

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

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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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¹Richard 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-

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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 required 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 required without policy adjustments. Under conditions of full employment, direct investment inflows were overrequired within a year and tended to produce a payments deficit; with heavy unemployment they were underrequired. Under average conditions for the period in question they were just about fully required via income effects. Portfolio investment both long- and short-term were underrequired 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 underrequired. 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.

³These 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 procedure⁴ 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

⁴For 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

⁵For a summary, see Erich Spittler, "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

⁶One 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 1-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 –

⁷Results 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.

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

⁹The 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							
		CL	USL	NNS	NNSC	RS	RS ₋₁	CTS	
1. PC	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	Whole	NNSC .000737 (5.74)	PCMS .0702 (3.17)	ATM .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	Whole	DS 58.19 (0.28)	FP 3999.0 (0.24)	BMTUS - 0.733 (2.51)	CRS - 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	Whole	FP 40.34 (4.49)	USS 0.862 (7.33)	PCMS - 0.0253 (2.14)	GNP 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)

^aSeasonal 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 2½ 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 3½ 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

¹⁰Norman 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

¹¹Because 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.

¹²See 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

¹³Albeit 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.

¹⁴Cf. *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

¹⁵See 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.

¹⁶It 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.

¹⁷We 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.

¹⁸An 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

¹⁹For 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

²⁰This 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

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

²²See 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 Euro-dollar 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 multi-lateral 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).

²³From 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.

²⁴From 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).

²⁵The 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.

²⁶From 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 - 1961III 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)

$$RSQC = 0.643$$

$$DW = 1.559 \quad (A.1)$$

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)

$$RSQC = 0.501$$

$$DW = 1.835 \quad (A.2)$$

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.

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

$$(2.49) \quad (1.38) \quad (0.48) \quad (1.92) \quad (1.79)$$

$$RSQC = 0.640 \\ DW = 2.436 \quad (A.5)$$

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

$$(2.22) \quad (2.16) \quad (0.89) \quad (2.61) \quad (1.76) \quad (1.79) \quad (4.38)$$

$$RSQC = 0.650 \\ DW = 2.275 \quad (A.6)$$

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.

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

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

$$RSQC = 0.483$$

$$DW = 2.005 \quad (A.7)$$

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

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

$$RSOC = 0.375$$

$$DW = 1.669 \quad (A.8)$$

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 criterion 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 theorem 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.