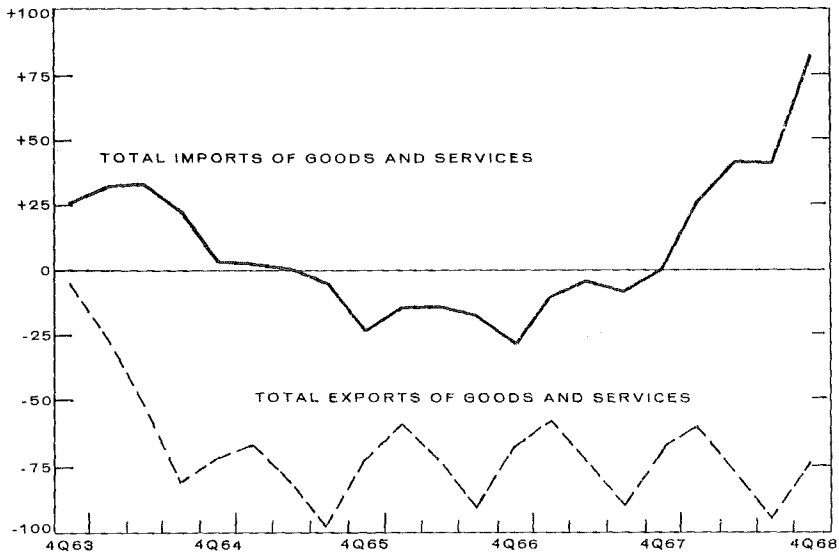


Chart 4

CHANGES IN THE PRICES OF FOREIGN EXCHANGE AND DOMESTIC OUTPUT

(Revaluation-Control, as a Percent of Actual Prices)

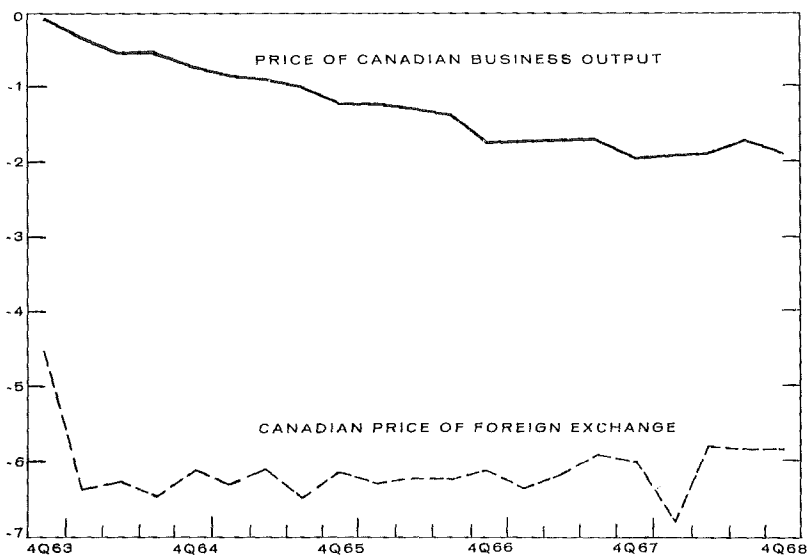


Chart 5

CHANGES IN AGGREGATE SUPPLY AND DEMAND

(Millions of Constant 1961 Dollars)

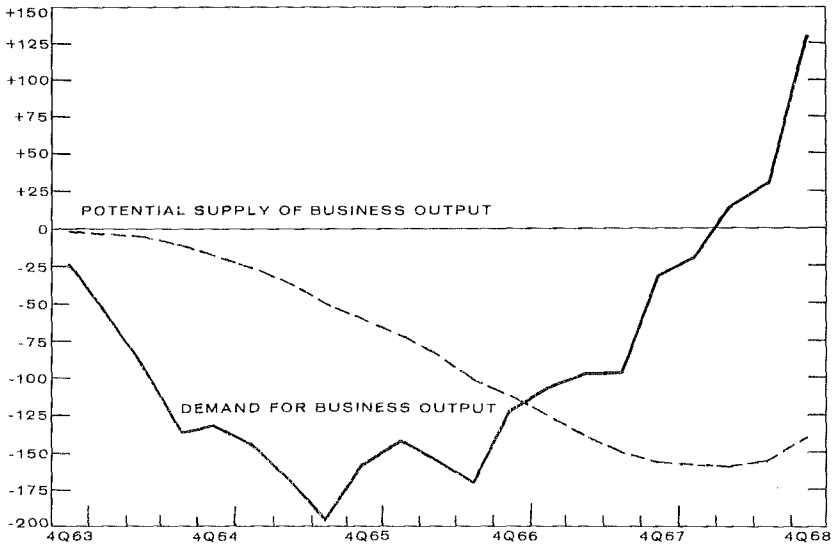


Chart 6

CHANGES IN EMPLOYMENT AND LABOR FORCE

(In Thousands of Persons)

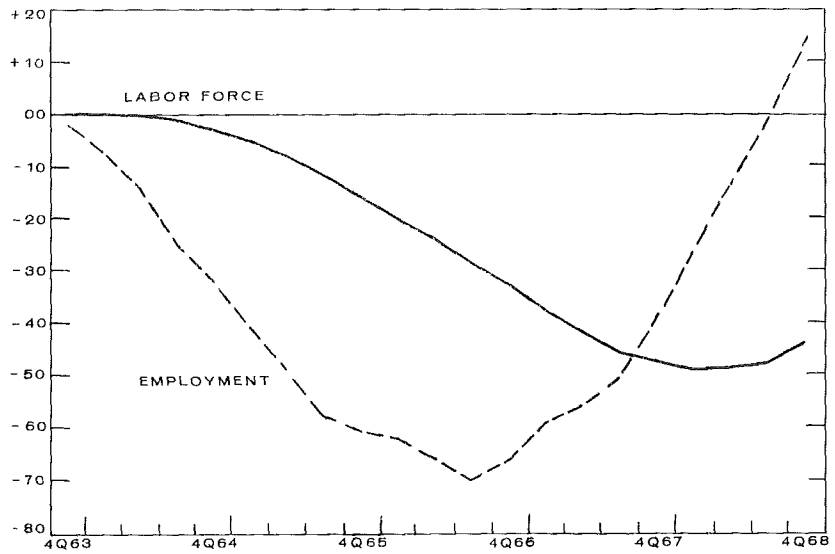


Chart 7

CHANGES IN WAGES, PROFITS, AND FEDERAL SURPLUS

(Millions of Current Dollars)

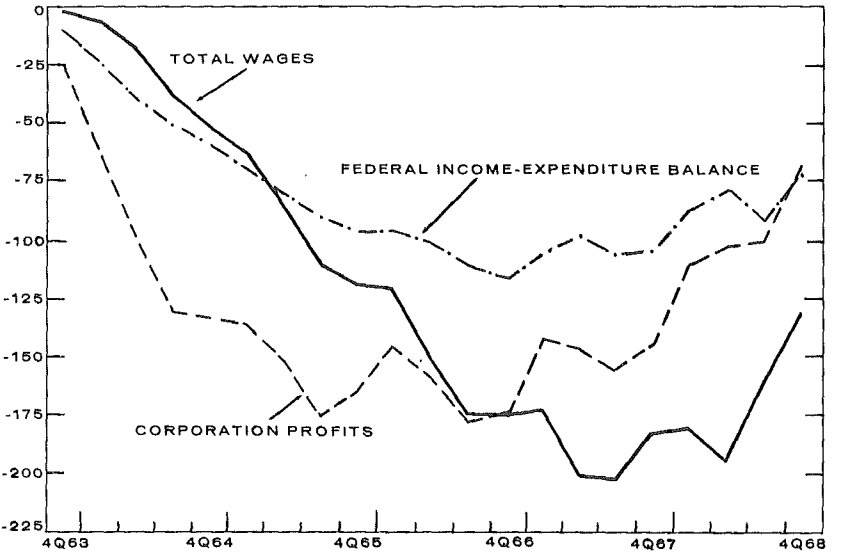
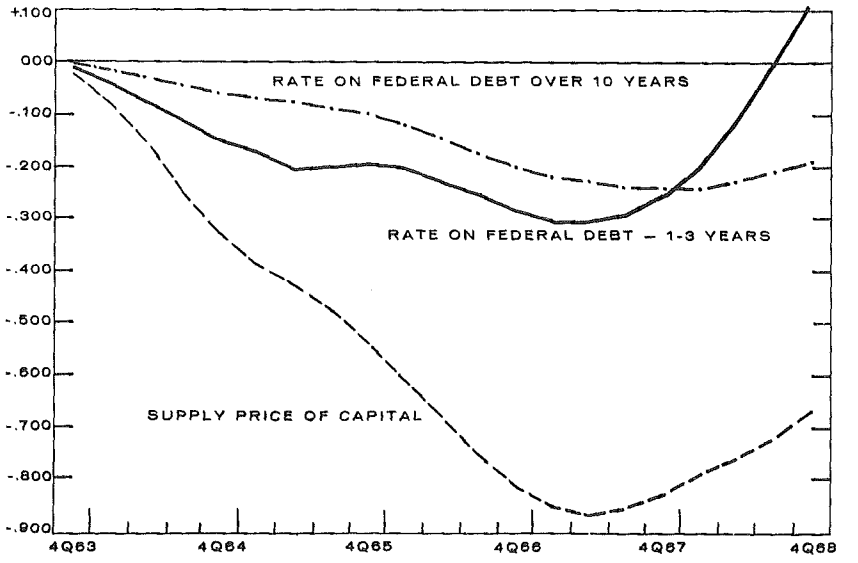


Chart 8

CHANGES IN INTEREST RATES



Canada. During most of the simulation period, about $10 million of the reduction in the quarterly capital inflow arises from supposed expectations that the exchange rate will return to its control solution par of 1.081. This effect, which appears in the equation for trade in outstanding bonds of Canadian corporations, may have been appropriate for variations of the exchange rate within a band about 1.081 but surely distorts the nature of the speculative bond trading that might have accompanied the choice of a new parity of 1.010. The new value might well have been accepted with equanimity at first, with speculative trading starting in a rush when the cumulative loss of reserves reached some alarming level.

Chart 2 shows the current-dollar trade balance and the "basic balance" in trade and long-term capital flows between Canada and all countries. These flows show roughly the same pattern as the corresponding measures for flows between Canada and the United States. The net effects of revaluation on the basic balance are about one-half as large for other countries (excluding the United States) as they are for the bilateral balance with the United States.

Chart 3 shows the constant-dollar (in millions of 1961 Canadian dollars) flows of imports and exports of goods and services between Canada and all countries. Real imports are at first higher than in the control solution, because of reductions of import prices. The real flow drops sharply during the middle of the simulation period as the increasing slack in the Canadian economy diminishes the marginal propensity to import. However, by the end of the simulation, aggregate demand is recovering and aggregate supply is still less than in the control solution (as shown in Chart 5), so that imports rise sharply. Exports drop initially because of the effect of revaluation on Canadian export prices in terms of foreign currency. About one-third of the effect of revaluation is absorbed by lower Canadian-dollar export prices, but there is still a substantial price-induced reduction in export volume. Later on, this effect is reduced as Canadian domestic output prices, including the prices of exports, drop because of excess capacity. Chart 4 indicates the extent to which the decline in the price of U.S. dollars (PFX) is matched by a decline in the price of Canadian business output (PGPP). For ease of comparison, both changes are measured as a percent of their actual values. By the end of the simulation, the Canadian output price is no longer dropping relative to control, evidence primarily of the government fiscal and monetary policies designed to support income and employment and leading eventually to a strong resurgence of demand.

The net effects of revaluation on aggregate supply and demand are shown graphically in Chart 5. The aggregate demand variable is equal to actual business output less unintended inventory changes. Aggregate supply is the output that would be forthcoming if business fixed capital and the labour force were employed assuming average rates of unemployment and productivity. The ratio of the demand variable to the supply variable influences trade flows and domestic prices. The chart shows the difference of each series from its control solution, measured in millions of 1961 dollars. Aggregate demand falls at first because of the decline in net exports and then further because of induced reductions in consumption and investment, chiefly the latter. The reductions in investment and in the labour force (see Chart 6) lead to continuing reductions in supply potential. Aggregate demand starts to recover strongly once the point is reached (in 1Q67) where the cumulative reductions in investment, net immigration and labour force participation cause aggregate supply to reach a lower point than aggregate demand, thus raising the index of capacity utilization higher than it was in the control solution. The recovery in investment is also aided by the lower supply price of capital, which leads firms to choose higher capital/output ratios for their replacement and expansion investment.

Lower aggregate demand, during the first years of the simulated revaluation, leads to the reductions in employment shown in Chart 6. The implied increase in the unemployment rate leads to marginal reductions in the labour force participation rate and to substantial decreases in immigration and increases in emigration. The change in the unemployment rate is determined by the net effect of the changes in employment and the labour force. The peak increase in the unemployment rate occurs in 4Q65, where it is .64 percentage points above the control solution. By 4Q67, the drop in the labour force is greater than the drop in employment, and the unemployment rate is thereafter lower than in the control solution. No doubt there would be further cycles if the simulation were allowed to run over a larger number of years.

Chart 7 shows the induced declines in aggregate wage income and corporation profits, both measured before taxes and in millions of current dollars. These declines in pre-tax factor incomes lead to substantial drops in tax receipts. The reductions in tax revenues, when coupled with induced increases in federal expenditures and transfer payments, produce the decline in federal government income-expenditure balance shown in Chart 7.

Finally, Chart 8 gives some idea of the induced changes in monetary policy. The short-term government interest rate is the focus of monetary policy in RDX2, and the induced changes in the long-term rate follow as the distributed lag term structure works itself out. The supply price of capital (RHO), which is a major determinant of domestic investment and savings decisions, and of international capital flows, is reduced even more than the long-term interest rate. This is because the continuing federal government deficit increases the supply of government bonds, leading to an increased demand for shares (and hence a decrease in the cost of capital to firms) required to maintain balance in private portfolios.

4. *The Analogy Between Past and Future*

It is apparent that the simulation results reported above are very dependent on the assumed pattern of government behavior. Whether a given change in the par value of a currency leads to eventual duplication of the original balance-of-payments situation or to a continuing change in flows depends primarily on which outcome is adopted as a policy goal. In the simulation reported here, Canadian authorities were assumed to attach their usual degree of concern to domestic goals and to ignore entirely the continuing balance-of-payments deficit implied by the revaluation. This is presumably unrealistic in the case of a continuing deficit, as after some point the power of a government to borrow foreign exchange reserves is contingent upon policy actions being taken to stop further reserve losses. However, for the purpose of analogy with the Canadian revaluation since May 1970, the simulation assumptions are not so drastically unrealistic. By means of a very rough analogy, the simulation suggests how different things would have been, speculative flows aside, if the Canadian authorities had chosen to keep the exchange rate pegged at 1.081 and let foreign exchange reserves accumulate. According to the analogy, monetary and fiscal policies would have been tighter than they actually have been, in order to offset the greater aggregate demand and inflationary pressures that would have existed had the exchange rate been pegged at 1.081 rather than allowed to float. The parallel between the two situations is rather weak, for several reasons. First, the trade flows between the United States and Canada are different now than between 1963 and 1968, and the equations do not take adequate account of how trade in autos and parts (either earlier *or* now) would be affected by revaluation. Second, the analogy depends on changes in monetary and fiscal policies being symmetric in their use and effects, while RDX2 offers ample evidence of non-linear public

and private sector responses. Third, the simulation results depend heavily on the control solution values of the various exogenous variables in the model. Because many of these variables have quite different relative values now than they did during the 1963-68 period, solutions for the endogenous variables will differ by more than just a scale factor reflecting today's larger economy and higher prices. Fourth, the Canadian revaluation since May 1970 cannot be represented by a uniform change in the price of all foreign currencies. In the current circumstances, it is no longer appropriate to treat foreign exchange as a commodity with a single price, and trade and capital flow equations will have to be reformulated to bring the relevant exchange rates into play. Finally, the situation in the U.S. economy is very different now than between 1963 and 1968, and realistic simulations ought to reflect contemporary policies as well as likely U.S. responses to any unilateral action taken by Canada with respect to the exchange rate linking the two countries.

All of the above qualifications do not suggest that models are of no use for assessing contemporary events – only that a simulation of RDX2 between 1963 and 1968 gives different answers than we would get from ex ante simulation of alternative exchange rate policies assessed from 1970 to 1975. In the temporary absence of an ex ante version of RDX2, the simulation results from 4Q63 to 4Q68 do provide (to the builders of the model, at least) some valuable insights into the impacts and repercussions of revaluation.

RESPONSE

ANDREW F. BRIMMER

I will comment first on the remarks by Professor Helliwell. I am delighted that my paper stimulated the kind of effort which he has made. This is especially so because he has been away from his academic home base since he received the paper. Perhaps some assistance from the Bank of Canada (with which he is also associated) enabled him to analyze on such short notice some of the issues raised by my paper.

In particular, I want to congratulate him on the quality of the research which he undertook in an effort to estimate the lags in the adjustment of trade to changes in the Canadian exchange rate. However, my concern was not with the speed with which the Canadian balance of trade responded to the changes in the exchange rate since May, 1970. I was more concerned with the origin and evolution of the trade surplus since the mid-1960s. In a short period of only 15 months or so, I would not have expected to see the full impact of the appreciation registered on the trade account. This was not my concern. Instead, I was more concerned with the evolution of the trade account over the last four or five years.

I was also pleased to see Professor Helliwell's comments on the auto pact. He feels that some kind of guarantee is needed to maintain minimum production in Canada. But he agrees with me that the restrictions on the freedom of Canadian consumers and non-auto firms to import duty-free automobiles from the United States are no longer necessary. If such restrictions were abolished, the price of Canadian-produced cars would probably fall, and consumers would benefit.

At this point, let me react to the question of applying the surcharge to Canada. Frankly, this is the question every country asks, "Why apply it to us?" And especially those countries such as Canada can take a stance saying, "Look, we have not been the offenders." But frankly, aside from the GATT requirement which Professor Helliwell stressed, the need is to get all countries (especially the Group of Ten industrial nations, of which Canada is one), and

particularly those with surpluses, to realize that we do need to make a basic reform in the international monetary system. So I would not encourage the Canadians or anyone else to think about early and special exemptions from the surcharge. That is not the purpose. The purpose is to bring about a basic, multilateral revamping of the old arrangements, and Canada ought to be included along with everyone else.

Now let me turn to Professor McKinnon's paper. Essentially, he reiterated his views about the dangers of new-fashioned mercantilism which he expressed some time ago in an article in the *Washington Post.* My paper apparently served as another peg on which to hang that same set of considerations. In my judgment, it is quite appropriate for the United States to think about a current account surplus (with special emphasis on the trade account) of the order of magnitude being talked about. Given the other kinds of commitments which many people (perhaps not Professor McKinnon) think the United States ought to try to take on—or at least maintain—a sizeable surplus is desirable. I would suggest that some countries have to yield up part of their surpluses.

The observation was made that an improvement on the order of $13 billion is entirely too large, or even a long-run surplus of some $5 billion is too large. The $13 billion figure which has been suggested is a swing figure. From a deficit of perhaps $6-8 billion in 1970—based on the assumption we did nothing—we might aim for a surplus of about $5 billion looking down the road a year or two later, that is, through 1973. This is the kind of planning period which I had in mind. That is how one gets an order of magnitude of $13 billion. It is not a $13 billion improvement in 1972 over 1971. I want to make that distinction because apparently it did not come out quite so clearly.

Professor McKinnon argued that if we want to assume our role as a mature creditor, we ought to be happy with a trade surplus of some $1 or $2 billion. I would say, "Fine, but what do we do about our role as a source of capital for the developing countries?" Leave aside the question of capital flows to Europe, to Canada, and to other industrial countries, how do we sustain over the long haul the capacity to provide access to our capital market with a trade surplus of that magnitude? These are the immediate reactions I had to the discussion.

The Relative Efficiency of the Canadian Capital Market: The Consequences for Canadian-United States Financial Relations

EDWARD P. NEUFELD

In an address delivered in Montreal on September 28, 1970,[1] Mr. Andrew F. Brimmer, member of the Board of Governors of the Federal Reserve System, made the following comment:

> Recently, the United States has been urged strongly to use its gold and other reserve assets to finance our large deficit. ... The fact is that much of the increase in our liquid liabilities is to Canada. This arises in large part from Canadian use of the international capital markets (especially the market in the United States) to obtain long-term funds, while enjoying a large surplus on current account.
>
> I am by no means suggesting that restrictions be placed on Canada's access to our capital market. Canada should continue to have the opportunity to raise whatever funds it needs to further its development. However, I do think it is appropriate to ask whether Canada should not give more consideration to ways of restructuring the internal flow of savings in Canada in order to meet a larger share of the domestic demand for funds.

This comment attracted considerable attention in Canadian financial

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[1] Andrew F. Brimmer, "United States-Canadian Balance of Payments, Prospects and Opportunities," delivered before the First National Conference of Canadian Bankers, sponsored by the Institute of Canadian Bankers, Chateau Champlain, Montreal, Quebec — September 28, 1970.

circles for it seemed to suggest that the pattern of the flows of funds into and out of Canada is in a significant way explained by inefficiencies in the Canadian capital market. More specifically, the reference to giving "...more consideration to restructuring the internal flows of savings in Canada..." was taken to imply that such restructuring was thought to be necessary in order to remove an undesirable pattern in the international flows of funds and that it would not be removed automatically through the free play of market forces because of rigidities or inefficiencies in the Canadian capital market. The undesirable pattern that the presumed rigidities were thought to be creating, it would seem, was one involving Canada's being an exporter of short-term funds and an importer of long-term funds with the latter sometimes exceeding the former in amounts more than sufficient to cover current account deficits. Restructuring presumably would involve encouraging Canadian investors to curtail their export of short-term capital and to shift such capital into long-term Canadian financial instruments. The effect on the U.S. balance of payments of such restructuring would be a reduction in the outflow of capital through a reduction in the purchase of long-term Canadian bonds by U.S. investors and a reduction in the growth of U.S. liquid liabilities to Canada in similar amounts. This, it is felt, would improve the U.S. balance-of-payments position. I do not wish to embark on a discussion of U.S. balance-of-payments accounting conventions, in spite of my scepticism over some of their aspects. My essential purpose is to examine the relative efficiency of the Canadian capital market and, wherever relevant, to identify its balance-of-payments implications.

The suggestion that Canada is borrowing long and lending short because of domestic capital market imperfections is, of course, a suggestion that has for some years been used to explain a similar pattern in the flows of funds between the United States and Europe. It has been argued that Europe did not have an efficient long-term securities market so that international financial intermediation inevitably resulted in exports of short-term funds (i.e., holding of liquid U.S. liabilities) and imports of long-term funds. The phenomenal growth, since the early 1960s, in the volume of Euro-dollar bond financing, with the bonds being purchased by European investors, may be taken as evidence that structural deficiencies were indeed important.

The question I wish to raise is whether the same generalization can be made to apply to Canada. I wish to answer this question, as well as other related ones, by examining certain long-term developments

in the Canadian capital market and, wherever possible, by comparing these to developments in the U.S. capital market, and also by examining some very recent developments.

Long-Term Developments

It is not possible, with the available data, to measure the efficiency of the Canadian capital market using an "output per unit of input" approach. In any case, efficiency of a capital market is concerned not just with minimizing cost per unit of output of capital market services, but also with the quality of the capital allocation decisions made in terms of the relative economic efficiency of the borrower to whom funds are directed. What I propose to do is to make some assumptions as to the characteristics that a well-developed capital market is likely to have, and then determine the relative degree to which these characteristics are present in the Canadian and U.S. capital markets.

It may be presumed that an increasingly sophisticated and efficient capital market is one in which there is a high level of financial intermediation and in which there is a wide spectrum of financial assets available for investing the savings of the nation. This is not to suggest that there will be a never-ending shift away from direct financing to indirect financing through financial intermediaries, but merely to assume that financial intermediation, and innovation in financial claims, are prominent features of well-developed capital markets.

The degree of financial intermediation is roughly indicated by the ratio of the stock of financial intermediary assets to the Gross National Product.* Table 1 shows that while the ratio of financial intermediary assets is lower in Canada than in the United States (by an amount almost exactly equivalent to the degree to which per-capita GNP is lower in Canada than in the United States), that ratio has for at least the last 36 years been rising at the same rate or slightly more than the equivalent U.S. ratio. It can be presumed that the development of financial intermediation is at present proceeding at about the same pace in Canada as in the United States.

It would also seem to be the case that the rate of development of non-bank financial intermediaries has been as rapid in Canada as in

*It would be better, conceptually, to use national wealth instead of national product, but both reveal the same long-term trends. See R.W. Goldsmith, *Financial Institutions*, Random House, New York, 1968.

TABLE 1

FINANCIAL INTERMEDIARY ASSETS AS A PROPORTION OF GNP

	Canada (1)	United States (2)	Canada-U.S. Ratio (1) ÷ (2) (3)	Canadian per capita GNP as a proportion of U.S. per capita GNP (4)
1929	95	130	73	72
1939	139	185	75	72
1948	115	144	80	65
1965	134	167	80	79
1968	140	172	81	80

Source: Canadian financial intermediary data from E.P. Neufeld, *The Financial System of Canada, Its Growth and Development*, The Macmillan Co. of Canada Ltd. (forthcoming). U.S. data from R.W. Goldsmith, *Ibid.*, and from Board of Governors, Federal Reserve System, *Federal Reserve Bulletin*, March 1971.

the United States. Table 2 shows the rates of commercial bank assets to total financial intermediary assets for both countries. It can be seen that since 1890 the two banking systems have both declined substantially in relative size and to roughly the same extent which, parenthetically, is rather interesting considering the quite different legal framework in which the two systems have developed.

This decline in relative size of the banking system, of course, reflects innovation in financial intermediation on the part of non-bank financial intermediaries, including the appearance of government-sponsored intermediaries such as government pension funds and lending agencies. The number and relative size of the various intermediaries gives some impression of the range of financial intermediary claims available to savers and of the extent to which savers have diversified their portfolios. Table 3 gives an over-all impression of the extent of these developments in Canada and the United States. What stands out is the similar distribution of financial intermediary assets among the major types of financial intermediaries of the two countries.

In view of earlier discussions, it may be useful to obtain an impression of the extent to which the capital markets of the two economies are absorbing intermediate and long-term credit instruments. I do this by comparing ratios of net new issues of such securities to gross

TABLE 2

COMMERCIAL BANK ASSETS AS A PROPORTION OF TOTAL FINANCIAL INTERMEDIARY ASSETS CANADA AND THE UNITED STATES

	Canada %	United States %
1860	N/A	65
1869	75	N/A
1890	50	58
1912	60	64
1929	49	50
1939	42	40
1948	44	41
1965	29	32
1968	29	32

Source: See Table 1.

TABLE 3

RELATIVE SIZE OF FINANCIAL INTERMEDIARIES OF CANADA AND THE UNITED STATES 1968

	Canada %	United States %
1. Bank of Canada - Federal Reserve	4.6	5.1
2. Chartered Banks - Commercial Banks	28.9	31.6
3. Trust and mortgage loan companies and credit unions - Mutual Savings Banks and Savings and Loan Associations and Credit Unions	12.2	15.9
4. Finance Companies (including Personal Loan Companies)	4.9	3.4
5. Investment Companies	4.3	3.6
6. Life Insurance Companies	13.6	12.3
7. Private Trusteed Pension Funds	8.9	7.1
Sub-total	77.4	79.0
8. All Other	22.6	21.0
Total	100.0	100.0

Source: See Table 1.

savings as shown in flows of funds accounts. Table 4 gives this information for the years 1968 and 1969. I have combined the two years to minimize the impact of transitory elements. What stands out clearly is the remarkable similarity in the way the two economies utilize intermediate and long-term credit instruments. Bonds absorbed 12.6 percent of gross savings in Canada and 12.8 percent in the United States. The figure for mortgages was 12.9 percent and 12.2 percent, that for life insurance reserves and pensions was 9.9 percent and 8.9 percent, and that for corporate stocks was 3.3 percent and 3.2 percent. The total for all the intermediate and long-term instruments shown was 38.7 percent for Canada and 37.1 percent for

TABLE 4

SELECTED NET NEW INTERMEDIATE AND LONG-TERM CREDIT INSTRUMENTS AS A PROPORTION OF GROSS SAVINGS[1] 1968 AND 1969

	Canada %	United States %
Bonds		
- Federal Government[2]	3.3	2.6
- Other Government	7.0	3.9
- Non-Government	2.1	6.3
Total	12.6	12.8
Mortgages	12.9	12.2
Life Insurance Reserves and Pensions	9.9	8.9
Corporate Stocks	3.3	3.2
Total	38.7	37.1

Source: Based on data in D.B.S., *Financial Flow Accounts* and *Federal Reserve Bulletin.*

[1]Only domestic savings were used in the computation and exclude domestic credit instruments purchased by non-residents.

[2]Includes all securities except treasury bills.

the United States. There is no evidence here that the market for long-term credit instruments is less developed in Canada than in the United States.

These data, of course, ignore the possibility that the terms to maturity of the instruments included differ between the two countries. The only area where this is likely to be an important matter is that of the Federal Government.

Table 5, which outlines the term to maturity of the Federal debt of both countries, shows that Canadian Federal Government marketable debt is about two years longer to maturity than U.S. debt, and that this is little different from what it was in, say, 1950, with considerable variation in between.

It may be concluded at this point that the basic structural characteristics of the Canadian and U.S. capital markets are remarkably similar and so there does not seem to be any obvious evidence to support the view that deeply imbedded rigidities in the Canadian capital market explain the pattern of international financial flows that has existed.

However, it is now necessary to focus closer attention on recent developments, with particular emphasis on the Canadian balance of international payments.

TABLE 5

AVERAGE TERM TO MATURITY OF INTEREST-BEARING MARKETABLE FEDERAL GOVERNMENT DEBT OUTSTANDING

	Canada		United States	
	Years	Months	Years	Months
1946[1]	9	11	9	5
1950	8	1	6	7
1955	6	4	5	4
1960	9	5	4	6
1965	7	9	4	11
1966	7	7	4	7
1967	6	11	4	2
1968	6	4	4	0
1969	5	10	3	7
1970[2]	5	4	3	4

Source: Bank of Canada, *Statistical Summary* and United States Government Printing Office, *Economic Report of the President*, Feb. 1971.

[1]U.S. as of February of succeeding year. Canada as of December.

[2]Both as of December.

Recent Developments

For convenience, Table 6 outlines the Canadian balance of international payments for the period 1952-1970, and it does so in a form that facilitates an examination of the major developments since 1965. Over the period 1952-1970, Canada's current account deficit averaged $689 million per annum. It was more than covered by an inflow of long-term capital of $1,020 million per annum, of which $888 million came from the United States and $132 million from other countries. The difference was accounted for by an average outflow of short-term capital of $183 million ($121 million to the United States and $62 million to other countries) and average accumulation of exchange reserves of $147 million.

It may be asked whether these flows suggest capital market rigidities. In 1952 the ratio of official reserves (monthly average data) to total trade (exports plus imports) was 16 percent, and in 1970 it was 10 percent, while the ratio of the increase in reserves (1951 to1970) to the increase in Canada's total trade was 9 percent. Without discussing the difficult question as to what constitutes an adequate reserve, it does seem that the outflow of capital implied by the increase in reserves over the period as a whole was not unusual in relation to the growth in the volume of trade, even though the rate of accumulation in recent months certainly has been. In any case, if the reserves were regarded as being excessive, this would imply inappropriate exchange rate policy and not structural rigidities.

Consider now the flows of short-term funds. When it is remembered that much of Canada's trade is effected in terms of U.S. dollars and that the Canadian dollar is not essentially an international currency, it is not surprising that there was a net outflow of short-term capital, both on account of book credit increases (apparently), and increased holdings of foreign deposit balances and other short-term claims for essentially transactions purposes. The ratio of the total outflow of short-term capital (1952-1970) in the form of holdings of foreign bank balances and other short-term claims to the increase in total trade was 15 percent. By way of rough comparison, the ratio of *domestic* currency and demand deposits to Gross National Product in 1970 was 11 percent. It does not seem unreasonable to believe that most of the net outflow of short-term capital from 1952 to 1970 (amounting to $183 million annually on average) was the result of the increased need for transaction balances and related foreign claims arising from the growth in the value of trade. It does not appear that the magnitude of the outflow was such as to imply imbedded rigidi-

TABLE 6

CANADIAN BALANCE OF INTERNATIONAL PAYMENTS
1952-1970
(MILLIONS OF DOLLARS)

	1952-70	1952-70 Average	1966	1967	1968	1969	1970
CURRENT ACCOUNT							
1. Exports	189,746	9,987	13,396	15,085	17,184	19,095	21,580
2. Imports	202,853	10,676	14,558	15,584	17,291	19,846	20,283
3. Balance	- 13,107	- 689	- 1,162	- 499	- 107	- 751	+1,297
4. Balance with U.S.	- 22,568	- 1,188	- 2,030	- 1,342	- 801	- 733	+ 33
5. Balance with others	+ 9,461	+ 499	+ 868	+ 843	+ 694	- 18	+1,264
CAPITAL ACCOUNT							
1. Long-Term Capital							
a. Net direct investment	+ 8,126	+ 428	+ 785	+ 566	+ 365	+ 400	+ 545
b. Net Canadian common stock transactions	+ 843	+ 44	- 83	+ 48	+ 176	+ 265	- 82
c. Net Canadian bond transactions	+10,562	+ 556	+ 809	+ 857	+1,354	+1,461	+ 682
d. Net foreign securities transactions	- 1,443	- 76	- 401	- 432	- 467	+ 106	+ 61
e. Other	+ 1,286	+ 68	+ 57	+ 316	+ 226	+ 25	- 392
f. Total long-term	+19,374	+1,020	+1,167	+1,355	+1,654	+2,257	+ 814
(1) With U.S.	+16,865	+ 888	+1,238	+1,258	+1,134	+1,632	+ 958
(2) With other countries	+ 2,509	+ 132	- 71	+ 97	+ 520	+ 625	- 144
2. Short-Term Capital							
a. Resident holdings of foreign bank balances & other short-term claims	- 4,611	- 243	- 603	- 259	- 401	- 1,604	- 376
b. Non-resident holdings of Canadian deposits and other short-term market claims	+ 1,865	+ 98	+ 158	+ 8	+ 25	+ 392	+ 168
c. Other short-term transactions	- 721	- 38	+ 81	- 585	- 822	- 229	- 373
d. Total short-term	- 3,467	- 183	- 364	- 836	- 1,198	- 1,441	- 581
(1) With U.S.	- 2,293	- 121	- 179	- 707	- 1,270	- 540	- 338
(2) With other countries	- 1,175	- 62	- 185	- 129	+ 72	- 901	- 243
3. Net capital movements ex. reserves	+15,907	+ 837	+ 803	+ 519	+ 456	+ 816	+ 233
(1) With U.S.	+14,572	+ 767	+1,059	+ 551	- 136	+1,092	+ 715
(2) With other countries	+ 1,334	+ 70	- 256	- 32	+ 592	- 276	- 482
4. Change in Official Reserves	+ 2,800	+ 147	- 359	+ 20	+ 349	+ 65	+1,530
5. Balance	+13,107	+ 690	+1,162	+ 499	+ 107	+ 751	- 1,297

Source: D.B.S., *Canadian Balance of International Payments.*

ties in the Canadian capital market of the kind previously discussed. A year-by-year examination shows, however, that the volatility of short-term capital movements was very great -- much greater than the volatility of long-term capital movements. Ten out of 19 years showed a net outflow of short-term capital, and nine showed a net inflow, with an absolute range extending from -$1,441 million (1969) to +$425 million (1965), while 18 out of 19 years saw a net inflow of long-term capital. So, while the permanent net outflow of short-term capital can probably be explained by the needs of trade and commerce, this is not the case with year-to-year movements of short-term capital. Expectations of exchange rate changes, interest rate differentials, and spreads between spot and forward rates undoubtedly have been important forces behind the massive annual flows of short-term capital that have existed in the past. To the extent that such annual movements of short-term capital reflect interest rate and exchange rate sensitivity on the part of individuals in the Canadian financial system, presumably they could be taken to imply the existence of an efficient and innovative short-term funds market. An active short-term money market has, in fact, emerged in Canada over the years.[1] Once the basic structure and personnel are there, it is easy for the market to take advantage of new opportunities that emerge at home and abroad. Since 1966 a number of the investment dealers have become very active in the Euro-currency deposit brokerage business, and at least one firm was formed to specialize in it.[2] The Canadian banks and investment dealers in 1969 and 1970 saw an opportunity to develop a market in "Euro-Canadian dollars," involving loans of Canadian dollars to foreign investors, which were then swapped into U.S. dollars. The participants regarded such activity as not covered by the guidelines issued by the Canadian Government that were designed to prevent using Canada as a flow-through for U.S. dollars going abroad. Such guidelines referred only to foreign currency. However, in March 1971, the Bank of Canada wrote a letter to the banks and dealers, saying that such transactions were subject to the guidelines and, since then, they have disappeared.

Let us now examine developments in the period from 1966 to 1970 somewhat more closely. There was a change from a deficit on current account of $1,162 million in 1966 to a surplus of $1,297 million in 1970, or a "turn-around" of $2,459 million, of which

[2]See E. P. Neufeld, *The Financial System of Canada, ibid,* Ch. 14.

[3]See *Financial Times of Canada,* March 8, 1971, p. 14.

$2,063 million was accounted for by Canada's trade position with the U.S. and $396 million by trade with other countries. Roughly one-third of the trade balance turn-around, since 1966, arose from trade in automobiles and parts, reflecting the impact of the Canada/U.S. automobile trade agreement; while two-thirds of the turn-around arose from other trade involving a number of countries (including, of course, the United States).

Until and including 1969, the move toward a reduced deficit on current account was accomplished by an *increased* inflow of long-term funds, mainly through sales of Canadian bonds, which influences were offset by an increase in outflows of short-term funds and a steady accumulation of foreign exchange reserves. From 1966 to 1969 inclusive, the accumulated current account deficit was $2,519 million, the inflow of long-term capital was $6,433 million, the outflow of short-term capital amounted to $3,839 million, and official reserves rose by $75 million. A large part of the increased inflow of long-term funds was accounted for by net sales in the U.S. of provincial municipal and corporate bond issues, but such sales to European investors, including German investors, were large in 1968 and 1969 as well. Much of the outflow of short-term capital took the form of resident holdings of foreign bank balances -- essentially in the form of U.S. dollar balances -- by Canadian individuals and banks. Since the accumulated trade deficit was smaller than the inflow of long-term capital, Canadians as a group were acquiring short-term U.S. dollar claims with funds obtained from selling long-term Canadian claims to foreign (mainly U.S.) investors. But of course those responsible for the long-term capital flows and those responsible for the short-term flows were almost certainly largely independent of each other.

A basic change in trade and capital flows emerged in 1970. In that year, a trade surplus of $1,297 million developed, long-term capital provided an additional $814 million (down sharply from the $2,257 million of 1969), and these were offset only to the extent of $581 million by an outflow of short-term capital (which had been $1,441 in 1969) with an increase of exchange reserves ($1,530 million) absorbing the rest.

Two crucial questions must now be asked: Why did long-term capital inflows not respond more quickly to the declining current account deficit after 1966, and why did short-term capital flow out of Canada in increasing amounts? Consider the matter of long-term capital inflows first. We attempted to define an equation explaining such long-term capital movements over the period 1952-1970, and

estimated its coefficients. The yield spread between the Canadian and U.S. bond markets came out as an important explanatory variable. And it is therefore interesting, as Table 7 shows, that the interest spread between Canadian and both U.S. and German markets widened greatly in 1968 and 1969. Indeed, we have estimated that the average yield spread between the Canadian and U.S. bonds shown in Table 7 from 1952 to 1965 was 1.02 basis points, whereas the spreads from 1966 to 1969 were 1.16, 1.19, 1.42, and 1.37. In 1970 it declined to 1.00. We also found credit availability in Canada to be significant as an explanatory variable, although a really good proxy variable for it was difficult to find. But the fit was much improved when total net bond issues were added as an explanatory variable. This may suggest that Canadian issuers of bonds have, over about the past two decades, become accustomed to financing some part of their requirements abroad, regardless of credit conditions in Canada or changing yield spread; or it may suggest simply that credit availability effects are being picked up here. The difficulty is, of course, that it was a period during which there was a persistent current account deficit (except 1952 and 1970) and so there was not much experience with the behavior of explanatory variables during extended periods of surpluses on current account. However, there is

TABLE 7

CANADA-U.S. BOND YIELD SPREADS

	Average Canadian Provincial Yields	U.S. Corporate AAA Bond Yields	West German Local Authority Bond Yield	Spread	
				Canada U.S.	Canada West Germany
1952-65 Average	4.86	3.84	N/A	+1.02	N/A
1966	6.29	5.13	8.10	+1.16	- 1.81
1967	6.70	5.51	7.00	+1.19	+0.30
1968	7.60	6.18	6.50	+1.42	+1.10
1969	8.40	7.03	6.80	+1.37	+1.60
1970	9.04	8.04	8.30	+1.00	- 0.74
1971 - January	7.66	7.36	7.70	+0.30	+0.04
- February	7.86	7.08	7.70	+0.78	+0.16
- March	7.90	7.21	7.90	+0.69	+0.00
- April	8.10	7.25		+0.85	
- May		7.53			
- June					

Source: McLeod, Young, Weir Ltd.; Federal Reserve System, *Federal Reserve Bulletin;* International Monetary Fund, *International Financial Statistics.*

evidence that market adjustments are occurring. In 1970 and 1971, the yield spread between the Canadian and U.S. markets and between the Canadian and German markets has narrowed, as Table 7 shows.

The period of monetary restraint of 1969, during which the Canadian chartered banks were selling large amounts of Government of Canada securities, was transformed into a period of monetary ease in 1970, which also increased domestic demand for securities. As for balance-of-payments results, in spite of the fact that net new issues of provincial, municipal, and corporate bonds were substantially higher in 1970 than in 1969 ($3,698 million as against $3,212 million), the amount sold abroad declined by $746 million. Looked at in another way, whereas the Canadian market absorbed about $1,775 million or 55 percent of the total of such issues (net) in 1969, in 1970 it absorbed $3,006 million or about 81 percent of the total. First quarter 1971 Canadian balance-of-international payments statistics further support the view that capital flows are responding to the transformation that has recently occurred in Canada's current account position. In that quarter, the net inflow of long-term capital amounted to $269 million, compared with $644 million in the first quarter of 1970 and $560 million in the first quarter of 1969. Of these amounts, net issues of bonds and stocks accounted for $191 million in the first quarter of 1971, $448 million in 1970, and $532 million in 1969. Deliveries of new issues of bonds sold to U.S. residents amounted to $182 million in the first quarter of 1971, compared with $420 million a year ago; offerings amounted to $55 million, down sharply from $361 million of the previous year's first quarter; and undelivered issues were $296 million, compared with $712 million a year earlier. Of $1,156 million net new issues of Canadian bonds and stocks in the first quarter of 1971, 87 percent were sold in Canada. It does seem as if market forces, acting through yield spreads and credit availability, are achieving a substantial change in the flow of long-term funds into Canada, and that the Canadian market can absorb such long-term instruments in large volume.

To market forces there has been added the moral pressure of the Government of Canada. In October 1970, a request went from the Minister of Finance in Ottawa to Canadian borrowers to explore domestic sources of funds carefully before going abroad. In April 1971, the Minister sent a letter to all provincial treasurers and to underwriters active in foreign borrowing, forcefully reiterating his first request and suggesting that foreign borrowing had again begun

to increase. His concern was, of course, with the effect such borrowing would have on the Canadian dollar, fearing that it would lead to further appreciation and so to harmful effects on the export sector. If the results of the regression referred to earlier imply that some Canadian borrowers have become accustomed to selling some issues abroad, regardless of relative yields or credit availability conditions in Canada, then such *ex cathedra* supplementation of market forces might be justified.

It is also possible that some Canadian borrowers erred in their judgment about future exchange rates, considering the recent upward revaluation of the German mark, although the upward revaluation of the Canadian dollar, relative to the U.S. dollar, would argue the other way. But since very substantial adjustments in capital flows had occurred before the Minister of Finance exercised his direct influence, it is apparent that market forces were forcefully at work, and it is not certain that such direct intervention was either necessary or effective; however, it probably has had no harmful effects and just possibly may be speeding up adjustments that market forces were already achieving.

Summary, Implications, and Conclusions

We have seen that the *rate* of development of the financial intermediation process seems to have been at least as rapid in Canada as in the United States. We also found that the spectrum of financial intermediary instruments offered in Canada is as wide as in the United States, and that the relative importance of the various claims offered is very similar in the two countries. Furthermore, we found that, relatively speaking, the Canadian capital market seems to be absorbing just as high a proportion of long-term financial claims as does the U.S. market. All this seemed to suggest that structural rigidities were not the explanation for the pattern of the flows of funds into and out of Canada that has existed.

This conclusion seems to be supported by an examination of capital flows data. Over the last 19 years the *net* outflow of short-term capital might well be explained by needs of trade, while the great annual volatility of short-term capital, involving large amounts of funds, reflects sensitivity of money market dealers, borrowers, and investors to interest and exchange rate changes--evidence of the existence of a sophisticated market. The inflow of long-term funds also seems to reflect sensitivity to relative interest rate costs, although some additional element, involving notions among borrowers of

amounts they should seek abroad annually (regardless of domestic credit conditions), could have developed over the last two decades. The huge current account surplus of 1970 and the prospect for another surplus in 1971 suggests that such notions, if they existed, should be discarded, and the letters from the Minister of Finance to borrowers about seriously seeking funds in Canada may be justified in that they may hasten the results that interest rate changes would eventually achieve alone. At the same time, the sharp decline of long-term borrowing and short-term lending abroad, in 1970, suggests that interest rates and exchange rates, current and expected, are already achieving great changes in capital flows and that they, rather than structural differences between the Canadian and U.S. capital markets, are the dominant forces explaining the nature of Canada's participation in the international capital market.

Some implications of these findings may be noted. Since the Canadian capital market is quite highly developed, there seems to be little economic justification for using extra-market pressure to change basically the international flows of funds that it generates. Second, if troublesome capital flows do emerge, causes for them are likely to be found in the economic policies of the Canadian Government and of the governments with whom Canada has extensive financial relations. Third, if troublesome capital flows that are caused by misguided economic policies are dealt with by directly interfering with the way the Canadian capital market accumulates and distributes funds internationally, then the efficiency of the Canadian capital market is likely to be diminished and its future development somewhat impaired.

The latter point may be stated more directly. Canada has free access to the U.S. capital market, including being exempt from the interest equalization tax. In return, Canada has agreed to ensure that it will not be used as a medium for enabling U.S. funds to escape U.S. guidelines relating to capital outflows. Recently this has been interpreted as applying also to loans made by Canadian institutions in Canadian dollars with proceeds swapped into U.S. dollars. The possibility exists that the foreign financial transactions that are thereby impeded are not ones involving flights of U.S. capital abroad, but, rather, ones arising from swiftly changing conditions in Canada's trade position, credit conditions, and price-level performance. The difficulty of distinguishing between the former and the latter types of transactions could mean that the development of perfectly desirable Canadian international financial activity is being impeded by the impact of U.S. guidelines. At the same time it may be that the very

efficiency of the Canadian money market, including its ingenuity in seeking out new opportunities abroad, may mean that the Canadian capital market will always to some extent succeed in circumventing U.S. guidelines. Or, to put it another way, it is not the *inefficiency* of the Canadian capital market that may from time to time appear to cause trouble for the achievement of capital-flows objectives of U.S. authorities, but rather, its *efficiency*. It is to be hoped, therefore, that future developments will not be in the direction of increasing the number of guidelines that affect the financial transactions of Canadian institutions (for this would make Canada's financial markets less efficient) but rather, in the direction of creating conditions in the U.S. economy that would permit those guidelines to disappear.

DISCUSSION

BILL HUTCHISON

I found Professor Neufeld's paper very interesting. I am a part of the capital market that he so ably surveyed and it is disconcerting to find surprises about one's own work. The point which surprised me was the structural similarity that he demonstrated between the American and Canadian capital markets.

The paper is about the efficiency of the capital market, and since we are discussing this in relation to balance-of-payments transactions between the two countries, we must consider whether efficiency of the capital markets is in fact relevant to problems in this area. I think it is, but we must not forget that the largest part of capital formation in Canada takes place outside the capital market, as I assume is true in the United States. So if there are apparent inefficiencies in the capital market, and if they are causing wrong patterns of international flows, they may, in fact, be due to some structural weakness in those other processes of capital formation outside the capital market itself. Improper international flows of capital need not be the fault of the capital market.

In seeking a measure of efficiency, I think Professor Neufeld has chosen an appropriate course, and I am glad that he did not offer us anything which claimed to be a precise quantitative measure of capital market efficiency. Although theoretical attempts have been made, I think it is impossible to measure the efficiency of the capital market in practice, particularly in terms of its allocation. Therefore, the measure he has used — a comparison of the distribution of financial intermediaries' assets — is a necessary and acceptable proxy.

There is one test that I think might be interesting, because from Canada's point of view the capital inflow may or may not be

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efficient even if the capital market itself appears to be working smoothly. This is the test of whether or not the capital inflows result in a larger change in domestic real income than the return to the foreign owners. I don't know if Canada's inflows have been tested by this criterion, but I would suspect they qualify most of the time, although I have a feeling that the return of some of the foreign capital is pathetically low.

One other way of looking at the question of efficiency would be to look for signs of inefficiency, rather than trying to actually measure the efficiency exactly. It seems to me that inefficiency can come basically in two forms, the first of which is restriction of capital flows that are otherwise justified. The second is rechanneling a justified flow from one place to somewhere else – from a growing and useful industry to a moribund industry – this kind of thing, or from a country which needs the capital to one that doesn't. You can always excuse these interventions by saying that the flow is unjustified in the first place – the kind of reasoning which, in Canada, we are always afraid will be used in American policy. But personally, I would always bet that the degree of intervention is a sign of lowered efficiency. I simply don't believe that intervention on balance is ever likely to be efficient.

Now, if you agree that restrictions on capital movements are a symptom of lowered efficiency, does it not follow that Canada's great degree of freedom from currency restrictions and capital restrictions is a sign of relative efficiency? I think Canada's capital market is one of the freest in the world in terms of what the investor can do with his money. He can even buy gold, which Americans are not allowed to do. There are very few restrictions on movements across the border of capital for an investor. Most of the guidelines we have, have been imposed at the request of the United States. There have been some steps to restrict foreign ownership, of course, but such steps, in the context of this discussion, presumably help the U.S. balance of payments, so that I don't think we can consider them a problem. Basically the long history of the U.S. balance-of-payments program is one of interference with market forces. This strongly suggests that U.S. external capital flows have been lowered in their efficiency – from 1959 on.

After all, this has been a very long balance-of-payments program, partly because it has always been considered a temporary problem. In 1959 it started with a "Buy-American" policy under the Eisenhower Administration – a "Buy-American" policy is hardly something that could be described as efficient in an economic sense.

Then it went through a long series of voluntary restraints on capital flows. In 1965 I remember the treasurer of a large American corporation pointing out that he had repatriated a great deal of money under the contemporary guidelines, but there were two identifiable disadvantages. The corporation suffered a loss of flexibility in its international monetary affairs, and second, there was a reduction in after-tax interest income of about one percent. Those two consequences clearly denote inefficient, not efficient, use of capital from the corporation's point of view. Then there followed a large number of ingenious devices: Roosa bonds, swap credits and so on, which may or may not have increased the efficiency of the capital market, but in my opinion did not.

Now we have the surcharge. Like the interest-equalization tax, it is subject to a fairly solemn pledge that it is temporary. Fortunately for Canada the interest equalization tax did prove to be temporary, but I don't think there is much of a precedent for confidence in assurances of the temporary nature of any of these measures. In any case, most of them can only be classed as inefficient. For instance, in this day and age, considering current views of social justice and what is desirable business activity, I find it discouraging to see Americans adopting a policy which gives a double-edged benefit to the automobile industry. To transfer resources to Detroit at this point will only guarantee the addition of another 40 pounds of chromium to next year's Oldsmobile or twice as many cars. If that is really a legitimate aim of economic policy, I am disappointed.

My impression of all this is that the efficiency of the U.S. capital market, internationally speaking at least, must have suffered because of continuing intervention. Intervention on this scale will always result in lowered efficiency. This is not to deny that there are Canadian restrictions – I think there is an unfortunate trend in this direction and I wonder if we aren't, as Professor Neufeld has suggested, learning from the Americans. The most serious Canadian restriction, because it is so direct, is the limiting of the amount which pension funds may invest in foreign securities. For practical purposes this will chiefly bear on American stocks.

Returning to the concept of using the financial intermediary structure as a measure of the efficiency of the Canadian market, I would like to raise two points. First, Professor Neufeld's analysis shows that the percentage of assets of these financial intermediaries is lower in relation to GNP than the same group in the United States. This suggests that the capital market in Canada is, in fact, still less developed than in the United States, as one might expect. The lower

share of GNP for these intermediary assets does not necessarily mean that there is lower efficiency because, as Professor Neufeld suggested, it is related partly to the lower standard of living in Canada. But it is also possible that the degree of direct American investment in Canada may be a cause rather than a result. A large flow of direct investment may short-circuit a great deal of the domestic intermediary market. The smaller proportionate share of Canada's GNP taken by financial intermediaries may be accounted for by the simple fact that much of our capital formation is taken care of by direct investments, for reasons which may be paternalistic and unconnected with Canada's capital market.

Secondly, I disagree somewhat about the role of the life insurance companies. It's not a terribly important point, but I think at times in the past it has been important for Canada. I am convinced that a significantly higher share of financial intermediaries' assets is taken by the life insurance companies in Canada even now, in spite of the fact that they are losing ground. Let's take the assets for 1970 of the major group of financial intermediaries: chartered banks, other deposit-receiving institutions like trust companies, mortgage companies, mutual savings banks; finance companies, mutual funds, pension plans, and life insurance companies – that is not the complete list of institutions which Professor Neufeld used, but it is the bulk of them. Life insurance companies take 16½ percent of that particular group's assets in the United States and 20 percent in Canada. Not a very large difference, but I think it has significance, particularly because life insurance companies, in my view, are a special kind of financial intermediary. This raises the question of whether or not the mere presence of an intermediary is necessarily efficient. I happen to think that life insurance companies are not a particularly efficient form of gathering savings and allocating them. I say that for two reasons. First, their sales are really based on a non-financial objective. I know that life insurance salesmen have a pitch about savings, which claims that insurance is a good way to save. This has been challenged in recent years, largely by mutual fund salesmen who come around contradicting life insurance companies. This deposit-taking institution really collects its deposits (life insurance premiums) outside the capital market. By that I mean people don't go through a calculation of interest rates when they buy life insurance. Secondly, the reserves of life insurance companies are invested to match liabilities in current dollars. I don't blame life insurance investment officers for doing this. It's a sensible approach, and they do the same thing in the United States. But it does mean

that the real rate of return may be ignored, at least for a long period, by life insurance portfolios. At times in Canada's past, this dollar-matching approach to investment of such a large part of the country's savings has been important. For instance, when oil was discovered in Leduc, Alberta in 1947, Canadian capital simply was not forthcoming. But I believe that if the life insurance companies in 1947 had, in fact, been mutual funds, much more of Canada's resource development would have been accomplished by domestic capital.

Professor Neufeld suggested that the spectrum of financial possibilities is as wide in Canada as in the United States. While for the purposes of the argument this can be accepted, I don't think it is true in detail. There are some gaps. I can think of things like equipment leasing, which has always been far easier and far more economical in New York, through the New York banks, than in Canada. Any equipment leasing, of which there is a fair amount in Canada, has been very limited in the domestic capital market simply because the facilities are not available. We don't as yet have real estate investment trusts although I think we will in the future. The mutual funds' share of Canadian financial assets, I would say, is significantly smaller than it is in the United States.

In general, we seem to have more difficulty in Canada in raising risk capital, except perhaps in the mining industry. Canadian portfolio investors are too often either depressingly conservative or insanely speculative – it's blue chips or penny mines, with not enough in between. Also, I suspect that although our financial intermediaries are very similar in their structure, some of their portfolio tastes may be significantly different. So far, for instance, Canadian pension funds have a far lower investment in common stocks than their U.S. equivalents; I think, at the moment, that the figure is about 24 percent of assets in common stocks, which would compare with 61 percent in private U.S. plans. If you throw in the state retirement plans that would bring the U.S. average down to 44 percent, but there is still quite a difference.

One question I would ask about this striking similarity of intermediary structure is whether it is appropriate for Canada. I suspect that we may have adopted a U.S.-type of financial system that is not entirely appropriate for Canada, in view of its different economy and needs. We have a demonstrably higher capital/output ratio for instance. We devote a higher percentage of GNP to capital investment. We have faster GNP growth and we have a faster-growing labour force. A far bigger part of our GNP is involved in foreign

trade. And fundamentally we are still less mature industrially. So I suspect that there may be something inappropriate about having a financial-intermediary industry which is so similar to that of the United States.

Although I don't quarrel with Professor Neufeld's conclusion, I will mention three special difficulties which confront the Canadian capital market. None of them is in my view a sign of inefficiency. First, the predominant role of our junior levels of government – the provinces and larger municipalities; second, the degree of direct investment in Canada; and third, the issue size problem, particularly for large scale projects. Yesterday, Alan Hockin covered very eloquently the last point about large scale projects in Canada, so I will put that to one side. However, the other two problems – the role of junior governments and the degree of direct investment – I don't think can be attributed to market inefficiency. The political structure is responsible for our emphasis on the provincial government level, and past trade and tariff policies are largely responsible for the branch plant economy we have inherited and which, of course, calls for a substantial amount of direct investment. Also the American need for Canadian resources has resulted in a flow of direct investment. None of these has much to do with the efficiency of the Canadian capital market. It may be true that our domestic capital markets are not well designed to meet these special problems, but I am not sure that they should be. International flows have already provided a solution which is entitled to be called efficient.

In reference to the provincial government role, this shows up particularly in the percentage of GNE. In Canada the federal government accounts for about 5½ percent of Gross National Expenditure, and the junior levels of government account for about 14 percent, for a total of 19½ percent. In the United States the federal government's share of GNE is between 9 and 11½ percent, twice as big as in Canada, and the junior levels only take 12.9 percent, somewhat less than our junior levels. The total of all levels is 22 percent, somewhat higher. The National Accounts don't include any financial transactions, but I think this gives some idea of the relative importance of our junior government finances. This arises, of course, not only from our political structure, but also from the fact that our federal government is not involved in the kind of international obligations that your government is. It is important because it creates a financial problem which shows up in Table 4 of Professor Neufeld's paper where the Canadian junior governments are shown to

take a larger share of total financing. Provincial governments find it harder to raise money than the federal government because they do not have the full panoply of aid and sympathy from the central bank. Debt management is a more difficult matter for a provincial government than for the federal government. The same is true for municipal governments – keep in mind that the municipality of metropolitan Toronto is larger than most of the provincial governments.

Because we fragment so much of our government borrowing in Canada, we may create a source of inefficiency. If the federal government were responsible for more of the big three areas of provincial expenditure – transportation, health, and education – it would be in a better position to manage their financing than I believe the provinces are. As it is, I think each of the provincial governments has had a tendency, as Professor Neufeld suggested, to feel it must resort to the U.S. market almost as a continuing policy. There has been evidence of a policy of raising such and such a percentage in the New York market each year to avoid overloading the Canadian market. The predominance of junior government finance in Canada is confirmed by an analysis of bonds outstanding. Of the major bonds outstanding, 40 percent of the total in Canada is provincial and municipal government debt, whereas in the United States it's more like 22 percent.

Turning to the second problem of direct investment, this is obviously very important. Of the $285 million long-term capital imported from the United States in the first quarter this year, about $200 million was direct investment. Direct investment is always a significant portion of these capital inflows. The capital markets are therefore not responsible for the majority of this capital inflow. We don't directly ask for these savings in Canada. Even though they may benefit Canada, they are not a result of direct forces operating in our capital market.

American parent companies have a special attitude toward their own debt management that may be classed as inefficiency. It's very difficult for a U.S. parent company to consider its Canadian subsidiary's bond issues in the light of its own domestic image in the United States. It tends to be appalled at the rate its underwriter says will have to be paid on a bond issued in the name of its Canadian subsidiary. The simple solution of guaranteeing the debt directly is usually not an acceptable one. Also, the American parent does not usually like to register its subsidiary's issue and publish information on the operations of the subsidiary. These considerations prevent

some of this direct investment from being more properly placed in the public capital market.

Some of the other conclusions drawn by Professor Neufeld are of interest. I agree that transactions needs explain our short-term capital exports except, of course, during periods of great upheaval. There have been some interesting periods of this type, such as the Atlantic Acceptance collapse, for instance. At that time there was actually a short-term capital *inflow* into Canada in response to the difficulty of financing the upheaval – surely a sign of efficient integration of the two markets. Canadian industrial corporations currently carry large foreign exchange balances, as they always have. I think the latest figures are running something like $1 U.S. for every $4 Canadian. Nothing comparable occurs with American corporations. These are corporations operating in Canada – I am not talking about foreign branches. The general run of Canada's industrial corporations will always have large foreign exchange balances, the bulk of which are American dollars. Alan Hockin raised a good point – that these short outflows may be the sensible way to offset the necessary long inflows rather than adjusting the current account balance. Is there any real reason for the United States to consider that these particular liquid liabilities are undesirable? I find it hard to see why.

Finally, as far as implications are concerned, I agree with Professor Neufeld's conclusion that the predominant source of inefficiency in international movements between the two countries is, in fact, the U.S. balance-of-payments program or the policies which give rise to these measures. Perhaps there are some structural difficulties in Canada's long-term capital formation, but these could best be cured by policy changes outside the capital market, in my opinion. I don't think our capital market needs any intervention. Capital market efficiency is not the same thing as helping the U.S. balance of payments, so that I am not at all sure that the two are related. The current measures – the August 15th steps taken by the United States – are, unfortunately, one more invitation to inefficiency.

They amount to use of a blunt instrument on the whole world. In monetary policy and fiscal policy I had hoped we had learned that blunt instruments are to be avoided but now we have the bluntest instrument we have ever seen. It has been used, as far as I can see, to correct a bilateral U.S. problem with two or three countries, at the risk of turning the whole world into turmoil. If Canada is hurt by these measures, which I think is a considerable possibility, then it will certainly cause a turning point in U.S.-Canadian relations. Not one that I relish particularly, but it will be the end of the automatic

assumption on Canada's part that it really does have a co-operative and friendly relationship with the United States. In the future Canada's first action will be to look to its own defense. Perhaps this is the way it really should be. I don't think it will necessarily hurt us, but I do think it will cause a change in our relations.

I am skeptical about the permanence of Canada's current account strength. When the interest equalization tax was imposed on Canada, it happened to arise at a moment when there was a very transitory improvement in the Canadian balance of payments. If one looked at the balance of payments only for the period preceeding the imposition of the interest equalization tax, it looked as if it were justified. I'm worried that the same thing is happening now, that we are looking at a position in the Canadian balance of payments which is in fact unsustainable and temporary.

DISCUSSION

ROBERT M. MacINTOSH

Actually, my name is Pandora; I was the one who invited Andrew Brimmer to come to Montreal last year, and he opened up a whole box of ugly animals which we are still talking about.

First of all, I want to make a couple of observations about whether or not Dr. Brimmer is right in thinking that there has been a fundamental change in the Canadian balance of payments on the current account side. I'm inclined to agree with him that there really has been a fundamental change, but I would have to say that this is a minority view in Canada. We have such a basic inferiority complex that we, in Canada, really can't believe that anything is ever going well. And even last year when we were running a surplus on current account amounting to a very substantial figure, $1 billion or more overall, after having come in two or three years from a negative figure approaching that amount, the hand wringing still goes on: "Things really aren't going to be good. It really isn't going to stay this way."

We have opened a new window on Japan in the last decade or so. We have very large energy resources which are beginning, in terms of comparative cost advantage, to put us in a position where we are going to be in the driver's seat. And when it comes to the automotive deal, our current account has turned around roughly $1 billion, depending on whose statistics you use. If you look at the American trade account deterioration in the last five years, one-fifth of it is due to the automotive pact alone. Well, if one assumes that this is irreversible then we have had a fundamental change. A $1 billion turnaround on the automotive account is more than sufficient to have offset our average trade deficit.

Robert M. MacIntosh is Deputy Chief Manager of the Bank of Nova Scotia.

I personally don't think the deal can be reversed in any sense. For one thing, the plants have been built and all the related rationalization of auto parts manufacturing has been done. The corporations were a part of this. As a matter of fact, I don't think that the apparent American edginess over this subject is entirely justified. First, there appears to be a feeling in Washington that we are trying to make bilateral settlements, industry by industry, and that we are aiming at being balanced in every sector, at least where it suits us. There is also an assumption that the comparative cost advantage still lies south of the border in the automotive industry, a proposition which I simply don't think is true now. The General Motors' plant in St. Therese, Quebec, is said to be the most efficient of the forty plants in the General Motors' empire. The Ford plant that was built in St. Thomas, Ontario, in response to the automotive agreement is perhaps one of the finest plants in existence. That plant, as it so happened, was brought on stream to produce small cars for the North American market. The market took off, and that plant was producing the whole supply of some models. Well, having seen this, the American head office has since reallocated a portion of the market to Kansas City and a portion to Los Angeles. So there is, in fact, a head office decision process in the mix of the models which can and will influence the structure of our automotive market. Nevertheless, I am still assuming that there has been a fundamental turnaround which secures at least 6 percent of the production of North American models related to our 8 percent consumption.

All of that is preamble by way of coming to the point of the paper, which is the question of whether or not there has to be some restructuring of our capital markets to take account of the fact that we no longer need, on balance, a long-term capital inflow. This was the burden of Dr. Brimmer's proposition. By and large, I share Dr. Neufeld's approach to the matter. We are fortunate to have him here because he has been spending the last year at Stanford working on the Canadian capital market, and comes to us, quite evidently, with a wealth of preparation and depth of knowledge in this field, from which we are benefiting now. I don't think our capital market is inefficient in terms of resource allocation. I'm not sure that Dr. Brimmer ever really meant to use the word "inefficiency" as though that were the same thing as a structural problem. The title of the topic led us into using the word "inefficiency." I don't think that is really the issue. The issue is: are there structural problems? I think there is one structural problem that can't be gotten over very easily. During the last two decades there has been a terrific refinement of

the Canadian capital market. I've been in most parts of this market one way or another in the last 15 years, and during that time, the money market has increased in depth and strength and ability to arbitrage over time, over space, over maturity, over structures, and so forth.

A free capital market is an Anglo-Saxon idiosyncrasy. It's not much admired elsewhere in the world except by importunate borrowers, especially by developing regions or countries. That's why, I think, our French-Canadian compatriots also believe in a free capital market, being an importunate borrower. Of course, they don't have at all the same views of capital markets as their French speaking forebears over on the Continent.

Dr. Neufeld has shown that the relative size and the basic structure of the Canadian market for savings is remarkably similar to that of the United States in terms of the institutional structure of the relative proportions of GNP that are allocated to different types of intermediary institutions. But the aggregate numbers fail to describe the market's "lumpiness". The continuing tendency for Canada to import long-term funds despite an overall surplus on our current account is due to the fact that there are a few major borrowers who are very large in relation to the size of our institutional lenders. I want to say a word about this because one can too hastily conclude that Dr. Brimmer was correct in suggesting that Canada should give more thought to restructuring its internal savings flow. I doubt that this part of our savings flow can be effectively restructured in any foreseeable future. Dr. Neufeld did not touch on the position of the lender seen from the point of view of portfolio management. It's on that point that I would like to say a word in a moment.

Before doing so though I would like to make a few more remarks about the reasons for the lumpiness on the part of the borrowers. Mr. Hutchison has already gone over this to some extent, so I am touching on the same ground. There has been a substantial shift of our resources to the provincial-municipal sector in the last decade in Canada. The expenditures on social infra-structure have been relatively heavy compared to the United States in recent years, partly because these same resources have not been pre-empted for military purposes. Table 1 is to remind you of this proportion that our relative budgets allocate for military purposes. A shift away from military expenditure is still a problem to be dealt with by the United States but has been going on in Canada for the last decade, and will, to some extent, raise the same capital market problems here as in Canada. We've been like Sweden during the Second World War.

TABLE 1

DEFENSE SPENDING AS A PERCENT OF GNP

	UNITED STATES	CANADA
1960-64 average	8.7	3.7
1965	7.3	2.8
1966	8.1	2.8
1967	9.1	2.7
1968	9.0	2.5
1969	8.5	2.3
1970	7.8	2.2

Sources: Federal Reserve Bulletin, various dates; D.B.S. National Accounts, various dates.

TABLE 2

CURRENT AND CAPITAL SPENDING ON EDUCATION BY JUNIOR GOVERNMENTS AS A PERCENT OF GNP

	U.S.: STATE AND LOCAL	CANADA: PROVINCIAL AND LOCAL
1960-64	4.0%	4.5%
1965	4.5	4.4
1966	4.8	5.3
1967	5.0	6.4
1968	5.2	6.5
1969	5.5	6.7

Notes:
1. Spending includes grants-in-aid and conditional transfers from federal governments.
2. For the United States, expediture statistics are for the fiscal years of the state and local governments ending in the listed fiscal year of the federal government.
3. U.S. statistics are from the Annual Report of the Council of Economic Advisers. Canadian statistics are drawn from D.B.S. Consolidated Public Finance, 1960 to 1968 issues, and for 1969 estimated from D.B.S. Local Government Finance 1968 and 1969 and from Provincial Government Finance 1969.

TABLE 3

PUBLIC DEBT ISSUES OF ONTARIO & QUEBEC ($ MILLIONS)

Calendar years	C $	U.S.	DM	Euro $
1968	430	310	–	–
1969	315	325	241	40
1970	580	310	–	30
1971 (to Sept. 15)	495	360	30	60

Fortunately we've been able to devote substantial real resources to our social infra-structure. The supporting evidence for this proposition is partly contained in a couple of tables.

The second table is a partial statement of our social infra-structure, related only to education. I picked this particular sector because of the very difficult definitional problems of separating current and capital accounts. As you can see, in Canada the proportion of Gross National Product going to education at all levels, including pass-through of federal funds, has gone from 4.5 percent to 6.7 percent and in the United States, from 4 percent to 5.5 percent. Admittedly, this is only one segment. It is not the whole story. My resources were not sufficient in the time I had available to go into other aspects of it, but speaking in a very general sense, we have introduced national medicare. It is quite self-evident that if you take operating expenditures and related capital expenditures for medical infra-structure, hospitals, etc. our present proportionate budget going into this area is very large compared to that of the United States. The same is perhaps true of highways. Another thing that is left out of the figures, but alluded to by Mr. Hutchison, is the fact that our hydro-electric power utilities are part of the provincial regimes, whereas most of the American utilities are still a somewhat more diverse group of private utilities.

Roughly two-thirds of the Canadian population is concentrated in two of the Provinces, Quebec and Ontario. Table 3 shows the debt issues of these two Provinces in recent years, because these two are so overwhelmingly the area of lumpiness of which I am talking. These figures, the public debt issues of Ontario and Quebec, include their hydro-utility agencies, but do not include the extremely large

sums of money which are being obtained from the Canada pension fund. Again, as you know, we have a national pension scheme now operating in nine Provinces and a parallel one in Quebec to which very substantial resources are going, flowing through the federal government and back into the Provinces, and for the most part financing the social infra-structure, mainly education. Mainly university building, I am sure most of you will be glad to know. Anyway, you can see from these figures that in recent years these two Provinces have been leaning on the U.S. dollar market for something in the order of $300+ million a year.

In '69 there was a very substantial borrowing in the Deutschmark and a few relatively small Eurodollar issues. I think that we will probably be going back to that German market in the future in fair size. The German institutional investors have special problems, the institutions with really big savings, especially the West Deutsch Giro Central, which is one of the really big participants in the Canadian market now. They can only buy very restricted types of assets. They can buy mortgages and government securities. They cannot buy corporate securities or real estate stock. So this is why there is a substantial market in Germany for Quebec and Ontario. In the case of Quebec, the quiet revolution there has led to a catch-up process and has vastly increased social capital spending. The expansion of the school system, 25 or 30 years behind Ontario, has grown at a fantastic rate. It might be argued that a fully flexible capital market in a country with a balance-of-payments surplus could absorb such large scale borrowings, but the problem has to be viewed from the lenders' side. That is what I want to come to next.

Public debt issues in Canada of $50-100 million are not uncommon now. Within the last month Ontario Hydro borrowed $100 million. The month before that the International Nickel Co. had a $150 million issue. If you relate those to the New York market, a $200-300 million issue in the New York market is a very big issue. So a $100 million issue every second or third month by the Ontario government is a big job of financing. I'm saying that the non-bank financial institutions in Canada are incapable of absorbing that scale of borrowing repeatedly.

Table 4 was taken directly from the Bank of Canada Statistical Summary. I'm not going into the details of the table, but the life insurance companies, which used to be major purchasers of Quebec and Ontario bonds, have no real growth in their net cash flow now. The trust and loan companies in Canada have had a very high rate of growth in recent years. These are now our major housing market

suppliers. The mortgage market in Canada has to be seen in the context of provincial requirements. We have a very high rate of population growth and our rate of housing starts per capita in Canada for the last 10 years has been consistently higher than that of the United States, and of California, despite the fact that in California 25 percent of the housing is trailers. So the resources that we are pouring into the housing market are really very considerable. This function is absorbing a large part of the savings flow and again impinges on the size of this market for provinces.

The pension funds are a very large growth area and a major absorber of provincial debt. But in Canada you are talking about a market with maybe only 20 or 30 pension funds in excess of $100 million in size of assets. I happen to be chairman of the investment committee of one of those, and there is just no way that our pension fund, approaching $100 million size, is capable of buying $3 million of Ontario's issues this month, next quarter and next year. After all, a $100 million fund isn't going to have more than $5 million of Ontario bonds all told in its portfolio if it has any sort of asset distribution. A very large pension fund account would be $1 billion, and obviously the scale in relation to the size of the provinces is way out of proportion. Hence, there is a spillover into the U.S. market. Anything that would impede the ability of these lumpy borrowers in the U.S. market would really throw a monkey-wrench in the works.

Moreover, I think it is well understood in Washington and Ottawa that it would also in a very serious way impede the aspirations of Quebec where we have a very special problem, and put almost impossible strains on political unity within the country.

One might hazard a guess that the capital market problem resulting from a shift from federal to junior government activities will eventually lead to a change in the statutory framework to take account of this. As a matter of fact, it is interesting to note that in the United States the Federal Reserve has just now introduced agency bonds as part of the eligible assets which they can absorb on certain terms. FNMA was created 35 or 40 years ago, and despite the fact that it is not an insignificant part of the U.S. federal debt, it's taken 40 years to adjust the commercial and central banking system to this fact of life. I don't think we will go that long in the case of the junior levels of government. The list of liquid assets that is commonly employed is simply out of date in relation to the realities of the nature of borrowing today. Our federal government debt has gone from $15 to $20 billion in the last decade. Our provincial government debt had doubled from $10 to $20 billion. The nature of

TABLE 4

ESTIMATED DISTRIBUTION OF HOLDINGS OF PROVINCIAL, MUNICIPAL, CORPORATE AND OTHER BONDS[1]

As at December 31	Provincial Direct & Guaranteed Bonds[2]						Municipal Direct & Guaranteed Bonds[3]					
	1964	1965	1966	1967	1968	1969	1964	1965	1966	1967	1968	1969
Held by	Millions of Dollars						Millions of Dollars					
Bank of Canada[5]	—	—	—	—	—	—	—	—	—	—	—	—
Chartered banks	372	338	280	343	373	364	307	338	327	348	366	368
provincial governments[6]	1,422	1,719	1,819	1,890	2,089	2,336	261	224	248	254	259	271
Municipal governments[7]	114	124	133	149	161†	127	403	398	429	494	610†	620
Life insurance companies[8]	1,075	1,048	1,063	1,142	1,124	1,094	727	722	716	720	700	678
Other insurance companies[9]	332	387	437	497	567	593	151	154	174	184	201	202
Quebec savings banks	78	67	60	58	62	47	33	30	29	29	39	30
Trust & mortgage loan companies	210	234	273	334	332	338	149	136	137	121	128	103
Trusteed pension plans:												
industry	1,861	733	769	782	781	760	585	313	317	305	292	282
other[10]		1,281	1,449	1,586	1,756	1,947		334	365	392	413	450
All other resident (residual)[11]	2,946	3,064	3,814	4,720	5,490†	6,252	1,215	1,445	1,612	1,741	1,773†	1,966
Total resident	8,410	8,995	10,097	11,501	12,735†	13,858	3,831	4,094	4,354	4,588	4,781	4,970
Non-resident	2,772	2,951	3,437	4,133	4,886	5,864	1,278	1,304	1,418	1,527	1,585	1,674
Total[12]	11,182	11,946	13,534	15,634	17,621†	19,722	5,109	5,398	5,772	6,115	6,366	6,644

TABLE 4 (CONTINUED)

ESTIMATED DISTRIBUTION OF HOLDINGS OF PROVINCIAL, MUNICIPAL, CORPORATE AND OTHER BONDS[1]

As at December 31	Corporate and Other Bonds[4]						Total Provincial, Municipal, Corporate and Other Bonds					
	1964	1965	1966	1967	1968	1969	1964	1965	1966	1967	1968	1969
Held by	Millions of Dollars						Millions of Dollars					
Bank of Canada[5]	177	201	240	270	305	351	177	201	240	270	305	351
Chartered banks	487	529	560	605	712	718	1,166	1,205	1,167	1,296	1,451	1,450
provincial governments[6]	167	230	245	238	319	351	1,850	2,173	2,312	2,382	2,667	2,958
Municipal governments[7]	2	41	42	52	32	50	519	563	604	695	803†	797
Life insurance companies[8]	2,175	2,388	2,533	2,741	2,843	2,780	3,977	4,158	4,312	4,603	4,667	4,552
Other insurance companies[9]	187	234	264	329	360	481	670	775	875	1,010	1,128	1,276
Quebec savings banks	26	30	32	32	47	46	137	127	121	119	148	123
Trust & mortgage loan companies	253	292	264	319	351	362	612	662	674	774	811	803
Trusteed pension plans:												
industry	867	834	882	950	970	994	3,313	1,880	1,968	2,037	2,043	2,037
other[10]		172	208	257	299	331		1,787	2,022	2,235	2,468	2,729
All other resident (residual)[11]	1,546	1,950	1,711	1,951	2,037	2,414	5,707	6,459	7,137	8,412	9,314†	11,734
Total resident	5,887	6,901	6,981	7,744	8,275	8,878	18,128	19,990	21,432	23,833	25,805†	28,810
Non-resident	3,459	3,808	4,787	4,998	5,382	5,828	7,509	8,063	9,642	10,658	11,853	12,378
Total[12]	9,346	10,709	11,768	12,742	13,657	14,706	25,637	28,053	31,074	34,491	37,658†	41,188

1. Holdings are shown at par value where available, in other cases at book value.
2. Excludes provincial treasury bills other than those of Manitoba and Saskatchewan sold at public tender. In 1963, $247 million of bonds of several Quebec hydro-electric utilities were assumed by Quebec-Hydro.
3. Excludes municipal bonds guaranteed by the provinces and bonds sold directly to municipal financing agencies set up by provincial governments. These bonds are included under provincial guaranteed debt.
4. Excludes a relatively small amount of funded debt which it has not been possible to identify by issue. "Other" bonds consist of those of Canadian religious and other institutions. Data in 1963, affected by the reclassification of bonds of hydro-electric utility companies referred to in footnote 2.
5. Holdings of bonds and debentures of the Industrial Development Bank.
6. Includes holdings of various funds under provincial jurisdiction such as hydro commissions, workmen's compensation boards and sinking funds. Holdings of teachers and civil service pension funds are included with "other trusteed pension plans".
7. Based on a sample of those large cities which provide details of their investments in their published annual reports. Includes holdings of various funds under municipal jurisdiction such as sinking funds.
8. Registered under federal Insurance Acts.
9. Fire and casualty insurance companies and fraternal benefits societies registered under federal Insurance Acts.
10. Pension plans of federal crown corporations and government agencies, teachers federations, provincial crown corporations and government agencies, municipal, religious, charitable and health organizations, trade and employee associations and cooperatives.
11. Includes holdings of mutual and closed-end funds as shown on pages 798-801 and of sales finance and consumer loan companies as shown on pages 804-805.
12. Foreign pay issues have been converted at the official rates of exchange of £1 = $3.027 Cdn. and $0.925 U.S. = $1.00 Cdn. Quarterly data on net new issues of bonds with foreign currencies converted to Canadian dollars at market rates of exchange are shown in the table on pages 953 and 955.

† Revised.

the assets of the commercial and central banks is going to have to take account of that fact. I recognize that no one connected with a central bank could regard this idea with anything but horror. The political problems are self-evident. I know quite well how our own central bank would feel about that. But if it's possible to work out a technique for agency bonds down here, it's possible to work out a technique to restrict the number of junior government issues, the nature of issues, and the size of packages the central bank can deal in. You would have to make the central bank capable of dealing in them on both sides of the market if you are going to have the commercial banking system brought into it in terms of liquidity requirements. Well, that's probably a very good place to run for cover.

RESPONSE

EDWARD P. NEUFELD

in response to BILL HUTCHISON and ROBERT M. MacINTOSH

Bill Hutchison referred to the fact that the lower financial intermediary to GNP ratio in Canada may not be an indication of lower efficiency. I quite agree. Some studies Goldsmith and others have done on international financial intermediation show that there are substantial differences. For example, I think one of the highest, in terms of financial intermediary to GNP ratio, is the United Kingdom. Nor would I argue that it is really lower income or lower income alone that explains the level of financial intermediation. In Canada, it just happened to be the case that the lower degree of financial intermediation in relation to that of the United States is almost exactly the same as the lower relative level of per capita real income. I put it down because I thought it was rather interesting and suggestive. But just how important the relationship is should, I think, be examined further.

In considering the life insurance companies, I don't know whether Bill excluded foreign assets of Canadian life companies. I did so, which might make some difference. I concentrated on Canadian assets of financial intermediaries because I was interested in financial intermediation in Canada. While I agree generally with what Bill said about Canadian life insurance companies, what is actually happening to them indicates that the market is moving at a fairly rapid pace toward correcting this area of inefficiency. The highest ratio of life company assets to financial intermediary assets appeared in 1934. So we have had about three or more decades of relative decline in what was, at that time, an exceedingly important financial intermediary.

I agree that we may have gotten beyond the point where Canada could automatically assume that its financial relations with the United States will be of a personal nature, in which a frantic overnight trip to Washington by our friends in Ottawa constitutes a worthwhile approach. We have seen now that it is no longer a worthwhile approach. From here on, it may well be that Canada should reexamine its basic approach in its financial relations with the United States.

I throw out this question now not because I know the answer at this moment but to give a specific example. Has the time come when we should refuse the interest equalization tax exemption, and therefore not feel morally obligated to do all the other things we have committed ourselves to do? I feel that it has indeed impeded the international short-term capital market activities of Canadian financial institutions. A cost has been involved, and I'm not sure, at present, that the benefits have really been greater than the costs. It may well be that we should think not in terms of special arrangements, but in terms of normal kinds of relationships with the United States, of the kind other countries have with the United States.

Bob raised the question of the word "efficiency", and the fact that Governor Brimmer didn't use the word. I think that is perfectly true. I simply used it the way economists use the word, describing situations in which distortions or obstacles in a market are of a kind that lead to results different from those that would otherwise have been produced. That is a sign of inefficiency. I certainly would have been quite pleased to use another term, such as structural rigidities.

The lumpiness question does deserve closer examination. I agree with a good part of what Bob said, but I don't agree with the conclusion reached, that it is obvious we must be net importers of long-term capital for that reason. There are other things happening on the other side. I think that as long as one can assume that the credit instruments available in Canada and issued by Canada are not identical with those available in the United States and acquired in the United States, one would expect to see flows in both directions. As an example of a case of flow in the other direction, the flow of equities in Canada has certainly been less than the rate of growth of the normal macro-economic aggregates. At least, my own research suggests this. The supply of Canadian equities has, in fact, lagged. The growth rate of Canadian equities in relation to savings has lagged. One can point to factors such as foreign ownership as an explanation. The logical conclusion is that, if Canadian portfolio preferences are more or less like those in the United States, this will inevitably lead Canadians to buy U.S. equities, which is what they have done. So here is a case in which there is an outflow of long-term capital, which could be an offset to those cases in which, because of lumpiness, you have an inflow of long-term capital. I see no reason, in theory, why this sort of thing could not happen in a number of other areas. Given a basic balance-of-payments structure, and no obstacles to relative interest-rate adjustments, some U.S. investors might even sell longer-term credit instruments in Canada. We have

gotten so used to an interest rate structure that suited a period in which Canada had substantial deficits that we have not yet begun to contemplate the kind of interest rate structure we would have if that situation were to disappear. I found it interesting when I ran some regressions involving Canadian-U.S. interest rates, that in this period of capital scarcity in Canada, the cost of capital in Canada has been 25 percent higher than in the United States. Indeed, I found that the best forecast of Canadian interest rates, on a year-to-year rather than a month-to-month basis, would simply have been to forecast the U.S. interest rate and add 25 percent to that rate. I also noticed that, in the last year or so, when we have had a fundamental change in our balance of payments, this gap dropped down substantially. In theory, I see no reason why that process could not go even further. We could, in fact, conceivably have an outflow of longer-term capital even though we were financing Churchill Falls in New York.

DISCUSSION

The following note is an expansion of comments made by Professor Dunn during the discussion period which followed the presentation of Professor Neufeld's paper.

ROBERT M. DUNN, JR.

Professor Neufeld has provided a great deal of interesting and useful information on Canadian financial markets, but it is not clear that he has succeeded in refuting some of the conclusions of Andrew Brimmer's paper of a year ago.[1] Governor Brimmer suggested that structural differences between Canadian and U.S. financial markets existed which produced a pattern of long-term capital flows to Canada and short-term flows back to the United States. Neufeld argues (in the first 10 pages of his paper) that the structures of U.S. and Canadian financial markets are actually quite similar, and in particular that the Canadian market is relatively as receptive as the U.S. market to long-term bond issues. This conclusion is defended on the basis of statistics indicating that bond issues as a percentage of gross savings are almost exactly the same in Canada as in the United States. The relative structure of the U.S. and Canadian financial markets is defined, for the purposes of this argument, solely in terms of the relative quantities of various classes of assets moving through the markets.

This argument is in error in making no allowance for yield differentials, and in particular for the decidedly different structure of

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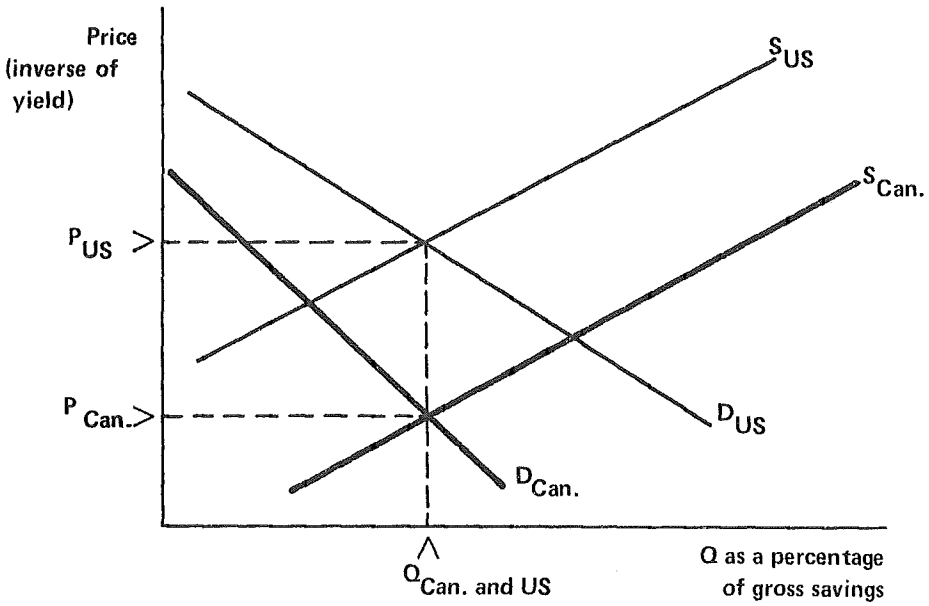
* I would like to thank Mrs. Beth Moxness of the Division of International Finance of the Federal Reserve Board for help in gathering the data for these comments.

[1] Andrew F. Brimmer, "United States-Canadian Balance of Payments: Prospects and Opportunities," presented before the first National Conference of Canadian Bankers, Montreal, September 28, 1970.

yields in the two countries. If two financial markets are similar, the supply and demand functions for various types of instruments ought to be similar, in that if the quantity axis is defined in terms of percentages of gross savings, similar quantities of various assets ought to relate to similar yields in the two national markets. A similarity of quantities in the face of decidedly different yields would indicate a distinct difference in the structure of the two markets rather than a similarity.

If, for example, bond yields in Canada were significantly higher than those prevailing in the United States, a similarity in the quantities of bonds sold as a percentage of gross savings in the two countries would suggest the following supply and demand functions for bonds in the two markets:

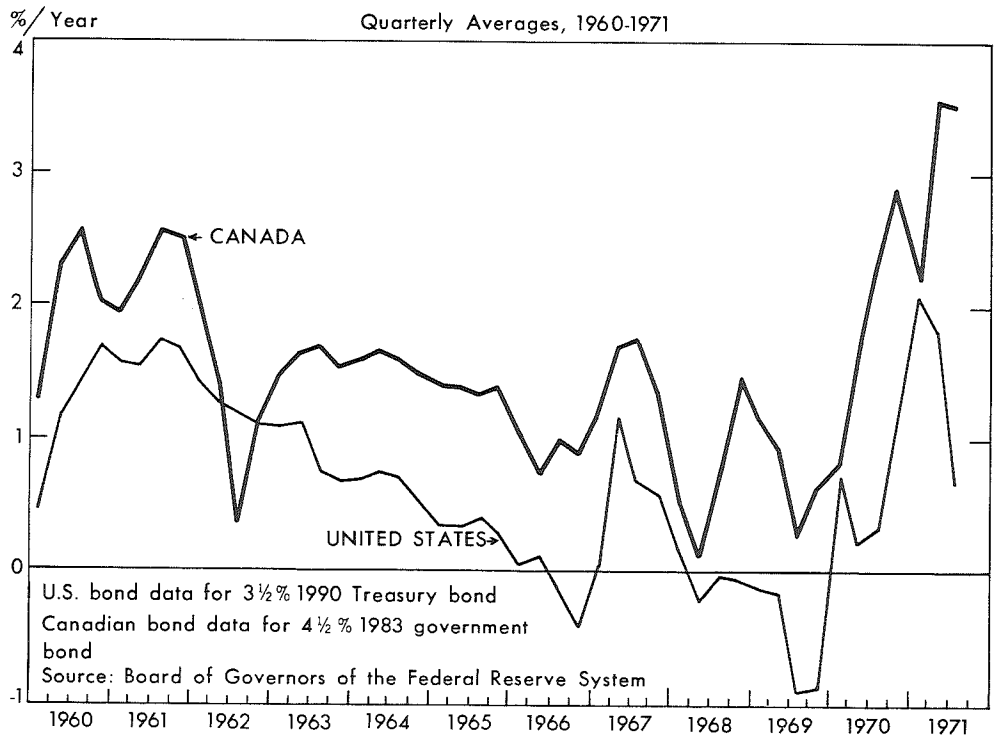
Figure 1



The structures of these two national bond markets are hardly the same, in that Canadian borrowers want to sell more bonds at various prices than do borrowers in the United States, but Canadian lenders want to purchase relatively fewer bonds. The markets clear with similar quantities issued, but with considerably lower prices (higher yields) in Canada than in the United States.

Figure 2

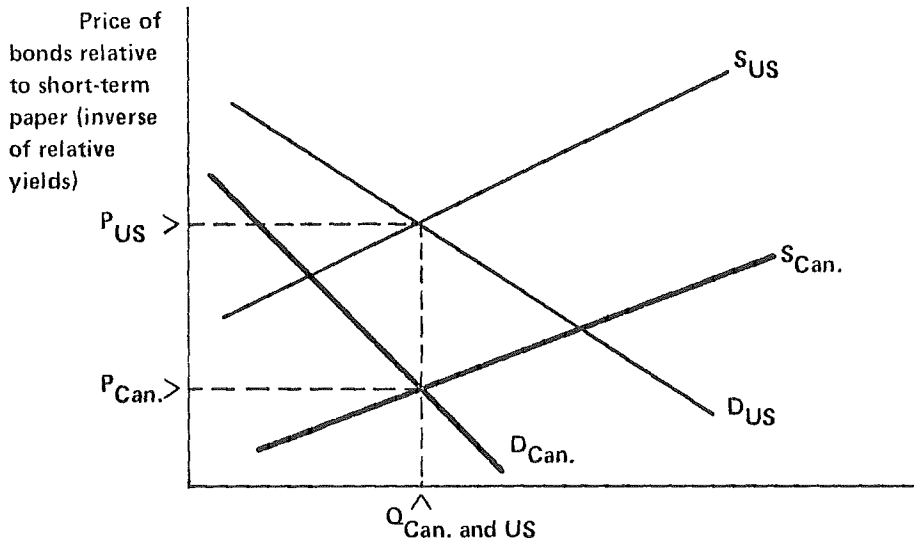
YIELD DIFFERENTIAL BETWEEN LONG-TERM GOVERNMENT BONDS AND 90-DAY TREASURY BILLS



In terms of the relationship between long and short-term markets, a similarity of U.S. and Canadian markets would be suggested if the same relative quantities of the two types of issues were sold *at similar relative prices,* that is, with similar yield curves in the two countries. Professor Neufeld has made no reference to the relationship between yield curves in the two countries in arguing that the financial markets of Canada and the United States are structurally similar, and has apparently confused points on the quantity axis with points on the relevant supply and demand curves.

As can be seen in Figure 2, Canada typically has had a significantly steeper yield curve than has prevailed in the United States in recent years, in that the excess of bond yields over short-term interest rates has exceeded that in the United States. The difference between the bond/bill yield differentials of the two countries averaged .85 percent during the period covered by Figure 2, and the data do not suggest a clear trend in that difference. This suggests that Canadian markets are considerably less receptive to bonds than to short-term paper when compared to the United States. Defining supply and demand curves in terms of bonds relative to short-term paper, the following pattern appears again. Canadian borrowers want to issue

Figure 3



relatively more bonds than short-term paper, but Canadian lenders want to purchase relatively fewer bonds. The markets in the two countries clear with the same relative quantities of the two types of instruments being sold in Canada and the United States, but with decidedly different relative yields. The higher relative bond yields in Canada reflect the relatively limited demand and larger supply of bonds in that market. Given the difference in the yield curves of the two countries indicated in Figure 2, Neufeld's data on the similarity of relative quantities of the two types of issues in Canada and the United States demonstrate a distinct difference in the structure of the two national markets rather than a similarity. His results consequently support rather than refute Andrew Brimmer's conclusion a year ago.

RESPONSE

EDWARD P. NEUFELD

Professor Dunn argues that since Canadian bond yields are higher than U.S. bond yields, even though about the same proportion of savings is invested in bonds in Canada as in the United States, such interest rate differentials indicate distinct differences in the structure of the two capital markets. He feels that this supports Mr. Brimmer's view to the effect that structural deficiencies in the Canadian capital market have caused Canada to import long-term capital and export short-term capital.

I am rather astonished at this theory of interest rate differentials and find it unconvincing. Differences in rates of interest between Canada and the United States could in theory be explained by a large number of factors including higher marginal efficiency of capital or profit expectations in the private sector, greater risk, a higher relative level of capital formation in the public sector, different inflation rates, and different savings rates. Just to take one example, the persistent flow of U.S. capital into Canadian resource industries may reflect higher expected returns on capital investment in Canada compared with alternative investments for such funds in the United States. Indeed, if such fundamental factors did not explain Canada/U.S. interest rate differentials, then considering the virtually complete absence of barriers to capital flows between Canada and the United States, one would expect the differentials to disappear, regardless of the state of development of the bond market in Canada. A zero interest rate differential would no more indicate identical capital market structures than a non-zero differential would indicate differing capital market structures. So Professor Dunn's graphs do not help us and his argument seems erroneous.

I also find unconvincing Professor Dunn's point that a steeper Canadian yield curve suggests a Canadian preference for short-term over long-term securites and therefore structural differences between the two capital markets. What is implied here is a sort of market segmentation theory of term structure, a theory that has received little empirical support in the voluminous literature relating to term

structure. Empirical testing of term structure theories has, of course, encountered great difficulties.

The direct evidence I referred to in my paper seems to me to be the relevant evidence. The data suggest that over the years, Canada has not, on balance, been exporting inordinately large amounts of short-term capital; that Canadian investors, relatively speaking, do buy as many long-term instruments as U.S. investors; that inflows of long-term capital are influenced by changing interest rate differentials; that the spectrum of financial claims is about as wide in Canada as in the United States; and that the rate of development of financial intermediaries is about the same in the two countries. These data leave little doubt, in my mind, that there are no distinct and significant structural differences between the Canadian and U.S. capital markets, and I think Professor Dunn is mistaken in believing that interest-rate data prove that there are.

The Hedging of Commercial Transactions Between U.S. and Canadian Residents: A Canadian View

HARRY C. EASTMAN

The literature on the commercial uses of the foreign exchange market, such as it is, finds inspiration for its classifications in analyses of the effectiveness of that market for short and long-term financial operations. It starkly classifies the positions of traders as either open, and therefore speculative, or as covered by a forward transaction that entirely offsets their commercial position. It will be shown below that this simple classification obscures the real nature of an international trader's business. Thus a trader who buys foreign goods today and pays with foreign exchange bought today is considered by the traditional classification not to have a speculative position. However, if he had bought spot or forward exchange earlier in the anticipation of this purchase of goods, or if he delayed purchasing foreign exchange until later, because of a view he held that those were the times at which the rate of exchange was lowest, the traditional view would consider that to be speculation. Yet the motives for the transactions and the type of risk assumed are the same in all three cases and reflect that the trader's function is to buy and sell internationally traded goods on the most favourable terms. If he buys foreign exchange today, yesterday or tomorrow, it is because he believes the rate to be particularly favourable then.

To make speculation refer to any net long or short position in foreign exchange or in a commodity whose price is determined by international conditions and the rate of exchange strains the term. That term should be restricted to net positions in foreign exchange

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taken for gain from changes in the rate of exchange and not to positions taken as a normal incident to commercial transactions. Speculation in foreign exchange is a purely financial transaction. Once a distinction is made between speculation properly defined and risks inherent in trade, the foreign exchange transactions related to international trade are seen to be covering or hedging operations carried out for a variety of purposes.

A distinction between covering and hedging must be made. In the former a trader abolishes risk of exchange rate change by immediately and invariably buying or selling foreign exchange forward to offset any liability he has incurred or asset he has acquired which has a stable value in terms of a foreign currency and a contract with a fixed and known date of maturity.[1] This operation is analogous to covering foreign exchange commitments for the purpose of interest arbitrage and might be carried out to fix the domestic currency cost of a specific payment for imports due on a certain date in the future. Hedging, on the other hand, does not eliminate, though it usually reduces, foreign currency risk. Uncertainty remains because the forward foreign exchange operation and the risk it is designed to offset do not exactly match, because the amount of the foreign exchange asset or liability is not precisely known or the date of maturity of the contract is uncertain. The consequence is that the price of the hedge and of the asset or liability hedged may not change by the same proportion over time.

As an example, a trader might wish to hedge the domestic currency value of a stock of goods whose price was determined in a foreign market and currency by means of offsetting forward currency operations. He would sell the foreign currency forward at the moment at which he wished to hedge the value of the goods he owned. His long commercial position is in effect a long foreign currency position with goods that can be sold spot at any time in the future. When the goods are sold abroad and the foreign currency proceeds are sold spot, the forward hedge would be removed by a forward purchase. The hedge would turn out to be perfect if the price of the forward had moved exactly as the spot foreign exchange rate, that is to say, if the forward margin was unchanged.[2]

[1] A forward contract with an "option" can cover a number of dates. Such technical details complicate the analysis without affecting the principle and are left out of the following discussion.

[2] This section assumes the rate of interest to be the same in both countries, a simplification that does not reduce the generality of the point made.

A profit would arise if the premium fell or discount increased over the period. An example of a profit would be if a Canadian trader sold forward at a premium for three months a sum equal to the foreign currency value of his inventory of goods. If the forward premium had narrowed when the goods were sold abroad and the foreign currency proceeds disposed of, the profit or loss on the spot value of the goods would exceed or fall short of the loss or profit on the forward operation. To be yet more specific: if the forward were sold at a premium of ½ cent when the spot United States dollar was 101 cents and bought back when the premium was ¼ cent, and the spot was 102, the profit on the spot transaction would be 1 cent but the loss on the forward transaction ¾ cent. In deciding whether to hedge expected foreign currency earnings, an exporter weighs the risk of unfavourable margin change on hedged transactions against the risk of spot exchange rate changes in unhedged transactions. The former risk exceeds the latter if the forward margin fluctuates more than the spot rate.

The price of a traded commodity may also fluctuate in terms of foreign currency in a matter unrelated to the exchange rate. In this case a Canadian trader would of course have to hedge on a foreign commodity market, if such existed, in addition to his forward exchange operations.

Hedging by the use of the forward market in foreign exchange has the essential characteristic that the forward transaction is only a temporary substitute for a spot transaction that is called for by the ordinary course of commercial transactions.

Three Types of Hedging Operations

Three distinct types of hedging operations can be distinguished. Probably the most common is selective hedging[3] when firms which are committed to future foreign exchange earnings or expenditures or which are long or short in stocks of commodities with international prices occasionally seek to protect themselves from expected exchange rate changes. The incidence of such hedging has been especially large in Canada when major rate changes were anticipated, such as in the period when the Canadian dollar was pegged at an evidently undervalued rate in 1950 and 1970, and in 1961 when

[3]The term "selective" and "anticipatory" hedging are taken from analogous operations in commodity markets. See Holbrook Working, "New Concepts Concerning the Future Markets" *American Economic Review*, vol. 52, no.3, June 1962, pp. 440-441.

the Minister of Finance announced that he believed the exchange rate to be too low. In the former cases exporters who normally did not cover did so, and the importers who usually bought foreign exchange forwards ceased to do so and vice versa when the rate was generally expected to rise. Holders of inventories of commodities could sell foreign exchange forward when they expected the price of foreign exchange (and of their inventory) to fall and buy forward when they expected it to rise.

Selective hedging is not strictly designed to reduce the variance in the rate but to anticipate changes in the rate. It would offset losses to the long position from an expected decline in the rate and to a short position from a rise in the rate. The usefulness of the forward market in this and other contexts is that it allows traders to adjust their positions at least cost in the light of their views as to the future course of the rate of exchange. Traders hold long or short positions in contracts, foreign exchange and commodities for trading purposes, because these positions give a convenience yield. They must hold stocks of raw materials and finished goods to supply the unforeseeable needs or timing of the needs of their customers and to reduce transactions costs. The same consideration leads them to hold balances in foreign currency and enter into contracts affecting the future. The point is that these commitments may give rise to long or short positions that conflict with their expectations about the future course of the rate of exchange. For instance, a refiner of copper must hold stocks of unrefined and refined copper even when he expects the price of foreign exchange and hence the value of his inventory to fall. In the absence of a forward market, he would be induced by the foreign exchange risk to reduce his inventory and therefore to raise his costs of doing business by foregoing the convenience yield of the larger inventory. The forward market enables him to maintain his inventory by selectively hedging the stock through a forward sale of foreign exchange when he believes that risk to exist.

Hedging may also be anticipatory. A trader may buy or sell foreign exchange forward in anticipation of a future need when the rate of exchange seems favourable to him. He is taking on a long or short position, but it is nevertheless a hedging operation. It is a substitute for a spot transaction that will be necessitated in any event by a commercial operation. The purchase of forward exchange is part of the normal conduct of a commercial enterprise and is a hedge against an anticipated requirement of that business.

Finally, a particularly knowledgeable and skillful trader might hedge on the basis of the margin. He might decide to hedge or not to

hedge depending on whether he expected the forward margin to move in his favour or not during the life of the contract he was contemplating. For instance, an exporter selling foreign exchange forward to hedge his commodity position might find this hedging sufficiently attractive only if he believed the premium on forward currency would decrease or the discount rise between the time of the hedge and the closing out of his forward exchange positions. By selling forward now to cover his present long position in goods and by buying back the forward later at a smaller premium or greater discount from spot, he would add the changing margin to his profits. A forecast of the margin is, in effect, a forecast of relative interest rates in Canada and abroad because the forward margin normally reflects the international interest differential. A forecast of an unfavourable change in the margin might lead to a decision not to hedge or it might lead to the abandonment of the commercial operation as well.

Effectiveness of Hedging

The effectiveness of the foreign exchange market for hedging commercial transactions, as for covering and speculation, depends chiefly on two characteristics. The first and most obvious is the transactions cost: how much the foreign exchange brokers and dealers charge for performing their function of exchanging one currency for another. The second characteristic is the extent of bias in the market. Bias is the tendency of forward rates to consistently over-value or under-value the spot rate that will actually prevail when the forward contract matures.

Transactions Costs

1. Transactions costs depend on the efficiency with which firms in the industry are organized to achieve lowest average costs and the extent to which competition between them keeps the price of their services to cost. Competition tends to insure that firms are efficient and that the spread between buy and sell prices and the commissions yield only normal profits, so the problem can be approached by an examination of competitive conditions in the foreign exchange business.

It is commonplace that the international foreign currency market in the major traded currencies is highly competitive at the wholesale

level. Banks all over the world are in constant touch with one another and are willing to buy and sell these currencies on margins of 1/50 of a cent or less. Major commercial and financial firms buying and selling large sums have access to the wholesale market. It is claimed that the international market is so competitive that "opportunities for profitable spatial arbitrage are limited and such dealers must therefore realize profits from future exchange fluctuations"[4] and specifically that in New York it is "impossible for a foreign exchange department of a New York bank to operate profitably without trading on a position. Competition among banks in New York is so keen that trading profits on the daily turnover of commercial transactions are extremely small."[5]

The fact that the market in large sums is highly competitive does not mean that smaller purchasers or sellers necessarily obtain favourable terms within national foreign exchange markets, because collusion among banks in retailing may raise commissions about competitive levels, but this situation varies from country to country and no general statement is possible.

The picture of a perfectly competitive international wholesale foreign exchange market needs to be modified somewhat for an analysis of the Canadian dollar market because that currency is not a major traded currency. Purchases and sales of Canadian dollars are made by firms needing this currency for commercial or investment purposes and are not the result of active trading in search of a profit from turning over the currency. The number of banks continually active in the Canadian dollar market is much less than for the major international currencies such as the United States dollar, sterling, or the Swiss franc.

The Canadian dollar market is chiefly in Canada between the Canadian chartered banks. The reason is that the overwhelming proportion of Canadian trade, both exports and imports, is invoiced in foreign currencies, chiefly the U.S. dollar and, to some extent, sterling. In consequence it is the Canadian traders who are responsible for foreign exchange operations and they naturally tend to carry them out with the local branch of their Canadian bank with which they have other business dealings.

[4]Helmut Lipfert, "The Psychology of the Exchange Market", in R.Z. Aliber, *The International Market for Foreign Exchange*, Praeger, 1969, p. 124.

[5]*Ibid*, p. 202.

The Canadian bank builds up a long or short position as a result of responding to its commercial customers through its various branches and it evens out its position from time to time in larger blocks in the Canadian interbank market or in the international market.

The interbank market consists of salaried brokers of the Canadian Bankers' Association to whom only the chartered banks, the Montreal and District Savings Bank, and the Bank of Canada, have access. This wholesale market has the unique characteristic that the marginal costs of transactions to an individual bank trader are virtually zero because the brokers are salaried rather than on commission as are brokers in other centres. This means that bank foreign exchange traders are willing to engage in more covering operations than they would if the marginal cost of transactions were positive. This may also aid in maintaining in Canada the centrality of the Canadian dollar market because Canadian banks can accommodate foreign requests more cheaply than if a commission had to be paid on each transaction. It is also alleged that the cost of brokerage to the industry is reduced by this system, but this is only an estimate based on assumptions as to the level of commissions that private brokers would charge.

Canadian banks do not deal in large sums only on the interbank market. They also buy and sell with foreign banks, especially in main United States centres, when this is profitable, and also with the commercial and financial firms with the largest volumes.

Small Number of Participants

The relatively small number of participants in the Canadian dollar market makes it possible normally to maintain a larger spread between the buying and selling price in quotations that are given by the central foreign exchange department of banks to their customers. Canadian banks quote a spread of 1/32 cent on a U.S. dollar to their principal customers, be they firms which purchase in large amounts or foreign banks. In contrast, in the United States and in Europe, quotations on foreign exchange have finer spreads of two points or less. Nevertheless, Canadian banks are responsive to market situations and if large commercial or financial customers, including foreign banks, consistently get better rates abroad, they will quote finer rates to these customers.

The question arises of why foreign exchange business does not gradually move from Canada to other centres when Canadian banks maintain a larger spread between the buying and selling rate than

foreign centres, notably New York, are accustomed to have on important currencies. The reason appears to be that the majority of commercial transactions are not very sensitive to relatively small differences in spread and they give to the Canadian banks a very large volume of transactions. This gives the Canadian dollar market in Canada volume and activity which are also increased by the zero marginal costs of trading in the interbank market to which only they have access, as already noted. This breadth of market is a precondition for effective foreign exchange trading by banks. Banks in other countries where Canadian dollar trading is less active must frequently turn to the Canadian market in Canada to even out their position and are faced there with the wider spread. They must therefore themselves maintain a commensurate spread or cover at a loss. Hence, the relatively wide spread generally maintained by Canadian banks in trade in Canadian dollars in Canada is exported to other centres also trading in Canadian dollars.

The ability of Canadian banks to maintain a relatively wide spread in Canadian dollars in a generally very competitive industry is owing to the fact that Canadian trade is chiefly invoiced in foreign currencies thus keeping the market in Canada, as already noted, but also that the banks are few in number. Nine banks participate in the interbank foreign exchange market. Of these nine, five do the lion's share of the business, but some banks operate two foreign exchange trading departments, one in Montreal and one in Toronto, more or less separately. In any event, the participants in the market are few and interdependent for this reason, in addition to their common membership in the Canadian Bankers' Association.

The fact that Canadian banks individually have considerable market power is indicated by the care traders must take to avoid pushing the rate against themselves. This they do by spreading their large transactions over time and by attempting not to reveal their positions and intentions to the other traders by their market behaviour lest these raise the rate of exchange against them.

Bank traders typically prepare their positions by going exceptionally long or short when they anticipate large transactions from their commercial accounts. They consider accommodating their commercial accounts to be their primary function, a function related to the total of bank relations with these customers, and wish to do this at "reasonable rates," which is to say at the rate of exchange that would prevail without news of that large transaction. If caught unawares by having to meet a large but unforeseen commercial demand, banks may keep an open position for a long time, evening

up their position gradually. In general, banks know that the prevailing rate of exchange is not the one that will clear the market when they have large sums to lay off. They seek to discover how much they can buy and sell at a certain rate of exchange, not the rate of exchange at which they can transact all the business they would otherwise like to do. This concern with quantity as well as price is characteristic of oligopolistic market behaviour. In addition to their own downward sloping average revenue curve is the fact that other traders affect the rate of exchange as well and will respond by causing the rate to move adversely, if these realize from the market behaviour of a bank and from any other information they can glean that the bank has a large outstanding position to cover.

This discussion of the structure of the foreign exchange market in Canadian dollars shows that the spread between the buying and selling price of Canadian dollars is wider than for other currencies important in world trade and investment, and that this is probably the result of concentration of transactions in the market in Canada in which only a few participants are important. It is alleged that profits from foreign exchange transactions of Canadian banks are higher than those of U.S. banks, but this was not verified. However, higher profits would be consistent with the other aspects of the market. The important question is whether the structure and behaviour in the Canadian dollar market reduces the effectiveness of the foreign exchange market for commercial purposes from that which would prevail under perfect competition. No test of this question has been devised, but I am unaware of complaints about the spread and charges and the sums involved are very small as a proportion of the value of commercial transactions, so that it appears that whatever distortion exists is an unimportant impediment to carrying out commercial transactions most effectively.

Bias in Foreign Exchange Market

2. Low transactions costs may not be the only, nor indeed the principal, characteristic of an effective foreign exchange market for commercial purposes. The foreign exchange market may also be biased in such a way as to make hedging consistently too expensive in one direction and too cheap in the other.[6] Such an artificial

[6]Terms for hedging that lower the net returns of importers and raise them to exporters who hedge as compared to these traders' returns if they do not hedge have the same general equilibrium effects as those of a tax on purchases of foreign exchange and a subsidy on sales at the same flat rate, but which apply only to part of total trade.

obstacle to hedging in one direction and inducement in the other occurs if the forward price of the foreign currency consistently over- or under- estimates the actual spot rate that will prevail when the forward contract matures.

The importance of an unbiased forward foreign exchange market can be illustrated by an example of a Canadian importer who is continuously short in U.S. dollars because of his commercial account and who hedges himself by consistently buying forward U.S. dollars. Suppose that he first buys U.S. dollars forward at a certain rate of exchange and, when the forward contract reaches maturity, he sells it and buys another forward contract. This procedure of hedging by continually turning over his forward contract continues for many years during which the rate fluctuates but has no trend. The operation terminates at a period when the rate of exchange is roughly the same as it had been at first. If, over the entire period, the importer has neither made nor lost much money on his forward operations, except for the spread and commissions, the market would be considered to be unbiased. Another trader hedging in the opposite direction, because he was a Canadian exporter or a U.S. importer, would also have managed to hedge his commercial position costlessly except for the transactions costs.

This type of hedging is not uncommon. "We buy regularly from the United Kingdom and pay in sterling. We usually contract with our bank for sterling futures, equal in amount to about one month's purchases. We try to maintain our position in sterling futures at a reasonably uniform level by contracting for new futures as we reduce our old futures at the time of remitting."[7]

Assuming the transactions costs are zero and that short-term interest rates in the two countries are equal, zero profits and losses on the hedging operations described above could arise as a result of either of two extreme characteristics of the market. One would be a market in which foresight was perfect over the period of the forward contracts. In such a case the forward foreign exchange rate would always exactly predict the spot rate that was going to exist in future when the forward matured and hence the forward rate would neither overestimate not underestimate the future spot rate. The other case would exist when, at the time of each transaction, the existing spot and forward rates were the same. This would occur if perfect interest

[7]J.H. Young and J.F. Helliwell, *The Effects of Monetary Policy on Corporations*, A Study Prepared for the Royal Commission on Banking and Finance, Ottawa, Queen's Printer, 1964, p. 420.

arbitrage existed. In this latter case, the forward rate of exchange would not predict the spot rate in the future, but the two rates would fluctuate randomly in relation to one another, the differences summing to zero.[8] Arithmetical examples of the two types of relationship are contained in Tables I and II.

A market guided by perfect foresight over the period equal to the length of the forward contract is effective for hedging a commercial position over any time span, however brief. A market of the second type, that is with perfect arbitrage, is effective for that purpose over a large number of transactions in which random elements can cancel each other out.

Effectiveness of the Market

An attempt is now made to estimate the bias and so test the effectiveness of the Canadian foreign exchange market for hedging commercial transactions, and also to identify whether that market obtains whatever effectiveness it may have from the accurate prevision of future spot rates by the forward rate, or rather from effective arbitrage at one time. The first type of market was illustrated in Table I above and the second in Table II.

The model is that of a trader who hedges his short commercial position by a continuous long forward position in the foreign exchange market. He might be an importer who is continually committed to future purchases of U.S. dollars to settle his bills abroad. Each month he buys U.S. $1.00 90 days forward. Three months later his forward contract matures, and he buys another 90 day forward contract of U.S. $1.00. Thus, after a preliminary period of three months, he has a continuous long forward position of U.S. $3.00. The period of his hypothetical operations is from January 1952 to March 1971. Table III below shows the result of the continuous turnover of his forward position. Separate calculations were also made for the result of his operations during the period of flexible exchange rates from January 1952 to June 1961 and for that of the pegged rate from June 1962 to March 1970. The extreme

[8]Perfect foresight of a limited period and perfect arbitrage are inconsistent one with the other because arbitrage in the future means that the spot price at that moment is affected by the forward price and hence the spot price in the yet more distant future. By assumption, the yet more distant spot price is unknown today, so the future spot price is uncertain and therefore today's forward can not predict it exactly.

TABLE I

FORWARD MARKET WITH PERFECT FORESIGHT

Date of Transaction	Three month Forward (Purchase) R90	Spot (Sale) Ro	Profit or Loss per U.S. $ $X = Ro - R90_{-3}$
December 31	102		
March 31	104	102	0
June 30	101	104	0
September 30	102	101	0
December 31		102	0

Sum = 0

$\bar{X} = 0$

TABLE II

FORWARD MARKET WITH PERFECT ARBITRAGE

Date of Transaction	Three month Forward (Purchase) R90	Spot (Sale) Ro	Profit or Loss per U.S. $ $X = Ro - R90_{-3}$
December 31	102		
March 31	104	104	+ 2
June 30	103	103	- 1
September 30	101	101	- 2
December 31		102	+ 1

Sum = 0

$\bar{X} = 0$

months of both these latter periods were omitted because at that time uncertainty and official intervention were especially important.

The statistical test described below is merely suggestive of reality because of shortcomings in the data used, but better estimates are not available. The principal problems in the calculations arise from the fact that average monthly exchange rates were used rather than the actual rates; so that the fluctuations are reduced. Furthermore, the use of monthly averages introduces positive correlation between adjacent monthly values even if the movements of the underlying data follow a random walk.

Table III, Column 1 reveals that when our trader bought forward he contracted prices for his U.S. dollars that averaged .1639 Canadian cents more than they were worth when he actually received them later upon maturity of the forward contract. This was the case for the entire period from 1952 to 1971 that witnessed 231 operations. That a loss from such operations was accidental can be rejected at the 5 percent level of confidence though not at the 1 percent level. The standard deviation of the individual losses was 1.249 cents. Thus the forward market in foreign exchange was probably biased and, in any event, our importing trader would have sustained a loss of about 12 Canadian cents per U.S. dollar hedged over the 19 years included in our experiments. This works out to an insurance premium of two-thirds of a cent a dollar a year.

The relationship between the spot rate and the earlier forward rate for the entire period is maintained for the sub-periods of the flexible and the pegged exchange system, except that no bias is revealed for the pegged rate period of 1962 to 1970. However, the two sub-periods show differences in that the mean difference between the spot and the earlier forward rate was much greater in the period of the flexible exchange rate of 1952 to 1961 than for the pegged rate. The variance of this relationship was also greater under the flexible rate. Thus hedging would have been more costly for our importer in the flexible rate period, costing him 36 cents for the total of his activities or 12 cents a dollar hedged during 9½ years as against 3½ cents or one cent a dollar hedged in the period of the pegged rate which lasted 8 years. In addition, the greater variance under the flexible rate would have required longer continuing operations to escape risk of a given loss.

Column 2 shows the relation of the 90 day forward rate of exchange to the concurrent spot rate. Over the 19 years the forward rate of exchange was above the spot on the average and this was by no means accidental, as shown by the very high t-value for the mean

of the observations. However, the excess of the concurrent forward over the spot rate was less than that of the lagged forward rate. Furthermore, the variance of $\overline{X}$ in column 2 is much lower than the variance in Column 1, the latter being 41 times the former. These differences show that, in so far as the foreign exchange market is effective for hedging, it is owing to forces that maintain a stable relationship between the forward and spot prices prevailing at one time (Column 2), rather than to the predictive ability of the forward rate for the future spot rate.

The difference between the actual forward margin and the forward interest rate parity margin calculated on the basis of the Treasury Bill rates in Canada and the United States is shown in Column 3. This parity calculation explains one-half of the value of $\overline{X}$ in Column 2 and is about one-third of the difference between the spot rate and the earlier forward rate shown in Column 1. The variance remains low compared to that of Column 1 and the difference of $\overline{X}$ from zero is significant. The low variance indicates the presence of a mechanism, undoubtedly interest arbitrage, maintaining a stable relationship between spot and forward rates. But the significant divergence of the forward rate from this forward interest parity needs an explanation which, at the moment, is the guess that $\overline{X}$ differs significantly from zero because the Treasury Bill yields used in the calculation are inappropriate, because interest arbitrage is in fact based on other rates,[9] but that the variance is low because Treasury Bill rates fluctuate with the appropriate rates, whatever they may be. This has yet to be tested.

The results for the sub-periods are not much different from those for the period as a whole. Under flexible exchange rates, the mean difference between the spot and the concurrent forward rate corrected for interest differential was less than half the difference between the spot and the earlier forward rate and its stability was much greater. In the pegged rate period, the difference of the spot from corrected concurrent forward shown in Column 3 is a discount, whereas it was a premium of the same size for the same period in Column 1, but its variance is also much smaller than in Column 1. With a discount, the bias becomes favourable to hedging importers

[9]Professor Helliwell found that the yield differential on Canadian and U.S. finance paper was a better explanation of the forward differential than that on Canadian and U.S. Treasury Bills for the years 1963 to 1966. John Helliwell, "A Structural Model of the Foreign Exchange Market", *Canadian Journal of Economics*,Vol. II, No. 1, February 1969, pp. 90-105.

TABLE III

HEDGING TRANSACTIONS IN U.S. DOLLARS
(MONTHLY PURCHASES OF U.S. $1.00 90 DAYS FORWARD IN CANADIAN DOLLARS)
1952 - 1971

Period		1 $X = Ro - R90_{-3}$	2 $Ro - R90$	3 $-\left[\frac{Ro - R90}{\frac{(rUS - rCdn) \cdot Ro}{4 + rUS}}\right]$	4 $-\left[\frac{Ro - R90_{-3}}{\frac{(rUS - rCdn) \cdot Ro}{4 + rUS}}\right]_{-3}$
January 1952	$\bar{X}$	-.001639	-.001285	-.0005947	-.0009488
to March 1971	Var.	.0001559	.000003715	.00000606	.0001598
N = 231	S.D.	.01249	.001928	.002461	.01264
	$\bar{t}$	(-.13)	(-.67)	(-.243)	(-.075)
	t	(-1.97)	(-10.18)	(-3.72)	(-1.14)
January 1952	$\bar{X}$	-.003171	-.002054	-.001427	-.002544
to June 1961	Var.	.0001653	.000002996	.000004743	.0001682
N = 114	S.D.	.01286	.001731	.00218	.0127
	$\bar{t}$	(-.25)	(-.1.19)	(-.654)	(-.196)
	t	(-2.48)	(-12.71)	(-7.15)	(-2.09)
June 1962 to	$\bar{X}$	-.0003702	-.0007851	.0003856	.0007613
March 1970	Var.	.00004673	.00000334	.000003195	.00004071
N = 94	S.D.	.006837	.001828	.001787	.00638
	$\bar{t}$	(-.054)	(-.43)	(.222)	(.12)
	t	(-.42)	(-4.17)	(2.026)	(1.24)

Notes: Ro is the monthly average noon spot rate for the US dollar in Canadian dollars.
R90 is the monthly average noon 90 day forward rate; -3 indicates a lag of 3 months
rUs is the monthly average yield on U.S. Treasury Bills
rCdn is the monthly average yield on Canadian Treasury Bills
$\bar{X}$ is the mean of the observations; Var. is their variance; S.D. is their Standard Deviation; t is the t-value of the observations. X; $\bar{t}$ is the t-value of the mean of the observations, $\bar{X}$.
For a large sample a t-value of 1.95996 corresponds to a probability of .05 and one of 2.57582 to .01.

and a cost to hedging exporters, but this does not add any significant aspect to this investigation.

Column 4 shows the relationship between the spot rate and the forward rate as it prevailed three months earlier corrected for the differential in Treasury Bill rates as they existed in the earlier period. This relationship tests the predictive reliability of the forward rate, taking the interest rate differential into account. The forward rate becomes a better predictor of the spot rate than Coulmn 1, which leaves out the rate differential, but the variance is the same and large, so that the conclusion reached earlier that the forward does not predict spot transactions well is not reversed. Comparing Column 4 to Column 3, we find the difference between the spot and the earlier forward rate corrected for interest differential to have a larger average value and to have a higher variance than the difference between the spot and the corrected concurrent forward rate. This confirms that the relationship of the forward to the spot rate is determined by arbitrage rather than by foresight. Again, in these calculations we find that the divergence of $\overline{X}$ from zero (the bias) and its variance is greater in the period of flexible than of pegged rates.

A trader can use other transactions to accomplish a hedge than the one specified in our definition and example of bias. Instead of buying forward U.S. dollars and turning over his long position continuously, an importer could borrow in Canada, buy U.S. dollars spot and invest the proceeds in U.S. securities, acquiring a long position in U.S. dollars in this way. The cost of this hedge would be the differential in interest rates. If forward interest arbitrage were perfect so that the forward rate was at its interest parity and if the arbitrage was on the basis of the interest rates available to the particular importer in the two financial markets, the two forms of hedging would have the same cost or bias. According to the calculations shown in Column 3, interest arbitrage was not perfect. On the basis of Treasury Bill rates, over the entire period borrowing in Canada, buying U.S. dollars spot and investing in U.S. securities would have cut the cost of the hedge by about one-third. In addition, the lower variance would have made this kind of hedge less risky. However, looking at the sub-periods, this type of hedging would have been cheaper in the flexible rate period, but more expensive in the pegged rate period than simply buying forward. As already noted, these particular results may stem from the use of rates of interest inappropriate to the calculation.

In summary, this preliminary statistical investigation of the Canadian foreign exchange market for commercial hedging purposes has revealed that a substantial bias has existed which has imposed an extra cost on importers who hedged by means of the forward market relative to non-hedgers and has given an extra gain to hedging exporters. This bias was greater in the period of the flexible rate than under the pegged rate when it was quite small. The bias was inherent in the functioning of the market because the mechanism determining the relationship of the spot to the forward rate was interest abritrage, not correct forecasting of future rates. When rates of interest are at different levels in Canada and the United States, a forward margin arises from interest arbitrage and this introduces a bias whether hedgers use the forward market or borrow and deal spot.

The Actual Behaviour of Firms

So far, the various forms that hedging of commercial transactions for foreign exchange risk might take have been discussed as has the effectiveness of the Canadian market for foreign exchange for hedging purposes. It now remains to examine the extent to which firms in fact wish to hedge and the techniques that they use. Unfortunately, nothing very encompassing can be stated on this question with the information available. Two rather cursory surveys[10] have provided some information. This is supplemented by knowledge of the operations of individual firms responding to one of the surveys.[11] In addition, this author has some personal knowledge of the opinions of executives, exchange traders and other banking officials who are in contact with the market as a whole.

The surveys indicate that the majority of commercial firms deal only on the spot market but that the larger firms tend to deal on the forward market more than the smaller firms. Thus, the Royal Commission found in its sample that 76 percent of firms with assets of under $10 million never use forward facilities, but only 51 percent of firms with assets of $10 million or more also limited themselves entirely to the spot market.

[10]Canada, Royal Commission of Banking and Finance, *Report*, Ottawa, Queen's Printer, 1964, pp. 298-99; Canadian Manufacturers' Association, *Submission to the Royal Commission on Banking and Finance*, 1961, Table 8.

[11]J.H. Young and J.F. Helliwell, *op. cit.*

My personal limited and unsystematic inquiry of commercial firms indicates a variety of patterns of behaviour even between firms in the same industry and of particular firms over time.

An examination of the relationship between the timing of changes in the balance of merchandise trade and other autonomous items in the balance of payments and of changes in the spot foreign exchange rate for Canada suggests that a substantial part of the payments for these transactions are not covered forward. Payment to the exporter follows the movement of merchandise by one to three months for a large part of international trade. If the importer or exporter does not cover his future payment by a forward exchange transaction, the foreign exchange transactions lag the shipment of the merchandise and its appearance in the trade statistics. Thus the change in the rate of exchange lags the change in the merchandise balance that gave rise to it. If the merchandise transactions are covered by a concurrent forward transaction, exchange rate changes coincide with the changes in merchandise trade owing to the flow of short-term capital through interest arbitrage responding to the increased demand for forward exchange. In fact, rates of exchanges tend to lag changes in the balance of merchandise trade and this evidence supports that of the surveys that Canadian trade is to an important extent not covered or hedged by forward operations.[12]

Despite the lack of systematic information on hedging practices by commercial firms, the information available suggests that the decisions of firms about the extent to which they should cover and hedge their commercial position are affected, first, by the size of the risk and secondly, by the extent to which hedging or covering protect against the risk.

One aspect of the size of the risk is that it increases with increased amplitude of fluctuations in the foreign exchange rate. Thus one would expect increased activity for hedging and covering on the forward foreign exchange market as fluctuations in the spot rate increase. In fact, persons involved in the foreign exchange market claim that the total volume of forward operations by commercial firms are noticeably greater in periods of flexible exchange rates than in periods with pegged rates. This has been the experience in the past year during which Canada has had a flexible rate as compared to the

[12]H.C. Eastman, "Aspects of Speculation in the Canadian Market for Foreign Exchange", *Canadian Journal of Economics and Political Science*, vol. 24, no. 3, August 1958, p. 365ff; William H. Branson, *Financial Capital Flows in the United States Balance of Payments*, Amsterdam, North Holland Publishing Company, 1968.

earlier period with a pegged rate. Forward operations are also very substantial when a general movement in the rate is expected such as usually precedes a change in a country's peg or a change in the exchange rate system. The change to a flexible rate in June 1970 was not very widely expected, at least compared to some other occasions on which the peg was lifted, yet the Exchange Fund Account accumulated a net long forward position of $360 million resulting from the rush for cover by firms in the last few days of the fixed rate.[13]

The size of the foreign exchange risk incurred by a particular firm, increases which it may wish to avoid, is a function not only of the amplitude of the fluctuations taking place in the exchange rate or expected to take place, but also of the structure of the firm's operations. The structure determines the extent to which a particular firm is exposed to a risk from given exchange fluctuations. This exposure might be measured as the percentage of change in the profits of a firm that would be caused by some change in the exchange rate. Such an exchange risk is a function of two things. One is the extent to which the prices of a firm's output are determined in the international market relative to the prices of its inputs. Obviously, if the prices of both inputs and outputs are fixed in terms of foreign currencies, a fluctuation in the rate of exchange has an effect on its position only proportionate to the rate change. But if the price of its output is determined in the foreign market, and those of its inputs are domestically determined, or vice versa, the firm has a maximum exposure to exchange risk from this factor. Secondly, the exchange risk is also a function of a firm's equity position. The smaller its equity as a proportion of its total assets, the larger in terms of the equity is the effect of a change in the prices of its outputs or inputs caused by exchange rate fluctuations.

Inter-industry and inter-firm differences in the exposure of firms to exchange risks of the nature indicated above go some way in explaining differences in behaviour. Industries such as the grain trade, in which firms are most exposed to exchange risk because they operate on small margins of equity and have costs fixed in Canadian dollars, but quote prices in foreign currency, usually hedge. In industries in which exports or imports are a smaller proportion of sales or costs, the danger to the survival of the firm of a single unfavourable change in the rate of exchange is less and they hedge less.

[13]W. Earle McLaughlin, "The Canadian Dollar – Freely Floating and Well Behaved", *The American Banker*, April 12, 1971.

These factors have been discussed as if they affected separate firms. However, a single firm may hedge different operations differently. One observes that the same firm may display different hedging behaviour with respect to different types of business operations, these differences being related to the factors so far discussed. Thus a firm might buy copper scrap in the United States, refine it in Canada and resell the refined copper in the United States. The fine margin involved in refining induces the firm to be sure of its prices which are assured by hedges. On the other hand, the same firm's normal and continuous copper exports produced from domestic ore may not be hedged, the firm being willing to risk changes in the spot rate of exchange because it knows that no such change is going to jeopardize its existence and that, in the long run, changes in the level of the rate cannot be avoided by a firm that is on a constant export basis and does not forecast.

Along the same line of reasoning, one would expect, and indeed one finds, that a firm hedges only a part of its foreign business even if all that business is undifferentiated with respect to foreign exchange risk. This is because the firm wishes to self-insure a certain level of risk, but cannot wisely afford to self-insure the entire risk. Consequently, it lays off some by hedging a larger or smaller proportion of its total business as the risk of greater rate changes or as the proportion of its total business that is exposed to exchange rates rises or falls.

Hedging or covering are not equally effective in insuring against exchange risk of different commercial operations even when the price of the traded commodity in internationally determined in all cases. This can best be illustrated by the difference between possible exporting and importing situations. An exporter may sell at a U.S. dollar price, sell the expected foreign exchange proceeds forward and be certain of his Canadian dollar return. But an importer may buy goods at a U.S. dollar price, buy U.S. dollars forward to avoid the risk of a change in the rate of exchange, but find that the Canadian dollar price at which he can later sell the goods in Canada has changed if the rate has altered. His hedge is ineffective.

If imports often cannot be as effectively hedged as can exports, this fact would explain the tendency reported by foreign exchange traders that exporters hedge forward more than do importers. However, this fact might also be owing to the normal premium of the forward on the spot U.S. dollar which has in the past given exporters more favourable terms forward than spot and less favourable terms to importers.

It should be noted that firms that can fix the Canadian dollar price of their imports for periods as long as the term of their forward purchases can hedge successfully by forward operations. Indeed, the reason given by some importers who hedge, amongst which automotive firms are very important, is precisely that forward purchasing of U.S. dollars permits them to "fix a Canadian dollar cost" of imported parts or vehicles.

The factors discussed in this section as affecting Canadian commercial hedgers go some way in explaining observed inter-industry and inter-firm differences in foreign exchange practices. However, a good deal of dissimilarity exists between the practices of firms that appear similarly situated. More research would undoubtedly be rewarded by the discovery of other explanatory principles, but it is also the case that differences in experience, interest, temperament and competence of individual executives are an important variable explaining differences in observed behaviour. So is the frequently rather uninformed opinion of boards of directors to which executives would rather explain a foreign exchange loss from a routine spot position than from some unsuccessful forward operation. Rather widespread lack of sophistication can persist in these matters, because, for many firms foreign exchange gains and avoidable losses have, over the long run, not been very large. Canadian firms are generally concerned with their international competitive position as it is affected by the longer term level of the rate of exchange rather than by short-term fluctuations in it.

DISCUSSION

PETER A.T. CAMPBELL

Professor Eastman indicates in his paper that there is a reasonable lack of systematic information on the behavior of users of the foreign exchange market. In this context and for the record, I felt it might be useful to spell out exactly what a firm like Wood Gundy does as a continuous user in the foreign exchange market. This exercise would also serve the purpose of exposing you to the kind of inevitable situation bias you get when someone like myself comments on a paper. As I thought about our operations in the foreign exchange market, I sorted out five aspects.

First of all, we are a broker in what we call the interest arbitrage market. We are involved in north-south and east-west interest arbitrage within North America, and between North America and continental Europe. Essentially, we place as agents, or sell as principals, Canadian commercial paper, to resident corporations of the United States and Europe who choose to deal in Canada. To facilitate our off-shore customer requirements, we usually arrange the foreign exchange aspects of the arbitrage transaction. These foreign exchange transactions are what we call hedges, a slightly different use of the phrase from Professor Eastman's, a simultaneous purchase of one currency spot and its sale forward. The foreign exchange side is done flat; that is to say, we do not attempt to make a profit on the foreign exchange transaction. We rely, for our own sustenance, on the commission generated by the commercial paper side of the transaction.

Second, as a member of the New York Stock Exchange through our American subsidiary, Wood Gundy, Incorporated, and as a member of the principal Canadian Stock Exchanges, a considerable amount of north-south equity volume, which involves foreign

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exchange transactions, is generated. In addition, a sizable amount of east-west equity volume is generated between Europe and Canada through the facilities of our London, England office. This latter volume involves cross-rates between continental currencies including the premium dollar in London, on the one hand, and the US-Canadian dollar market on the other. As a firm, we compute our net position internally at prevailing spot rates. Any surplus or deficit in our foreign exchange position is eliminated on a spot or very short dated-forward basis.

The third aspect of our operation is activity in the over-the-counter debt markets within Canada, the United States, and the Euro-bond market trading out of London, England. A substantial volume of transactions occurs between countries which involves spot foreign exchange transactions.

Fourth, from time to time we position foreign exchange for our own account in anticipation of a favorable move in rates. Such transactions are effected on an open-forward basis. In some markets this tends to be an exercise in self-immolation. Finally, in our function of what we euphemistically describe as a full-service money center, we act as an advisor to corporations with respect to foreign exchange. We do not, however, execute foreign exchange transactions on behalf of corporate customers. Clients are advised to deal directly with their banks when the point of execution is determined.

In summary then, Wood Gundy is thoroughly involved in the Canadian-US foreign exchange market at three levels of execution: spot, forward, and hedge. We regard ourselves as a commercial customer of the foreign exchange market and hence of the foreign exchange banks. In no sense can our participation in the market be regarded as in competition with the exchange banks. I have looked back through our trading blotters to date this year in order to give you a feel for our degree of involvement. Our average juridical day business volume is either side of $15 million. Slightly more than 50 percent of our business is executed by American foreign exchange banks. We would probably be regarded as a medium-sized commercial customer by the major foreign exchange banks.

Returning to Professor Eastman's paper, I think my comments will be biased by my experience. I found the paper a fascinating analytical piece of work. I group my comments under four subject headings: the forward margin, the location of the market, the structure of the market, and the nature of speculation. A substantial portion of Professor Eastman's paper examines the nature of the forward margin. He arrives at the conclusion that "the mechanism

determining the relationship of the spot to the forward rate was interest arbitrage, not direct forecasting of future rates." From our position in the market, I agree with this. I'd like to elaborate somewhat just to give you a feel for what I think the operational mechanism is.

Three sets of interest rates appear to be most relevant to the interest arbitrage mechanism on a continuing basis in the context of our subject today: good quality commercial paper rates, prime American commercial paper rates, and Euro-dollar interbank rates. When the return to a European or an American investor on Canadian commercial paper is comparable to equivalent credits by them internally, then Canadian paper is regarded as a suitable vehicle for portfolio or cash-flow investment. From a marketing point of view, whenever a yield advantage on Canadian paper can be shown to exist for off-shore investors, funds literally flow immediately to eliminate the advantage. It is fascinating to watch how quickly a good commercial paper trader can fill the Canadian borrower requirements when the yield to the off-shore lender is comparable to the lender's internal return. Because off-shore pools of short-term funds are immensely greater than liquid Canadian funds, the forward margin usually changes quickly to make adjusted yields on Canadian short-term investments equivalent to yields on similar investments in foreign countries. Narrowing this generalization down to what I describe as the normal situation, the forward margin appears to move in such a manner so as to make an American cash flow investor indifferent when choosing between Canadian or U.S. commercial paper from an adjusted yield point of view. Whenever the yield to the U.S. investor favors Canadian paper, a sufficient flow of funds is generated to push the forward margin back into line. Similarly whenever the yield to the U.S. investor favors the American paper on a sustained basis, the forward margin widens out to stem a repatriation of funds from Canada to the United States. Thus, when the Canadian short-term rates are below American rates, as they are now, the U.S. dollar is continuously weak in the forward market and vice versa. It would not appear that the volume of funds that give effect to this little mechanism is very big. Given the extremely small size of the relevant money market magnitudes in Canada as compared to those in the United States, the marginal pool of funds which operates the mechanism is probably not in excess of $100 million.

Regarding the second point, the location of the market, Professor Eastman suggests that "the Canadian dollar market is chiefly in Canada between the Canadian chartered banks." This has not been

our experience. In addition to Toronto, Montreal, and New York, we have found extremely active participants in Boston, Chicago, Detroit, Seattle, and London,England. As indicated earlier, more than half of our business tends to be transacted in the United States, mostly in New York. As a guess, I would suggest that the vast bulk of commercial transactions do take place within Canada. But from a volume point of view, a significant percentage of the market would appear to exist abroad. This is not surprising to me. Most international corporations have banking connections in both Canada and the United States, in addition to elsewhere, and a key selling point of all major banks is the capacity to provide an efficient foreign exchange service. It is not uncommon for treasury officers in international corporations to request at least two quotes on particular foreign exchange transactions, one from a Canadian bank and one from an American foreign exchange bank.

I have a comment on the structure of the market. Professor Eastman's paper examines at some length the oligopolistic structure of the foreign exchange market in Canada. It is suggested, I think, in his paper that this leads to somewhat wider dealing spreads and to some dressing of the market to accommodate large transactions. I don't think these should be regarded as problems. From a volume point of view, as I've indicated, the vast percentage of the market has the option of dealing with non-Canadian banks. On the large block question, I feel this is a relative situation. I know of no market that does not have inventory problems owing to the nonsimultaneous appearance of buyers and sellers. In the case of the U.S.-Canadian dollar market, block transactions or workout situations appear to be adequately accommodated through a combination of price change and transitory inventory positions. In our own case, as a user of the market, the largest single block that we have put through has been a $25 million hedge. That was accommodated by a New York bank on a firm bid from a tight inside market. From any point of view, that has to be considered a pretty impressive performance by the New York bank.

I have one last comment on Harry's paper concerning the nature of speculation. I probably lifted something out of context here, quite a common technique. Professor Eastman isolates speculative behavior as a "purely financial transaction." I don't think we should ever quibble about concepts, provided each serves a useful purpose. For what it is worth, I would have described speculative behavior in the foreign exchange market as any set of actions that deviates from the participants' normal routine of activity. Only in this way can you

arrive at a reasonable explanation of the huge flows of funds which are euphemistically described as commercial leads and lags. In the markets that are characterized by routine behavior, I would accept Professor Eastman's structuring of concepts. However, I think the present is characterized by accelerating change. In this environment, most participants in the foreign exchange market are continuously threshholding in a sea of new experience.

I have a few general comments on two aspects of the Canadian-U.S. dollar foreign exchange market that are not touched on in either of the papers: the role of lines of credit and the volume in the market. Most foreign exchange banks grant market users lines of foreign exchange credit. Often these lines are determined without the users' knowledge. It is a little surprising when you suddenly discover you have a lot of credit you didn't know about. It would appear that such lines are based on a variety of criteria analogous to those used to determine suitable lines of credit from a loan point of view. It is often the case that a market user must deal with a different bank from that which he would normally have used, or do what we call a third-party put-through, in order to give effect to foreign exchange desires. It is my impression that the line of credit practice does not materially affect the efficient operation of the foreign exchange market. Indeed it would seem that the operation of the market is probably enhanced by the line of credit practice over the longer pull. Because the practice, in effect, spreads risk, it is unlikely that a major default by a market user would set off a domino effect. This is a very important criterion to think about when dealing with a market such as this, in which the numbers are so big.

Finally, I am not aware of any estimates of the volume of activity that occurs in the U.S.-Canadian dollar market, so I've come up with a ball park guess. If you add together Canadian current account receipts and payments on the balance of payments plus gross capital flows, make allowances for rapid turnover on the interest arbitrage side, net out intra-company book transfers, and acknowledge that a certain amount of inventory musical chairs is played by continuous participants, including Canada's Exchange Fund Account, you come up with a volume around $50 billion. This estimate is probably subject to a margin of error of 100 percent on the upside.

Given the volume in the market, and the structural and conceptual considerations examined in Professor Eastman's paper, I feel it can be concluded that Canadian and U.S. trading relationships are very well served by the U.S.-Canadian dollar foreign exchange market.

The Hedging of Commercial Transactions Between U.S. and Canadian Residents: A View from the United States

NORMAN S. FIELEKE

For some time the air has been thick with recommendations to allow more flexibility in exchange rates. Among the reasons why these recommendations have gone largely unheeded, a prominent place must be given to the fear that international trade would be impaired. In particular, it is commonly alleged or implied that efficient facilities for hedging against movements in exchange rates would not be available if greater flexibility were permitted.[1]

The (presumably temporary) floating of several major currencies provides some opportunities to investigate this matter. This paper addresses the question whether efficient exchange-market facilities have been available for hedging commercial transactions between U.S. residents and Canadian residents since the Canadian dollar was floated on June 1, 1970. In this investigation two approaches are used, both of which examine evidence south of the border. The first approach analyzes information provided by U.S. commercial firms which trade with parties in Canada; the second examines evidence supplied by professional foreign-exchange traders.

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Note: I am indebted to Harry Eastman, Scott Pardee, Kenneth Hartwell, and Arthur Meehan for helpful comments. Any errors are my responsibility.

[1] For example, see H.S. Houthakker, "Exchange Rate Adjustment," in U.S., Congress, Subcommittee of the Joint Economic Committee, *Factors Affecting the United States Balance of Payments*, 87th Cong., 2d sess., 1962, pp. 292-93, and Giuliano Pelli, "Why I Am Not in Favor of Greater Flexibility of Exchange Rates," in *Approaches to Greater Flexibility of Exchange Rates*, ed. by George N. Halm (Princeton, N.J.: Princeton University Press, 1970), pp. 203-8.

I. The Evidence from Commercial Firms

The literature is replete with speculation about the effects of exchange-rate flexibility on international trade. In view of the many pages that have been published on the subject, it is surprising that so little is available on the attitudes and experiences of the international traders themselves.[2] There is no dearth of comment from economists or from those whose primary business is foreign-exchange trading; but one looks almost in vain to find statements by the businessmen whose international transactions are the ultimate object of concern. Admittedly, the experiences of businessmen are not the only relevant evidence for appraising the efficiency of the forward market for foreign exchange. But an evaluation which ignores their experience is probably no more useful than an evaluation of the railroad-commuter service which ignores the experience of the passengers.

In an attempt to learn something about this business experience, we posed a few questions in April and May to some businessmen in New England who transact business with parties in Canada, since these transactions presumably would have been complicated by any difficulties encountered in hedging in the forward-exchange market.[3] The first part of this paper examines the responses to our questions.

A. The Character of the Respondents

The recipients of our questionnaire were selected from the *Directory of United States Importers, 1969* and from the *1969-1970 Directory of International Trade of Greater Boston.*[4] From these directories we selected all those New England firms which are designated as transacting business for their own account with Canadians or with the world at large. There were 418 such firms. To each of these firms we sent the questionnaire and explanatory letter

[2] For an exception, see John H. Young and John F. Helliwell, "The Effects of Monetary Policy on Corporations," in *Appendix Volume, 1964,* by Royal Commission on Banking and Finance (Ottawa, Canada: Roger Duhamel, F.R.S.C., 1965), pp. 419-26.

[3] In devising these questions I benefited from the comments of Edward C. Stanger, Assistant Treasurer, The Gillette Company. Responsibility for any deficiencies is, of course, my own.

[4] The first is published by the *Journal of Commerce* and the second by the Greater Boston Chamber of Commerce.

that are reproduced in the appendix to this paper; 411 of these questionnaires apparently reached the parties to which they were addressed. We received replies from 183 firms, 27 of which declined to answer the questionnaire, usually on the grounds that their business experience did not qualify them to answer. Thus we had 156 completed questionnaires with which to work.

Respondents were asked to identify (1) the nature of their business and (2) the general nature of their business with Canadians. These questions were designed to ascertain whether certain lines of business experienced more difficulty than others from any inefficiencies in the forward-exchange market. Of course, the responses are not easily summarized. One summarization which can be made is that, of the firms replying to the first question, 103 can be classed as manufacturers, 11 as wholesalers, 11 as merely exporting or importing or as doing both, 5 as manufacturers and wholesalers, 5 as merchandisers, 1 as a retailer, and 19 as others the nature of whose operations was not indicated. With respect to the second question, it can be said that 11 of the respondents purchased from Canadians, 96 sold to Canadians, and 10 conducted both purchases and sales.

Recipients of the questionnaire were also asked to report their total assets and sales in 1970, on the possibility that difficulties encountered in the forward-exchange market might be correlated with the size of the firm. Tables 1 and 2 present frequency distributions of assets and sales based on responses to this question.[5]

B. Questions Relating to the Foreign-Exchange Market

The questions relating to the foreign-exchange market were generally ordered in a logical sequence in the questionnaire, and we shall summarize the responses to these questions in the same order.

Question 1. After June 1, 1970, did you at any time decide against entering into a transaction with a Canadian resident on the grounds that it would be too expensive or difficult to buy or sell Canadian dollars forward?____ . If so, please explain.

[5] While it would have been interesting to have had more very large firms included in the survey, the inclusion of the smaller firms is probably more important for the purposes of our inquiry. Had the smaller firms been poorly represented, our results might well have been questioned on the grounds that the "little fellows" would suffer most from difficulties in the forward-exchange market while the "big fellows" could take care of themselves.

TABLE 1

NUMBER OF RESPONDING FIRMS SPECIFYING SIZE OF ASSETS IN 1970, BY ASSET SIZE

Asset Size (in thousands of dollars)	Number of Firms
$ 100 and under $ 500	20
500 and under 1,000	16
1,000 and under 5,000	18
5,000 and under 10,000	9
10,000 and under 50,000	10
50,000 and under 100,000	2
100,000 and under 500,000	4
over 500,000	4
Total number of firms	93

TABLE 2

NUMBER OF RESPONDING FIRMS SPECIFYING VOLUME OF SALES IN 1970, BY SALES VOLUME

Sales Volume (in thousands of dollars)	Number of Firms
$ 100 and under $ 1,000	20
1,000 and under 2,000	18
2,000 and under 5,000	15
5,000 and under 10,000	14
10,000 and under 20,000	10
20,000 and under 50,000	8
50,000 and under 100,000	4
over 100,000	7
Total number of firms	96

There were no affirmative answers to this question.

Question 2. Did you enter into or complete a commercial or financial transaction with a Canadian resident at any time after June 1, 1970?_____If so, please proceed to the next question. If not, please return this questionnaire without answering any of the remaining questions *except numbers 12 through 16.*

There were 123 affirmative replies.

Questions 4a and 4b. Have you been asked by a resident of Canada to make or accept payment in Canadian dollars on transactions of a kind which before June 1, 1970, were executed in U.S. dollars?_____. If so, can you explain why? If you did not agree to a request to make or accept payment in Canadian dollars, would you explain why?

Difficulties encountered by Canadians in buying or selling U.S. dollars forward might have led them to ask that transactions be denominated in Canadian dollars. However, only 2 of the 120 replies to this question were affirmative, and neither offered an explanation. Subsequently, in the course of interviews, both of these respondents maintained that the floating of the Canadian dollar was not responsible for the requests by their Canadian customers to pay in Canadian dollars. Indeed, one of the respondents reported that his customers had made this request before the float and that he had accommodated them because, as a textile manufacturer, he was "happy to accept any kind of money" (and delighted to receive Canadian dollars). The other respondent believed that the request by one of his customers to discharge a debt in Canadian dollars was just one more nuisance tactic in a strategy designed to avoid making any payment at all.

Question 5. Have you entered into or completed transactions with Canadian residents since June 1, 1970, involving your payment or your receipt of Canadian dollars?_____. If so, please proceed to the next question. If not, please return this questionnaire without answering any additional questions *except numbers 12 through 16.*

To this question there were 23 "yes" answers.

Question 6. Have you generally tried to sell or buy forward the Canadian dollars involved in the transactions mentioned in question 5?_____. If not, why not?

Of the 23 firms responding affirmatively to the preceding question, 20 answered, "No," to this question. The reason most commonly given for this negative answer was that the Canadian-dollar amounts involved were "too small"; this reason was supplied either on the questionnaire or in follow-up interviews by 10 firms receiving Canadian dollars and by 3 firms making payments in Canadian dollars. Of course, the amount of Canadian dollars that is considered "too small" to warrant hedging is a function of the expected behavior of the exchange rate, among other things, and several firms noted, explicitly or implicitly, that the rate had not fluctuated enough for them to consider it worthwhile to enter the forward market. As one respondent put it, "We have bigger problems than the fluctuations in the exchange rate"; this respondent reported receipts of up to 2,000 Canadian dollars a day, usually with advance notice of 30 days.

Other reasons were also given for abstaining from dealings in the forward market. Two firms gave the cryptic response that they abstained because of their relationships with Canadian subsidiaries. Four others stated either that they did not know enough about the forward-exchange market or, making essentially the same point in other words, that they were not foreign-exchange "specialists" or "speculators."

This reluctance to enter the forward-exchange market on grounds of ignorance or on grounds that the amounts involved are "too small" invites speculation as to whether the reluctant firms constitute an untapped potential market for the services of professional foreign-exchange traders. Might commercial banks be able to demonstrate to these firms that it is simple and relatively costless for the firms to eliminate one source of uncertainty by dealing in the forward market? Banks once generally believed that the consumer-loan business would not be profitable, but subsequent events have shown that such small transactions can be highly remunerative. To be sure, the firms in question have not indicated a desire for the services of forward-exchange traders, but this attitude might be subject to change; a major *raison d'etre* of the advertising profession is that wants can be created. On the other hand, the number of firms with small Canadian-dollar transactions suitable for hedging may not be large enough to warrant a promotional effort. We do not wish to prejudge the issue, but it seems worth raising.

Question 7. Have any of your requests to buy or sell Canadian dollars forward been denied by a bank? ____. If so, why?

None of the respondents answered in the affirmative.

Firms were asked to answer questions 8-11 only if they had had the experience of buying or selling Canadian dollars forward. Four firms answered this block of questions.

Question 8. What is the smallest volume of Canadian dollars you have bought or sold forward in a single transaction?____. (An approximate figure will do.)

The smallest volume specified was 50,000 to 100,000. One firm stated that it never dealt in amounts of less than 1 million.

Question 9. In buying or selling Canadian dollars forward, what is the longest term to maturity you have ever contracted for?____. Have you found it impossible to obtain desired maturities?____. If so, please explain.

Ten months was the longest term to maturity. Another firm specified nine months. No respondent indicated difficulty in obtaining desired maturities.

Questions 10a and 10b. Do you generally shop around among the banks for the most favorable exchange rate when buying or selling Canadian dollars forward?____. If not, why not? If you do shop around, do you frequently encounter variations in the forward-exchange rates quoted by different banks?____. Could you illustrate the variation encountered?

Only one of the four firms answering this question stated that it did shop around, and this firm professed to find only "small" variations in the rates quoted by different banks. Of the other three firms, one stated that it did not shop around because the amounts it traded forward were "small" ($100,000 or more), and two reported that they were satisfied with the performance of the banks which served them.

When interviewed, the spokesman for one of these latter two firms was quite specific about his relationship with his bank. Over the years he had received much assistance from his bank, and he knew the key personnel there. For the sake of his relationship with the bank, to obtain its assistance in the future, he would be willing occasionally to accept a somewhat less favorable forward rate from

his bank than other banks might offer. However, he added that he could tell if his bank's quotation was far out of line by referring to the rates published in the newspapers.

Question 11. Are the forward-exchange rates quoted by banks generally less favorable for small transactions than for large transactions?____. If so, could you illustrate?

One firm answered, "Yes," but gave no illustration. The others' response to the first part of the question was that they did not know.

Question 12. What improvements, if any, would you like to see made in the market for forward Canadian dollars?

There were no suggestions for change. The only specific comment on the functioning of the market was by a firm which reported that a particular bank gave excellent service.

Question 13. Please add here any other comments you may care to make.

A variety of comments were offered. Of special interest are the following:

> "Since payments are made in American dollars we have no problems."
> "No problems in dealing with Canadian firms. Find that they pay in American dollars with no questions asked."
> "We are not affected one way or the other between the 'Floating' Canadian dollar and the former Official Fixed Exchange Rate."
> "Cut currency loose – let them find their own level."
> "U.S. and Canadian exchange need no longer be pegged. Free market has gone just about to par and we are pleased."

This last comment is suggestive of a number of others that were received. While no firm complained about the functioning of the forward-exchange market or about exchange-rate uncertainty as such, seven firms said that they would like to see parity established between the U.S. and Canadian dollars. As one respondent put it, "We feel with the future offering greater opportunities for greater trade between both countries, business should be conducted with a

comparable dollar value. The effect would eliminate unnecessary red tape for all concerned."

Interviews with this respondent and the six others recommending parity revealed a common motivation. All reported that an exchange rate of unity would simplify their bookkeeping; thus their primary desire really was for the exchange rate to be fixed, with parity viewed as the ideal form of fixity. Understandably, two of the spokesmen giving this report occupied the position of comptroller.

This bookkeeping motivation was not the only one at work, however. The three firms which argued most strongly for fixity complained that continual variations in the exchange rate give rise to corresponding variations in the Canadian-dollar prices of their wares, leading to haggling, misunderstandings, and ill will with their Canadian customers. This complaint would be more understandable if the Canadian dollar had depreciated rather than appreciated in terms of the U.S. dollar after it was allowed to float; nevertheless, the president of one firm insisted that the float had provoked such arguments with his customers over price that he would prefer a fixed exchange rate to a continuing appreciation of the Canadian dollar.

The executive vice-president of another firm took the opposite view, saying that while fixity would be a bookkeeping convenience, he would be happy to abandon it in return for a continuing Canadian-dollar appreciation, which would stimulate his firm's sales in Canada. He went on to volunteer that the exchange rate should not be held at a disequilibrium level; such policies often led to large changes in the rate, and these caused his firm more concern than smaller, more frequent changes. Thus his firm hedged transactions denominated in the pound sterling, since it did not want to take the risk of a sudden sizable loss, but it would not hedge these transactions if the pound were allowed to float, since the firm could accommodate (and perhaps anticipate) small frequent losses from exchange-rate variations. This comment, it should be noted, runs directly counter to the common assumption that the floating of a currency will increase the demand for forward-exchange-hedging facilities.

II. The Evidence from Foreign-Exchange Traders

The second body of evidence presented in this paper was obtained primarily from the foreign-exchange departments of Boston's leading commercial banks. In this part of the investigation, we tried to ascertain whether in the exchange market the costs of hedging

commercial transactions between U.S. and Canadian residents have risen since the Canadian dollar was allowed to float.

A. Data on the Cost of Hedging

There has been much confusion over what is meant by "the cost of hedging." To begin with, there is more than one way of hedging against future movements in an exchange rate; for example, an exporter who expects to receive a foreign currency three months hence may, at least in theory, borrow the same amount of the foreign currency for the same term and sell it in the spot market now. Our interest, however, is in the cost of hedging in the forward-exchange market. In this connection, it has been argued that once a currency is floated, the demand for forward cover will rise substantially, and that the increased demand will be satisfied only partially and at much higher cost than before the float. On the other hand, there are many precedents to suggest that financial facilities can be developed or transformed fairly rapidly in response to changed conditions, the development of the Eurodollar market being a recent example of some import.

Broadly speaking, the cost to society of the services of any class of middlemen is represented by the difference between their receipts for the things they sell and their payments for the same things. In the case of foreign-exchange traders, this differential, or gross markup, is the spread between the "bid" and the "asked"; it is *not* the forward discount or premium.[6] Tables 3-6 present data on this spread for several currencies, and Tables 3 and 4 express the spread as a ratio of the bid, or as a percentage markup. Note that the data relate to interbank quotations in the New York market. While they understate the net cost to any but the largest firms of the services of foreign-exchange traders, they probably provide a good indication of trends in costs to firms of all sizes.

Table 3 shows that for the month of June 1970, the first month after the Canadian dollar was floated, the percentage markup charged on trades of Canadian dollars against U.S. dollars was approximately double the percentage markup charged in May, for both spot and 90-day forward transactions. No doubt these large markups reflected the "shock effect" of the introduction of the float, as the markups

[6] Cf. Fritz Machlup, "The Forward-Exchange Market: Misunderstandings between Practitioners and Economists," in *Approaches to Greater Flexibility of Exchange Rates, op. cit.*, pp. 297-306.

TABLE 3

ASKED MINUS BID/BID FOR SELECTED CURRENCIES: MONTHLY AVERAGES, JANUARY, 1970-JUNE, 1971

(Based on Wednesday Closing Interbank Quotations in U.S. Dollars in New York)

	Canadian dollar		British pound		German mark		French franc		Dutch guilder	
	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward
1970										
January	.000222	.000436	.000094	.000219	.000115	.000402	.000329	.001078	.000159	.000453
February	.000228	.000456	.000078	.000192	.000138	.000357	.000122	.000625	.000182	.000431
March	.000215	.000402	.000094	.000208	.000126	.000368	.000260	.000764	.000148	.000420
April	.000215	.000397	.000091	.000183	.000164	.000356	.000193	.000651	.000163	.000390
May	.000242	.000429	.000088	.000182	.000102	.000262	.000207	.000658	.000204	.000408
June	.000467	.000958	.000088	.000183	.000125	.000352	.000172	.000796	.000215	.000609
July	.000248	.000515	.000084	.000184	.000082	.000300	.000124	.000499	.000181	.000468
August	.000433	.000611	.000074	.000136	.000079	.000250	.000190	.000762	.000158	.000483
September	.000336	.000610	.000092	.000337	.000072	.000177	.000138	.000623	.000107	.000447
October	.000281	.000472	.000074	.000200	.000114	.000216	.000164	.000666	.000135	.000393
November	.000230	.000408	.000079	.000163	.000045	.000250	.000086	.000363	.000146	.000382
December	.000336	.000498	.000055	.000151	.000091	.000318	.000138	.000581	.000135	.000360
1971										
January	.000278	.000507	.000104	.000219	.000159	.000341	.000121	.000449	.000056	.000225
February	.000252	.000454	.000046	.000266	.000068	.000273	.000155	.000415	.000101	.000336
March	.000231	.000473	.000078	.000238	.000091	.000282	.000124	.000470	.000126	.000359
April	.000240	.000490	.000082	.000281	.000079	.000340	.000172	.000483	.000124	.000516
May	.000227	.000628	.000072	.000197	.000530	.001056	.000293	.001259	.000532	.001258
June	.000245	.000458	.000091	.000224	.000149	.000517	.000249	.001023	.000517	.001151

Source: Computed from data provided by the First National Bank of Boston.

TABLE 4

ASKED MINUS BID/BID FOR SELECTED CURRENCIES: RANGE WITHIN MONTH, JANUARY, 1970-JUNE, 1971

(Based on Wednesday Closing Interbank Quotations in U.S. Dollars in New York)

	Canadian dollar		British pound		German mark		French franc		Dutch guilder	
	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward
1970										
January	.000134	.000027	.000042	.000042	.000092	.000184	.000277	.000349	.000046	.000092
February	.000107	.000215	.000021	.000042	.000092	.000231	.000070	.000277	.000000	.000182
March	.000000	.000107	.000063	.000187	.000046	.000323	.000138	.000348	.000091	.000091
April	.000107	.000054	.000042	.000042	.000047	.000092	.000139	.000279	.000091	.000136
May	.000108	.000108	.000021	.000042	.000137	.000182	.000138	.000070	.000136	.000136
June	.000307	.000511	.000021	.000042	.000090	.000045	.000069	.000763	.000226	.000447
July	.000104	.000207	.000000	.000043	.000137	.000227	.000138	.000282	.000090	.000226
August	.000408	.000409	.000084	.000105	.000091	.000136	.000207	.000555	.000090	.000090
September	.000510	.000613	.000042	.000212	.000091	.000249	.000000	.000138	.000135	.000277
October	.000102	.000153	.000042	.000126	.000137	.000182	.000172	.000311	.000090	.000135
November	.000102	.000204	.000021	.000105	.000000	.000499	.000069	.000208	.000090	.000135
December	.000459	.000714	.000042	.000126	.000091	.000138	.000207	.000276	.000135	.000179
1971										
January	.000305	.000405	.000083	.000167	.000181	.000409	.000207	.000208	.000045	.000180
February	.000503	.000707	.000062	.000313	.000046	.000181	.000069	.000138	.000090	.000090
March	.000151	.000201	.000083	.000167	.000091	.000137	.000138	.000070	.000135	.000090
April	.000100	.000050	.000083	.000187	.000091	.000362	.000069	.000138	.000180	.000448
May	.000303	.000903	.000042	.000083	.000698	.000692	.000483	.001930	.000977	.001939
June	.000205	.000301	.000166	.000207	.000090	.000438	.000346	.000415	.001470	.001589

Source: Computed from data provided by the First National Bank of Boston.

TABLE 5

ASKED MINUS BID IN U.S. DOLLARS FOR SELECTED CURRENCIES: MONTHLY AVERAGES, JANUARY, 1970-JUNE, 1971

(Based on Wednesday Closing Interbank Quotations in New York)

	Canadian dollar		British pound		German mark		French franc		Dutch guilder	
	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward
1970										
January	.000206	.000406	.000225	.000525	.000031	.000109	.000059	.000194	.000044	.000125
February	.000212	.000425	.000188	.000462	.000038	.000097	.000022	.000112	.000050	.000119
March	.000200	.000375	.000225	.000500	.000034	.000100	.000047	.000138	.000041	.000116
April	.000200	.000370	.000220	.000440	.000045	.000098	.000035	.000118	.000045	.000108
May	.000225	.000400	.000212	.000438	.000028	.000072	.000038	.000119	.000056	.000112
June	.000450	.000925	.000212	.000438	.000034	.000097	.000031	.000144	.000059	.000169
July	.000240	.000500	.000200	.000440	.000022	.000082	.000022	.000090	.000050	.000130
August	.000425	.000600	.000175	.000325	.000022	.000069	.000034	.000138	.000044	.000134
September	.000360	.000600	.000220	.000800	.000020	.000049	.000025	.000112	.000030	.000125
October	.000275	.000462	.000175	.000475	.000031	.000059	.000030	.000120	.000038	.000109
November	.000225	.000400	.000188	.000388	.000012	.000069	.000016	.000066	.000041	.000106
December	.000330	.000490	.000130	.000360	.000025	.000088	.000025	.000105	.000038	.000100
1971										
January	.000275	.000500	.000250	.000525	.000044	.000094	.000022	.000081	.000016	.000062
February	.000250	.000450	.000112	.000638	.000019	.000075	.000028	.000075	.000028	.000094
March	.000230	.000470	.000190	.000570	.000025	.000078	.000022	.000085	.000035	.000100
April	.000238	.000488	.000200	.000675	.000022	.000094	.000031	.000088	.000034	.000144
May	.000225	.000625	.000175	.000475	.000150	.000300	.000053	.000228	.000150	.000356
June	.000240	.000450	.000220	.000540	.000042	.000148	.000045	.000185	.000145	.000325

Source: Computed from data provided by the First National Bank of Boston.

TABLE 6

ASKED MINUS BID IN U.S. DOLLARS FOR SELECTED CURRENCIES: RANGE WITHIN MONTH, JANUARY, 1970-JUNE, 1971

(Based on Wednesday Closing Interbank Quotations in New York)

	Canadian dollar		British pound		German mark		French franc		Dutch guilder	
	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward	Spot	90 days forward
1970										
January	.000125	.000025	.000100	.000100	.000025	.000050	.000050	.000062	.000012	.000025
February	.000100	.000200	.000050	.000100	.000025	.000062	.000012	.000050	.000000	.000050
March	.000000	.000100	.000150	.000450	.000012	.000088	.000025	.000062	.000025	.000025
April	.000100	.000050	.000100	.000100	.000012	.000025	.000025	.000050	.000025	.000038
May	.000100	.000100	.000050	.000100	.000038	.000050	.000025	.000012	.000038	.000038
June	.000300	.000500	.000050	.000100	.000025	.000012	.000012	.000138	.000062	.000125
July	.000100	.000200	.000000	.000100	.000038	.000062	.000025	.000050	.000025	.000062
August	.000400	.000400	.000200	.000250	.000025	.000038	.000038	.000100	.000025	.000025
September	.000500	.000600	.000100	.000500	.000025	.000069	.000000	.000025	.000038	.000077
October	.000100	.000150	.000100	.000300	.000038	.000050	.000031	.000056	.000025	.000038
November	.000100	.000200	.000050	.000250	.000000	.000138	.000012	.000038	.000025	.000038
December	.000450	.000700	.000100	.000300	.000025	.000038	.000038	.000050	.000038	.000050
1971										
January	.000300	.000400	.000200	.000400	.000050	.000112	.000038	.000038	.000012	.000050
February	.000500	.000700	.000150	.000750	.000012	.000050	.000012	.000025	.000025	.000025
March	.000150	.000200	.000200	.000400	.000025	.000038	.000025	.000012	.000038	.000025
April	.000100	.000050	.000200	.000450	.000025	.000100	.000012	.000025	.000050	.000125
May	.000300	.000900	.000100	.000200	.000200	.000200	.000088	.000350	.000275	.000550
June	.000200	.000300	.000400	.000500	.000025	.000125	.000062	.000075	.000412	.000450

Source: Computed from data provided by the First National Bank of Boston.

have generally been much lower in the months after June 1970. During the first six months of 1971 the markups have generally been slightly, but only slightly, higher than during the five months of 1970 preceding the flotation. On the basis of these data it seems that the percentage markups might eventually stabilize at the levels that prevailed before the Canadian dollar was floated.

To be sure, the percentage markups on 90-day forward transactions in Canadian dollars have been about twice as high as for spot transactions in recent months; but roughly the same relationship prevailed in the first five months of 1970, and there are plausible reasons for such a relationship which have nothing to do with the flexibility of the exchange rate. One is that the volume of business in the forward market for a particular future date is surely much smaller than the volume of business in the spot market; and, among other things, in a smaller market it is generally harder for an intermediary to find an offer (or offers) to correspond with a specific bid, or to find a bid (or bids) to correspond with a specific offer. Another reason for the relationship is that there is less credit risk for a bank in a spot transaction than in a forward contract, in which the bank's clients promise to discharge their obligations at a future date.

Table 3 also shows that the percentage markups on 90-day forward transactions in Canadian dollars were little different from the markups on corresponding transactions in French francs over the period from July 1970, through April 1971 (that is, over the period after the Canadian dollar was floated but before the German mark and Dutch guilder were floated). On the other hand, these markups on Canadian-dollar transactions generally were noticeably higher than the corresponding markups for guilders, still higher than the corresponding markups for marks, and occasionally three or four times as great as the corresponding markups for sterling; are these discrepancies to be accounted for by the floating of the Canadian dollar?[7]

A negative answer is suggested by at least two considerations. First, as we have already noted, the markups on forward transactions in Canadian dollars in recent months have not been much above the markups in 1970 before the flotation. Second, factors other than the flexibility of the exchange rate *per se* play a major role in determining the spread between the bid and the asked. Among these factors are the size of the markets for the currencies involved, their

[7] The percentage markup on each of these currencies was about the same for 30 and 60-day forward transactions as for 90-day forward transactions.

stability, and their freedom from exchange controls.[8] While there are no data on the total volume of transactions in all the foreign-exchange markets of the world, the low transactions costs of dealing in sterling are no doubt explained largely by the vastness of the sterling market. It should also be noted that the spread between bid and asked widens appreciably in a nervous market; therefore, given the history of sterling since World War II, it is not altogether fair to the Canadian-dollar market to compare the spread on the Canadian-dollar with the spread on the pound sterling during only the recent halcyon period for sterling.

B. Other Evidence from Foreign-Exchange Traders

Cost is not the only consideration in appraising the functioning of a market. Certain other relevant information was supplied by professional foreign-exchange traders in Boston and by staff of the Foreign Department of the Federal Reserve Bank of New York.

The four major Boston traders all report that they have not experienced an increased demand for forward cover of transactions denominated in Canadian dollars in the period since the currency was floated. One trader volunteered that this phenomenon was attributable at least in part to a lack of knowledge about forward currency on the part of many nonbanking firms, and he stated that he had been trying to educate some of his bank's customers on the facilities that are available. All traders report that the float is causing them no difficulty, and some see it as an opportunity to enhance their profits through speculation. In New York the situation is reported to be somewhat different; apparently the demand for forward cover has increased somewhat, and reaction among traders to the float is mixed.

Forward cover in the amount of $50,000 is considered very small, but some traders expressed a willingness to provide cover in even smaller amounts for the bank's best customers. A term of one year is regarded as long, but, again, for a good customer a bank would negotiate a 2-year or perhaps even a 3-year contract.

[8] Alexander Swoboda, "Vehicle Currencies and the Foreign Exchange Market: the Case of the Dollar," in *The International Market for Foreign Exchange,* ed. by Robert Z. Aliber (New York: Frederick A. Praeger, Publishers, 1969), pp. 30-40.

III. Conclusions

The evidence presented in this study does not support the claim that international trade is impaired by flexibility in the exchange rate. In particular, we have found no confirmation for the argument that there will be a lack of efficient facilities for hedging against movements in exchange rates if greater flexibility is permitted. These conclusions are based on two related classes of evidence, one supplied by commercial firms in New England which trade with parties in Canada, the other by professional foreign-exchange traders in Boston.

These two independent sources are mutually confirming on a number of points. Neither suggests that the flotation of the Canadian dollar has stimulated a substantially increased demand for forward cover. Neither indicates that the cost of forward cover has increased appreciably or that forward cover is unavailable to those who desire it.

To be sure, one reason for these findings is that commercial transactions between Canadian and U.S. firms are commonly denominated in U.S. dollars. Some transactions, however, are expressed in Canadian dollars. Moreover, the U.S. firms queried have not been requested by their Canadian customers or suppliers to start denominating transactions in Canadian dollars, a request which might well have been made if Canadian firms had experienced difficulties in hedging. Further indirect evidence is provided by the continuing growth of trade between the United States and Canada since the Canadian dollar was floated; for example, the total value of merchandise trade between the two countries rose by nearly $500 million from the first quarter of 1970 to the first quarter of 1971, little different from the average change for the corresponding period over the three preceding years.[9]

Our conclusions, of course, are based solely on the U.S.-Canadian experience since June 1, 1970. Other experiments with flexible exchange rates might yield different results. But perhaps the information presented in this paper will go a little way toward allaying the common concern that more exchange-rate flexibility would mean less trade.

Like most research projects, this one raises questions for still further research. In particular, we are somewhat puzzled by the fact

[9] *Survey of Current Business:* June, 1971, and December issues for 1968-1970.

that Boston's major commercial banks have experienced no discernible increase in the demand for forward cover on Canadian-dollar transactions since the Canadian dollar was floated. A related question is whether there is a potential market for forward cover among at least those U.S. commercial firms whose Canadian-dollar business consists of relatively small transactions.

APPENDIX

FEDERAL RESERVE BANK

OF BOSTON

BOSTON, MASSACHUSETTS 02106
Telephone (617) 426-7100

Dear_____:

The purpose of this letter is to ask your cooperation in a study of the effect of the "floating" Canadian dollar on transactions between U.S. and Canadian residents. We are writing to you because your firm is listed as dealing with Canadians (or with the world) in one or both of the following publications:

Directory of United States Importers, 1969
(published by the *Journal of Commerce)*
1969-1970 Directory of International Trade of Greater Boston
(published by the Greater Boston Chamber of Commerce).

We should deeply appreciate your taking a few minutes to respond to the enclosed questionnaire. The questions probably do not request information that you would consider highly sensitive; nevertheless, your replies will not be attributed to you in any way in our communications with others. Indeed, you may not wish to divulge the name of your firm, although we hope you will do so in the space provided on the questionnaire so that we will be able to contact you if questions arise regarding your responses.

If enough firms respond to the questionnaire, a good foundation will be laid for our study, and toward the end of this year the results will be made available upon request to all who are interested. As you may know, there is widespread interest in the effects of a floating exchange rate and, more specifically, in the kind of facilities that are available for hedging against changes in the rate. We hope that you will be sufficiently interested or sympathetic with our study of this subject to complete the questionnaire. The questions are ordered so that you may find you are asked to supply only a few brief answers.

A stamped, addressed envelope is provided for your convenience in returning the questionnaire. If you have any questions about the questionnaire or the study, please contact Mr. Norman S. Fieleke, Assistant Vice President and Economist at this bank, who is responsible for the study.

Thank you for your cooperation. If at all possible, please return this questionnaire no later than May 21, 1971.

Sincerely yours,

Frank E. Morris
President

QUESTIONS FOR FIRMS IN NEW ENGLAND TRANSACTING BUSINESS WITH CANADIAN RESIDENTS

Note: For purposes of this questionnaire, "Canadian resident" means any party in Canada, including individuals or firms or other organizations.

1. *After June 1, 1970,* did you at any time decide against entering into a transaction with a Canadian resident on the grounds that it would be too expensive or difficult to buy or sell Canadian dollars forward? _____. If so, please explain.

2. Did you enter into or complete a commercial or financial transaction with a Canadian resident at any time after June 1, 1970? _____. If so, please proceed to the next question. If not, please return this questionnaire without answering any of the remaining questions *except numbers 12 through 16.*

3. What has been the *general* nature of your business with Canadian residents since June 1, 1970?

4a. Have you been asked by a resident of Canada to make or accept payment in Canadian dollars on transactions of a kind which before June 1, 1970, were executed in U.S. dollars?_____. If so, can you explain why?

b. If you did not agree to a request to make or accept payment in Canadian dollars, would you explain why?

5. Have you entered into or completed transactions with Canadian residents since June 1, 1970, involving your payment or your receipt of Canadian dollars?_____. If so, please proceed to the next question. If not, please return this questionnaire without answering any additional questions *except numbers 12 through 16.*

6. Have you generally tried to sell or buy forward the Canadian dollars involved in the transactions mentioned in question 5?_____. If not, why not?

7. Have any of your requests to buy or sell Canadian dollars forward been denied by a bank? _____. If so, why?

Note: If you have never bought or sold Canadian dollars forward, please return this questionnaire without answering any additional questions *except numbers 12 through 16.*

8. What is the smallest volume of Canadian dollars you have bought or sold forward in a single transaction? _____. (An approximate figure will do.)

9. In buying or selling Canadian dollars forward, what is the longest term to maturity you have ever contracted for?_____. Have you found it impossible to obtain desired maturities?_____. If so, please explain.

10a. Do you generally shop around among the banks for the most favorable exchange rate when buying or selling Canadian dollars forward?_____. If not, why not?

b. If you do shop around, do you frequently encounter variations in the forward exchange rates quoted by different banks?_____. Could you illustrate the variation encountered?

11. Are the forward exchange rates quoted by banks generally less favorable for small transactions than for large transactions?_____. If so, could you illustrate?

12. What improvements, if any, would you like to see made in the market for forward Canadian dollars?

13. Please add here any other comments you may care to make.

14. The following questions (14a and 14b) are asked merely for the purpose of classifying responses to this questionnaire. Your answers will be held in strict confidence.

a. What is the nature of your business?

b. What were your total assets in 1970?_____Total Sales?_____

15. Would you please state the name of your firm:

16. Date you completed this questionnaire: _____.

DISCUSSION

GEORGE H. CHITTENDEN

I am delighted with the opportunity to comment on Norman Fieleke's excellent paper, especially before a distinguished group such as this.

There are many interesting points made in the paper and of course there is a lot for the growing fraternity of flexibility fans to cheer about in the paper's conclusions. But let me return to the flexibility a bit later and comment on two or three specific points in the text which I felt were of particular interest.

Of the 123 firms which completed transactions with Canadians since June 1970, only 2 have been asked to settle in Canadian dollars instead of U.S. dollars, and these for insignificant reasons; only 23 firms settled their transactions with Canadians in Canadian dollars, indicating that 100 of the 123 normally settled their business with Canadians in U.S. dollars. This tendency for Americans to do business, not just with Canadians but generally with all foreign markets, in U.S. dollar terms is a natural by-product of our national habit of looking at international business as a relatively minor matter as compared with doing business in our own domestic market. If there is any surprise in this 23 figure it is that it is relatively high. And incidentally this is one reason why the Eastman paper, which, as I understand it, is in a sense the companion piece to the New England survey, has relatively so much more fertile ground to work over on the Canadian side of this two-way marketplace.

Of the 23 firms mentioned as settling transactions in Canadian dollars it is interesting, and again quite typical of the U.S. market as a whole, that only 3 or 4 have used the forward exchange market to any extent. I was amused by the reasons given for not using the forward market – they are so poignant and typical.

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In this context Mr. Fieleke raises the question of whether American banks have been derelict in not "selling" the facilities of the spot and particularly the forward exchange markets to their customers. That is a good question and I'll try to give you my explanation. The exchange market and the exchange business are highly technical in nature. The sensible banker should have at his finger tips precise and factual knowledge of the principal foreign exchanges when discussing with customers their foreign exchange exposure problems. At best there are very few men in any U.S. commercial bank who are qualified to give advice in this area. In most U.S. banks about the only men who are both technically qualified and well enough informed on current market conditions to "sell" the facilities of the spot and forward exchange markets are the bank's one or two or three full time foreign exchange traders. And these fellows, by the very nature of their responsibility, simply do not have the time to leave the trading desk to go out and "sell" the customer. Even those able people in the domestic or international divisions of our leading banks who have had the opportunity to participate in and learn the foreign exchange business, once they leave the trading market, lose touch with the subtleties and feel themselves unqualified to give meaningful and useful advice to the customer on these matters.

I'd like also to comment briefly on the corporate comptroller's preoccupation with exchange rate unity and related questions which Mr. Fieleke discussed. The typical comptroller is concerned with reporting profit and loss and valuations to the chief financial officer. Revaluations and devaluations, and the sudden and sizeable impact these events have on his reports and forecasts, give him fits. No wonder he wishes for worldwide currency unity. But in the absence of such unity, he very often will hedge foreign exchange exposures with little regard to the economics involved in the relative cost of hedging versus the risk. He only too often would rather suffer the exchange hedging cost which he can explain as a normal operating expense than run the risk of being criticized for the occasional adjustment to profits necessitated by large parity changes. Conservative financial management of this type is often more expensive over time than reasoned risk taking.

I found the comments of the financial officer which are cited to be a good common plea for stable but free exchange rates and very typical of responsible corporate financial thinking across the country, and perhaps around the world. In discussions with such financial officers I have noticed the recurrent theme that they feel

quite competent to deal with exchange rates which move freely in response to cyclical economic trends. Anything is better, they say, than living with the rigidities and periodic crises and explosions of recent years. They say they and their economists are smart enough to identify prospective exchange rate moves of genuinely free currencies in time to adjust their financial planning to accommodate these moves. But when an out-of-line rate is perpetuated and its inevitable day of reckoning is delayed, they have to go through all sorts of gymnastics, and some of these at considerable cost, to avoid the danger of major loss.

Now I should like to exercise my freedom as a commentator to pursue a few tangential thoughts which the Fieleke paper has prompted.

Right at the start Mr. Fieleke refers to the oft-made suggestion that greater flexibility in exchange rates would militate against efficient hedging facilities to cover normal trade and financial transactions. The Canadian experience of the last year, and in fact the years preceding the 1962 pegging of the rate, provides strong evidence that forward markets for flexible rate currencies can be quite adequate and can at times be even improved in a floating rate situation. A bit later I'll mention a market event which occurred in 1968 during the ufixed-rate period which adds further support to this thesis.

But in using the Canadian example to support his arguments, the floating-rate buff must always remember that indeed the Canadian-U.S. financial relationship is unique in its relative freedom from official intervention in the form of exchange controls, banking regulations, and related obstacles to the free market process of determining money values, both spot and forward.

In contrast, the school which perennially worries about what freely floating exchange rates will do to the forward markets can look today at the havoc, perhaps even total wreckage, of the forward markets for the yen and the major European currencies which have been floating for the past month or months. The markets are thin and erratic; they bear little relationship to interest parities other than to the very short dated Euro-dollar market; and the spreads between bid and asked prices are shockingly wide.

In this context let me read a few comments made by our Morgan Guaranty traders just last week in response to questions from Head Office as to how they felt the floating currencies were performing in the marketplace.

From our London office:

"To confirm our views from London, in general the so-called floating rates do not give a true reflection of the individual currency's worth in the markets, as believe that all central banks concerned are keeping a strict control on rate levels. Secondly, with ever increasing regulations issued by the respective central banks restricting free movement of funds by residents and non-residents alike, it is hitting the genuine commercial requirements of exporters and importers alike. The classic example, of course, is the yen where there is virtually no forward market to operate in and commercial banks there are being strictly controlled on their cash oversold position. With regards to Sterling, the spot market is undoubtedly being controlled by the Bank of England where they are obviously concerned to keep the *de facto* revaluation to as low a level as possible, with restrictions and exchange controls which paradoxically attempt to keep non-resident funds out and resident funds in; we are finding that the forward market is becoming more and more difficult to operate in. In summary, with the exception of the yen, believe there had been some improvement in spot markets generally and also in the forward markets in some of the currencies. Believe that one can operate well with floating rate system providing there is an adequate forward market and that we are not hemmed in more and more by ever increasing control regulations."

From our Paris office:

"Yours of 9/8 regarding comments on the present state of the international financial market. Many international institutions, EEC high commission, financial papers, economists, ETC argue that it is too early to assess success of (A) French two-tier system, (B) Belgian two-tier system, (C) simple floating system such as Germany's and Switzerland's. Fact is that pros and cons about floating cannot be formulated due to world-wide trend toward regulations and restrictions on markets. Fact is that the French two-tier system puts unduly

> heavy burden on banking, industry, as well as on whole economy. As to your questions: (1) feel that spot markets are extremely thin creating many difficulties for execution of large client's orders. From our experience would judge that only most urgent, unavoidable commercial business is carried out on the markets these days. Difficulties described are particularly true for markets with total foreign exchange control, such as franc market. As an example Banque De France instructions may indirectly force French banks to abandon the sale of Francs to non-residents at the end of the month because of control of the net external position. Do not need to add comment about untradability of Japanese yen. (2) Volume and efficiency of forward markets are definitely deteriorating. Prohibition of interest payment, limitations as to borrowing and lending in foreign currencies etc. make it tough to maintain markets at all. (3) Let's have free floating without control. It would be fun. However, as we are all living in western style democracies where no politician dares to wear a deflation hat, we'll have to swallow compromise solutions such as fixed rate systems with realignments and subsequent introduction of wider bands. (4) Paris euro-market will be dormant as long as Banque De France August 31 instructions are in force requiring banks to maintain the August 3, 1971 balance sheet situation vis-a-vis non-residents to prohibit increase of net debit of French banking system to non-residents.

This theme repeats itself in the analysis of our traders in Milan, Frankfurt, Brussels, Tokyo, and Zurich with special comment on the technical problems of each of those markets.

The Fieleke paper indicates that except for a brief period, while the market adjusted to the Canadian dollar float in June and July 1970, and marginally wider spreads appeared between bid and ask prices, there has been little difficulty either for commercial firms or for bank traders in obtaining such forward Canadian/U.S. dollar cover as they required. This is essentially correct and I am sure that if the Fieleke questionnaire had gone country-wide the answers obtained from the smallish New England sample would be consistently repeated.

In fact the questionnaire is so good and to the point that I wish it could have been extended across the country. Perhaps our energetic hosts can persuade the Federal Reserve Banks in New York, Chicago, Minneapolis, and San Francisco to do a similar job with respect to the commercial and banking interests in their districts. As a matter of fact, there is a lot of Canadian business and Canadian exchange done in the Cleveland-Detroit area, in the Dallas district and the Pacific Northwest as well as in Southern California. And I'm sorry to have to tell you that not all the exchange business related to U.S. commercial involvement with Canada in those parts of the country clears through the New York market – try though we do!

One of the difficulties of sampling New England's involvement with Canada is that it does not pick up the problems and hedging practices of such important industries and activities as the automobile manufacturers, the grain dealers, the metals companies or the gas and oil people, including at times the pipeline operators. Also my guess is that there is relatively little interest-arbitraging done between the Boston financial community and the Montreal/Toronto money markets, though of course New England institutional investors have always had a major position in Canadian portfolio securities, equities, and particularly fixed interest obligations.

Mr. Fieleke's research has only just lifted the corner of the bed-sheet on the most important element of Canadian-U.S. financial activity, namely the cash-and-exchange-risk management practices between U.S. parent companies and their majority - or minority-owned Canadian subsidiaries and affiliates. When these fellows get worried and decide that they wish to reduce or eliminate their exchange risk exposure, the bed clothes fly and the whole structure of Canadian-American financial involvement moves and shakes. Such a rumble has not occurred since the winter of 1968, despite the great strength of the Canadian dollar during 1969 and the first half of 1970 which brought the Canadian officials to the decision of floating their currency in preference to permitting a further large build-up in their external reserves.

The book value of U.S. direct investment in Canada was estimated at the end of 1969 to be $21.1 billion and of Canadian direct investment in the United States to be $2.8 billion. The OFDI, as a result of its fact-gathering endeavors vis-a-vis some 469 American companies, gives us a composite balance sheet of those companies' affiliates in Canada, a group of companies which incidentally represent $13 billion of the total $21 billion of all U.S. direct investment in Canada. This composite balance sheet indicates that

the net current assets of the U.S. affiliates in Canada was at the end of 1969 approximately $5 billion, in contrast to about $4.5 billion at the end of 1967. When corporations decide they will cover their intra-company exchange risks, the figure they often look at for hedging purposes is the net current asset position of their foreign affiliate. Thus in early 1968, in the wake of the sterling devaluation of late November 1967, and frightened by the belief that the U.S. Government would impose restrictions on capital flows to Canada, the American financial community undertook to hedge the Canadian dollar exposure to the extent indicated on the inter-company books. The selling pressure in the forward Canadian dollar market which developed in waves during the first three months of 1968 drove the discount on the six month forwards – for instance, between January 4th and March 15th – from 19 points to as low as 220 points. And the spread between bid and asked prices also widened dramatically. Typical of the market in those days were the following quotes for six-month forwards: January 4, 19 to 16; January 25, 80 to 55; March 13, 125 to 100; March 15, 200 to 120; and then in early April, 76 to 68.

I mention that early-1968 bit of history with reference to another point which appears in the Fieleke paper, namely that most of the time the biggest part of the exchange risk borne by commercial, industrial, and natural resources firms in connection with U.S.-Canadian investment and current business is not hedged. On the American side in particular (and this is symptomatic of why our Canadian friends complain that the United States does not take Canada seriously enough) the exchange risk of doing business in Canada is not thought of as being in the same category of concerns as those involved in sterling, Deutschemarks, or yen, or in fact any other currency situation. By and large, and over time, people doing business across our northern border have just not bothered to hedge against loss from the exchange rate which can be expected to go up and down but never get so far away from the starting point as to leave them permanently damaged.

Some across-the-border businesses use the forward market either constantly, from time to time as the spirit moves them, or only when an important move upward or downward is expected either in the parity, if there is one, or in the level of the freely-floating rate. There are intricate and interesting patterns of activity here which were not disclosed by the Fieleke questionnaire or by the answers to the questions. I might comment briefly on one or two of these, though my research has been hurried, empirical, and may in fact be misleading.

A moment ago, I mentioned the automotive industry and the grain trade. In looking at our forward Canadian book, which incidentally runs on average plus or minus some $500 million total of purchases and sales, I notice that at the moment we have outstanding with three major firms in the automotive field only $11 million of forward contracts as against a high earlier this year of $80 million. Our outstanding contracts with a sampling of four grain trading firms show present outstandings of only $33 million of forward contracts as against a high during the earlier part of this year of approximately $77 million. Oddly enough, our automotive customers have traditionally been sellers of forward Canadian dollars; the grain traders buyers of forward Canadian dollars. A similar contrast between present outstandings and highpoints earlier in the year shows up in our business with Canadian securities houses and American corporations in connection with the hedging of short-term money market transactions, predominantly from the United States to Canada.

Perhaps I should leave it for group discussion whether these figures support or contradict the Fieleke conclusions.

RESPONSE

NORMAN S. FIELEKE

George Chittenden's comments constitute a welcome addition to the meager literature dealing with the behavior of foreign exchange market participants. Moreover, his observations alert me to the need to record one or two points that were not explicit in my paper.

It is often asserted that the foreign-exchange markets perform well with floating rates only if governments refrain from introducing exchange controls. There is a contradiction in this kind of statement. Under the customary definitions, the more forcefully governments attempt to manipulate exchange rates, whether by controls or other measures, the more nearly the system becomes one of "fixing" the rates, not one of floating rates.

On another matter, it was not the purpose of my paper to explore the business motivations behind foreign-exchange dealings, except insofar as such exploration directly assisted in appraising the performance of the forward-exchange market; the underlying assumption is that one need not know the detailed motivations behind specific transactions in order to appraise the efficiency with which transactions are executed.

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