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ON THE
CANADIAN
DOLLAR

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ON THE CANADIAN DOLLAR

John E. Floyd
Professor of Economics
University of Toronto

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PREFACE

Which do you want to hear first -- the good news or the bad news? Well, the bad news is that try as we might, the best economic expertise in the land cannot definitely tell us why the Canadian dollar is wallowing in the doldrums.

Between 1977 and 1980 the Canadian dollar declined by more than 20 per cent compared to a weighted average of the currencies of 15 major industrial nations. But this was not because of temporarily expansive domestic monetary policy, states John Floyd, the author of this monograph. The time match-up between central bank activity and the falling dollar in this period precludes such an explanation. He suggests that the depreciation was quite probably due to real forces of demand and technology which made our goods relatively cheaper in world markets. But, he notes, the nature of these real forces is not known since the research necessary to understand them has not yet been done.

It is the same even for the "good" period in the recent history of the Canadian dollar, in the analysis of Dr. Floyd, Professor of Economics at the University of Toronto. Our currency increased in value rather substantially in comparison to the 15 major currencies between 1980 and 1983, but this cannot be attributed to tight money here relative to the rest of the world. Again, the responsibility probably lies with real forces of demand and technology that tended to favour Canadian goods.

What of the more dramatic 5 per cent fall in the Canadian dollar compared to that of the U.S. which took place in the 5-month period between March and July 1984? One possible explanation, says Floyd, is portfolio pressure resulting from the desire of investors to re-balance their monetary and non-monetary holdings in response to shifting Canadian or foreign monetary policy, or changing inflationary conditions. Another possibility is a fall in the real relative price of Canadian goods in terms of foreign products, perhaps due to a decrease in the world demand for our exports. Unfortunately, the data which would allow us to discriminate between these alternative explanations is not available.

Are you ready for the good news yet? The good news is that the depreciation of the Canadian dollar is not really a problem!

In the view of many people, just as national prestige rests on the number of Olympic medals won by our athletes (perhaps on a per capita basis), so is our honour determined by the value of our dollar, relative to the worth of the currencies of other nations. The precipitous fall in the Canadian dollar is seen as a decline in our level of "financial machismo."

But there are several difficulties with this view. First of all, even though the Canadian dollar is in the doldrums compared to the U.S. dollar, it is holding its own quite nicely, thank you, against the currencies of other nations. For example, while the cost of a U.S. dollar in terms of Canadian currency rose from \$1.27 to \$1.32 between March and July 1984, the value of the British pound fell from \$1.85 to \$1.78, and the worth of the French franc decreased from \$0.16 to \$0.15 against our dollar during that time period.

To continue our Olympic Games analogy, it is as if Canada had improved its medal harvest compared to Britain and France and other countries, but that the U.S. had improved even more. No case for national rejoicing, perhaps, but no need for wailing, the gnashing of teeth and the rending of garments either.

But there is a more basic reason for rejecting the view that Canada can no longer hold up its head in the international community because of the decline in its dollar. The value of a nation's currency has only a circumstantial relationship to its economic health and vitality. Rather, it is a rough index of the world demand for the currency, compared to the supply of it. To give just one example, economically thriving countries can print too much money relative to demand, leading to a weak currency, and poor ones can practice restraint, leading to a strong currency.

Our author asks, at the outset of Chapter 7, whether recent declines in the value of our dollar present a problem for the Canadian economy. Should we worry about the dollar? Should we be upset if the dollar depreciates another 20 per cent in the next year or so?

He answers in the negative, and his reply deserves to be heavily imprinted on the minds of all those charged with public policy making in Canada:

The wealth of a country depends on the amount of real resources it has at its disposal and how efficiently it uses them. High levels of real income and employment and a stable price level are the basic ingredients of domestic prosperity. The dollar plays no more than a bit part in this drama.

The point is, any attempt on the part of the authorities to prevent the downward (or upward) movement of the exchange rate will have serious and negative repercussions on the economy. Certainly, exchange control places great pressure on internal prices to adjust to changing world situations. As well, such a policy has negative implications for trade between nations. And, as the French people learned much to their dismay from Mitterand's brief experiments with exchange controls, their freedom to take holidays abroad can be severely curtailed by strict limitations on the amount of currency they can take with them.

In addition to its insightful analysis of the public policy implications of the Canadian dollar, this monograph does much more. In Chapter 1 it sets the stage and presents a number of popular and fallacious views about the dollar crisis. Chapter 2 examines recent trends in unemployment, inflation, domestic and foreign interest rates, and in the value of our dollar in terms of the U.S. dollar and other major currencies. Chapter 3 then proceeds with an analysis of the fundamental factors determining the international value of the Canadian dollar in the long run. The short-run factors determining the dollar's value are addressed in Chapter 4, followed by a discussion of the relationship between interest rates and the dollar in Chapter 5. Chapter 6 investigates the reasons for the most recent decline in the dollar and considers what, if anything, can and should be done about it. The final chapter deals with the question of whether we should be losing any sleep over the problems of the Canadian dollar.

Dr. Floyd's contribution contains a wealth of information on an important but little understood branch of economics. It is written, moreover, in an extremely easy-to-read manner. As such, it will be of interest to students, policy makers, and indeed to all Canadians concerned with the nation's financial health. It is also refreshing to see a nationally renowned economist tell the world an important truth about the profession: economists do not have the answers to all economic questions. Nevertheless, this is an extremely important contribution to public policy making in Canada and

the Fraser Institute is pleased to bring the fruits of Professor Floyd's research before the Canadian people. However, due to the independence of the author, the analysis, recommendations and views expressed may not conform singly or collectively with those of the Institute's members or funding agencies.

Walter Block
Senior Economist
The Fraser Institute

POPULAR VIEWS ABOUT THE DOLLAR'S PROBLEMS

Dollar Doldrums

The recent decline in the value of the Canadian dollar in U.S. funds has been creating a great deal of discussion and some alarm. Why is it happening? What is to blame? Does it bode ill for Canada's future? These are some of the questions that are being asked. The purpose of this study is to try to answer them.

The most recent decline in the dollar began in March 1984. In the months that followed it fell from in the neighbourhood of \$.80 U.S. to below \$.76 U.S. and then recovered to a level near \$.77 by the beginning of September. This decline came on the heels of an extensive downward adjustment from a level above \$1.01 U.S. in 1977.

Many see the value of the Canadian dollar as a measure of national performance. A decline somehow indicates that the economy is not performing up to standard, that our goods can no longer compete in world markets, that our wealth has in some way decreased. Others see the implications for their own self-interest. Because the country is small in relation to the rest of the world, the U.S. dollar prices of our exports and imports tend to be fixed abroad. Exporters thus get a higher price in terms of Canadian dollars for the goods they sell to foreigners. Consumers, on the other hand, see themselves as worse off, for the goods they consume from abroad now cost more in domestic currency. Because the decline in the value of the dollar increases the prices of goods purchased from abroad, many see this change as a cause of inflation. Governor Bouey of the Bank of Canada holds this view:

The longer the lower level of the Canadian dollar persists, the more prices in Canada will react to the changed exchange rate. These price rises can

have the benefit of providing a stimulus to export industries and to those industries which compete with imports. But that stimulus exists only so long as Canadians accept the higher prices without demanding compensating increases in their wages, salaries, and other prices.

It is because of the substantial inflationary risk involved that I have never favored depreciation where it could be avoided or at least limited. The record has not been good; our past experience with exchange rate depreciation has been that all too often it has led, not to a sustained improvement in our competitiveness, but to additional inflationary momentum as Canadians attempted to protect their incomes against the loss of purchasing power. The end result has then been more inflation rather than more economic activity.¹

Interest Rates

The value of the dollar in international markets has also been connected in the public mind with the level of interest rates. A very serious bout of high interest rates occurred in mid-1981, when the rates on home mortgages and commercial paper exceeded 20 per cent. The effects of these high interest rates on the costs of operating a business and on monthly mortgage payments are still fresh in people's minds. This is reflected in a concern that the declining dollar will lead to a further round of high interest rates.

Our purpose here is to examine the forces determining the international value of the Canadian dollar, and the interaction of these forces with domestic interest rates, the inflation rates, and the level of unemployment. This will permit us to make some judgements about the reasons for the current decline and to evaluate policies the federal government might adopt to deal with the situation. Most important, it will give us some perspective on the importance of changes in the value of the dollar for the health and stability of the domestic economy.

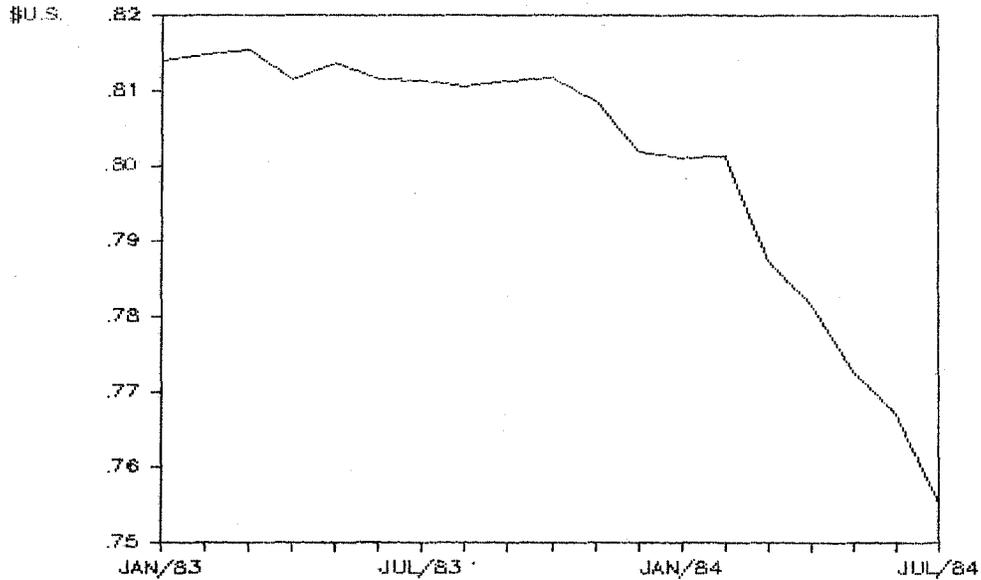
A Dollar Comparison

Recent trends in the international value of the dollar are shown in Charts 2.1 and 2.2. The first chart gives the actual value of the Canadian dollar in terms of the U.S. dollar. The second presents indexes of the dollar's value in terms of the British pound, West Germany mark, French franc, and Japanese yen, as well as the U.S. dollar. The indexes give the various exchange rates relative to their levels in January 1983.

After a number of months of relative stability, the price of the dollar in U.S. funds fell somewhat in October and November of 1983, flattened out in December and January 1984, and then fell quite drastically from February to July 1984. The overall decline since October 1983 has been about 6 per cent. During 1983, when the price of the Canadian dollar was relatively stable in terms of U.S. currency, it was rising in terms of the pound, mark, and franc. It appreciated with respect to these three currencies by approximately 10, 15, and 25 per cent respectively over the year. There was little overall change in the exchange rate with the Japanese yen. During the first three months of 1984, the Canadian dollar fell in terms of all five currencies. Then, in April and May it appreciated slightly in terms of all but the U.S. dollar and in June declined slightly with respect to all currencies but the yen. In July, the Canadian dollar gained against all currencies but the U.S. dollar. Overall, there has been a net decline of the dollar from January to June 1984 in terms of all five currencies.* Since the beginning of 1983 there has been a net appreciation with respect to the pound, mark, and franc, and a net depreciation with respect to the U.S. dollar and the yen.

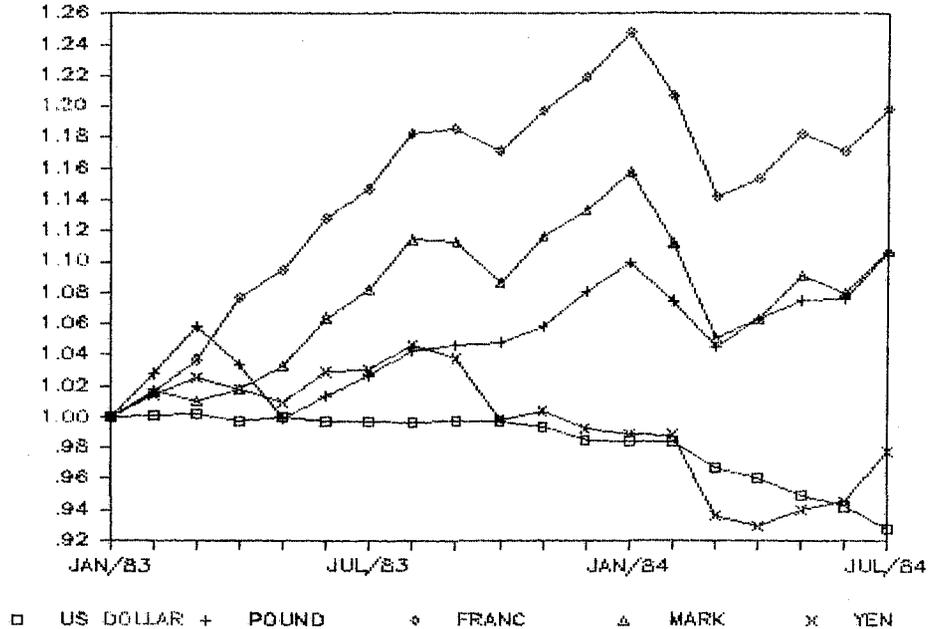
* In the case of the yen, the decline is very slight.

CHART 2.1: THE CANADIAN DOLLAR
Value in U.S. Dollars



Source: Bank of Canada, **Statistical Summary** and **Weekly Financial Statistics**.

CHART 2.2: PRICE OF THE CANADIAN DOLLAR
Index: Selected Currencies



Changing Interest Rates

Recent movements in Canadian and United States interest rates are shown in Chart 2.3. The rates on 90-day commercial paper are representative of interest rates in general. As would be expected from the integrated nature of world capital markets, U.S. and Canadian interest rates move closely together. They rose to a peak in the second half of 1981, fell drastically late in that year, and then flattened out and even rose slightly in the first six months of 1982. This was followed by an almost continuous fall until mid-1983. During the period from mid-1981 to mid-1983, 90-day commercial paper rates fell from over 20 per cent to about 9 per cent in Canada and from around 18 per cent to about 9 per cent in the United States. Since late 1983, interest rates have risen somewhat in both countries -- 90-day paper rates were in the vicinity of 12 per cent in Canada and 11.5 per cent in the United States in the summer of 1984. The customary differential of Canadian over U.S. rates was not present from mid-1983 until mid-1984 when a slight differential again began to reappear.

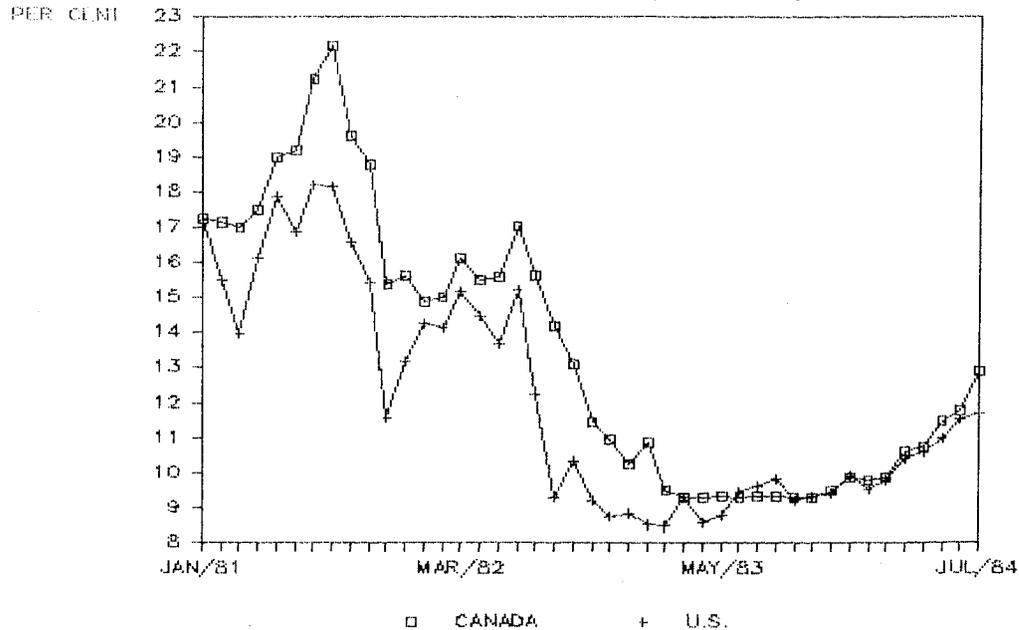
Declining Inflation Rates

The Canadian and United States inflation rates, measured by the year-over-year changes in the respective consumer price indexes, are shown in Chart 2.4.¹ The rate of inflation in Canada has declined almost steadily from a peak of over 12 per cent in mid-1981 and appears to have stabilized at around the 5 per cent level as of May and June 1984. The inflation rate in the U.S. was below the Canadian rate from the beginning of 1981 to the beginning of 1984. It declined relative to the Canadian rate during the first part of this period, and rose relative to the Canadian rate in the latter part. From the beginning to the middle of 1984, the rates of inflation in the two countries have been roughly the same.

Unemployment Patterns

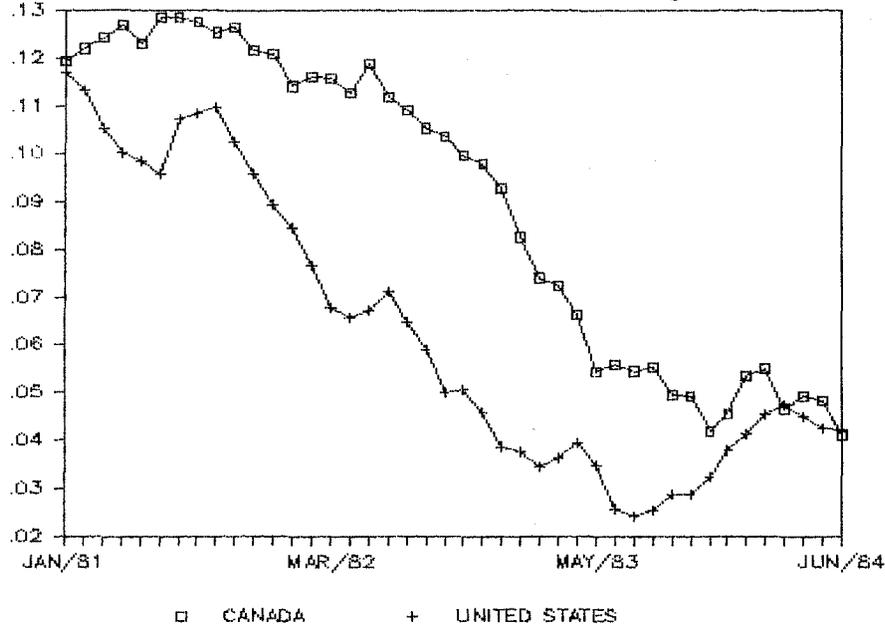
The unemployment rate in Canada, given in Chart 2.5, rose sharply from about 7 per cent of the labour force to over 12.5 per cent between mid-1981 and late 1982.² Between late 1982 and the end of 1983 the situation improved somewhat as the rate fell to around 11 per cent. It then rose again (on a

CHART 2.3: INTEREST RATES
90-Day Commercial Paper: Monthly



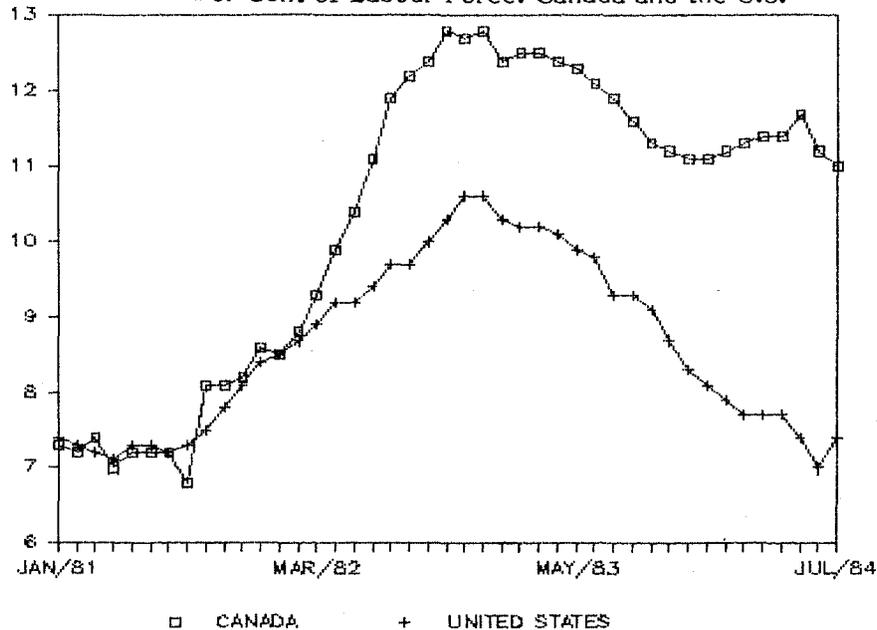
Source: Bank of Canada, **Statistical Summary** and **Weekly Financial Statistics**

CHART 2.4: INFLATION: CANADA AND U.S.
CPI: Year-Over-Year Rates of Change



Source: Statistics Canada, Cansim Mini Base .

CHART 2.5: UNEMPLOYMENT RATE
Per Cent of Labour Force: Canada and the U.S.



Source: Statistics Canada, Cansim Mini Base.

seasonally adjusted basis) between January and May of 1984 and then fell back to the 11 per cent level in June and July.

The unemployment rate in the United States, also shown in Chart 2.5, followed pretty much the same pattern as the Canadian rate, except that the increase was much less dramatic after March 1982. The peak in the U.S. rate was only 10.6 per cent as compared to 12.8 per cent in this country. As of July 1984, the rate in the U.S. was in the neighbourhood of 7.5 per cent, substantially below that in Canada.

Using these facts as background, we can now proceed with our analysis of the forces determining the dollar's value.

LONG-RUN INFLUENCES ON THE DOLLAR'S VALUE

Foreign Exchange Rates

A foreign exchange rate is the rate at which one country's currency can be bought and sold for another country's currency. Canada faces many exchange rates for its dollar -- one for each of the foreign currencies in which international trade is conducted. These exchange rates can be expressed in two ways -- as the Canadian dollar price of the foreign currency, or as the foreign currency price of the Canadian dollar. The dollar declines in value when the price it will command in terms of foreign currencies decreases. Obviously, our dollar can decline in value with respect to one currency while at the same time increasing in value compared to another currency. To say that the value of the Canadian dollar has gone down in world markets must therefore mean that its price has declined in terms of a whole group of foreign currencies, and not just the U.S. dollar. The decline must be in terms of some weighted average of foreign currencies.

To understand the fundamental forces determining the international value of a country's currency, we must appreciate two different roles played by the exchange rate. Not only is the exchange rate the rate at which a country's money can be converted into the money of another country, it is also a crucial component of the rate at which one country's goods can be exchanged for the goods of another. To exchange domestic for foreign goods, we must sell them first for Canadian dollars, exchange these for foreign currency, and then use the foreign currency to buy the foreign goods. The value of Canadian goods in terms of foreign goods thus depends on three things:

- a) The value of Canadian money in terms of domestic goods -- the amount of Canadian goods that our dollar will buy. This is, of course, represented by our price level as measured by some index such as the Consumer Price Index.

- b) The price of foreign money in terms of the Canadian dollar -- the exchange rate.
- c) The value of foreign goods in terms of foreign money, represented by the foreign price level and measured, for example, by the foreign country's consumer price index.

The Real Exchange Rate

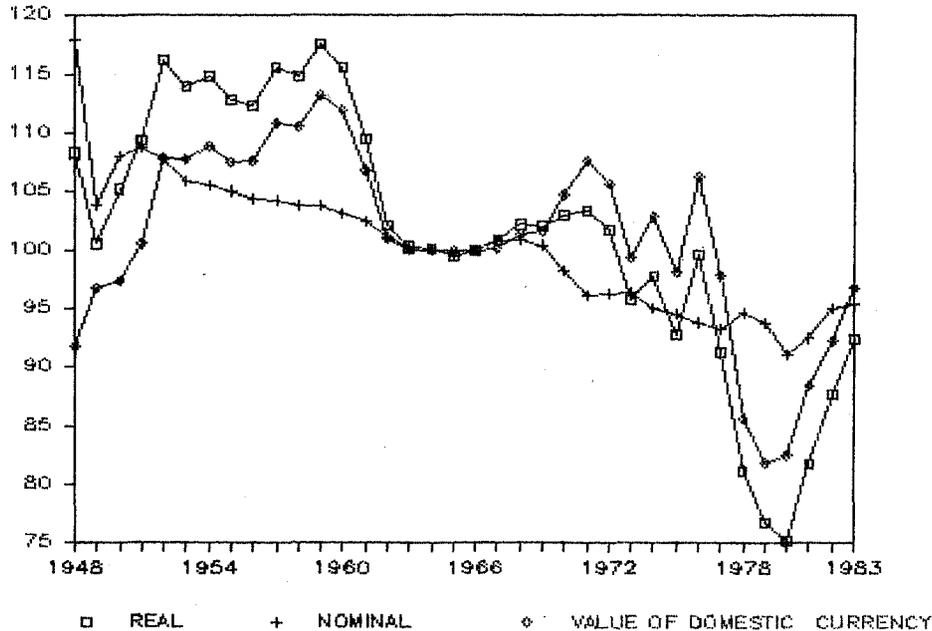
A measure of the price of Canadian goods in terms of foreign goods can be obtained by taking the ratio of the Canadian price level to the rest of the world's price level, after all prices have been expressed in Canadian dollars. Alternatively, we could refer to this variable as the real price of Canadian output in the world market. Some people call it the real exchange rate. Using consumer price indexes as price level measures, we can calculate the real price of Canada's output by taking the ratio of the Canadian consumer price index to a weighted average of the consumer prices indexes of the other major countries in the world, multiplied by indexes of the Canadian dollar prices of their respective currencies.¹ Since we are calculating relative output prices, the appropriate weights in the rest-of-the-world index are the individual countries' shares in world output.^{2, 3} The relative price of Canadian in terms of world output is plotted for the period 1948 to 1983 in Chart 3.1.

If we divide Canada's consumer price index by a weighted average of the consumer price indexes of other countries without converting those indexes into Canadian dollar terms, we obtain a measure of the historical degree of price inflation in Canada as compared to the rest of the world.⁴ This is, in effect, the nominal world price of domestic output. It is also shown in Chart 3.1.

Finally, division of the real price of Canadian output by its nominal price yields a measure of the international value of the Canadian dollar. It is a weighted average of the prices of the Canadian dollar in terms of the currencies of the countries comprising the rest of the world, where the weights are the shares of those countries in the rest of the world's output.⁵ This implicit measure of the international value of the Canadian dollar is also plotted for the period 1948 to 1983 in Chart 3.1.

CHART 3.1: RELATIVE OUTPUT PRICES
Canada vs. Other Industrial Countries

INDEX
1983-86 = 100



Source: International Monetary Fund, **International Financial Statistics**.

For the interested reader, a more detailed analysis of the construction and interpretation of the real and nominal relative prices of a country's goods and the implicit external value of its currency is given in a short appendix to this chapter.

Real Factors Affecting the International Value of the Dollar

The real price of Canada's output in terms of output in the rest of the world obviously depends on the demand and supply of Canadian-produced goods in the world as a whole. Consider a shift in world demand towards Canadian goods resulting, for example, from a preference of Canadian consumers for more domestically-produced and fewer foreign-produced goods. This will cause the prices of goods produced in Canada to be bid up relative to the prices of goods produced abroad. Canada's real exchange rate, or the real relative price of domestic output --whatever one wants to call it-- will rise.

In like manner, an increase in the supply of Canadian produced goods due, for example, to a bumper wheat crop, will cause the international relative price of Canadian output to fall. If the rate of price inflation is the same in Canada as in the rest of the world, a fall in the price of Canadian output in the world at large must be achieved through a decline in the international value of the Canadian dollar.

For Canadian goods to become cheaper, either their price in Canadian dollars must fall, or the price of the Canadian dollar in terms of foreign currency must fall. If the degree of inflation in Canada does not change, the only way the price of Canadian goods can decrease is for the dollar to fall in value. Similarly, in the absence of price inflation in Canada in excess of that abroad, an increase in the real value of Canadian output in world markets must be accompanied by an appreciation of the Canadian dollar.

A major factor affecting the international value of the Canadian dollar is thus the relative world demand for Canadian vs. foreign goods.

Long-term Monetary Influences on the Value of the Canadian Dollar

Suppose now that there is greater inflation in Canada than elsewhere. The amount of goods the Canadian dollar will buy

is thus reduced. If there is no shift in the real forces of demand and supply affecting Canadian goods, the exchange rate must adjust to maintain the real ratio of Canadian to foreign prices at its original level. The price of the Canadian dollar in foreign currency must therefore fall to match the increase in the Canadian dollar price of domestic goods. That is, the external value of the Canadian dollar must fall in accordance with the decrease in its internal value. Correspondingly, a greater degree of inflation abroad than in Canada must result in an increase in the value of the Canadian dollar in world markets.

Another basic factor determining the value of the Canadian dollar in international markets is thus the history of price inflation in Canada relative to that in the rest of the world. Without going into details at this point, it is worthwhile to note that the major factor determining the degree of inflation in a country over a long haul is the degree of expansion of its money supply. But the influence of money on inflation is a long-run rather than an immediate one. Of course, monetary expansion may have immediate short-run effects on the exchange rate quite apart from its effects on the price level. These will be considered in the next chapter.

Does a Devaluation of the Dollar Cause Inflation?

We can now address the question of whether, as Governor Bouey stated in the passage cited in Chapter 1,⁶ a devaluation of the dollar inevitably leads to domestic inflation. The answer is quite clear. If the devaluation occurs because of a decline in the real value of our goods in world markets, it neither has an effect on nor is necessarily associated with a rise in our price level. If the devaluation occurs in the face of no change in the real relative price of our goods in terms of foreign goods, it is the result of inflation in the domestic economy, not a cause of it. Of course, this conclusion relates to the long run -- the question will be raised again when we consider short-run influences on the dollar.

Long-term Influences on the Canadian Dollar: Some Evidence

Chart 3.1 presents some evidence on the relative importance of real and monetary factors affecting the major long-run

movements in the international value of the Canadian dollar between 1948 and the present time. As can be seen from the chart, the value of the dollar in international markets tends to follow quite closely the movements in the relative price of Canadian output in terms of world output. At the same time, the ratio of nominal prices in Canada to the nominal price level abroad has exhibited a mild overall downward trend with very little variability around that trend.

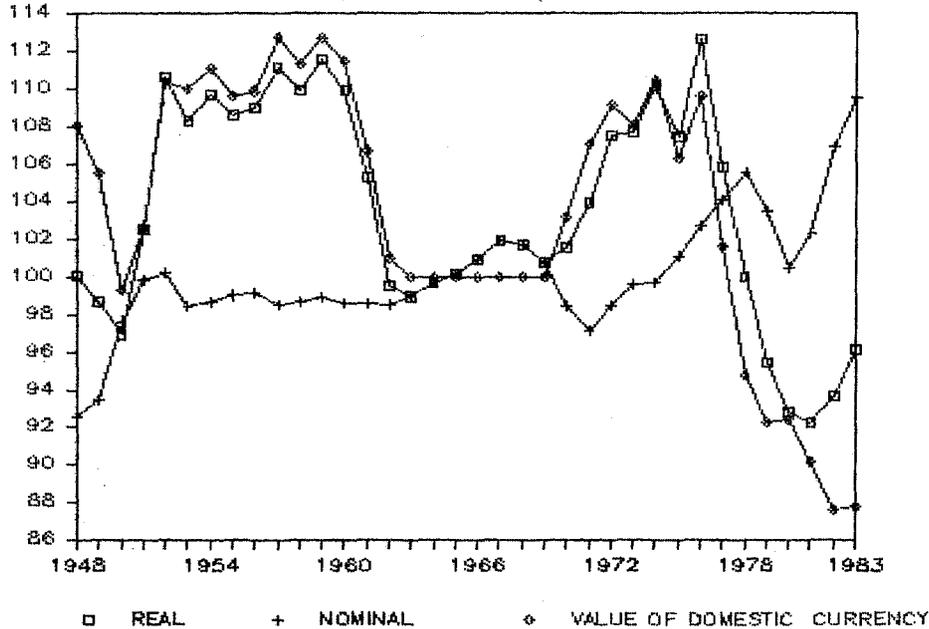
Generally speaking, Canada has had a lower inflation rate over the years than other countries on average. But there have been substantial movements in the real price of Canadian output in world markets. The real price of Canadian output rose about 15 per cent in the early 1950s, remained more or less constant for a few years, and then fell back in the early 1960s to its level in 1949. It then showed a slight upward path until 1970, after which it began a descent that gathered force after 1976. Between 1976 and 1980, the real price of Canadian relative to foreign output declined by about 25 per cent. Since 1980, goods produced in Canada have tended to increase in price relative to goods produced abroad. The increase has been substantial, but the index has not recovered to anywhere near its 1976 peak.

Note the close correspondence of the implicit international value of the dollar with the real price of our goods in world markets. Given the relatively stable but declining nominal price level in Canada in relation to the nominal price level abroad, this suggests that the monetary authorities in Canada have traditionally followed a long-term monetary policy quite similar to that adopted abroad. This required that the exchange rate adjust to accommodate the broad changes in real relative prices.

The reasons for the observed movements in real relative prices are not clear. While it would appear that the high levels of the mid-1950s were due to the foreign investment boom in Canada, the major movements from 1960 on are pretty much a mystery. World oil price movements offer no explanation because the timing is wrong. The decline in the price of Canadian output relative to output abroad between 1970 and 1980 could have resulted either from a shift of world demand off Canadian goods or from an improvement in productivity in certain domestic industries. Practically no research has been done on this problem.

CHART 3.2: RELATIVE OUTPUT PRICES
Canada vs. the U.S.

INDEX
1983-86 = 100



Source: International Monetary Fund: **International Financial Statistics.**

Canada/U.S. and U.S./Rest-of-the-World Comparisons

Real and nominal relative price level comparison between Canada and the United States are given in Chart 3.2. The relative output price is calculated by dividing the Canadian consumer price index by the U.S. consumer price index after multiplying the latter by an index of the Canadian dollar price of the U.S. dollar. The nominal price of Canadian output in terms of that of the U.S. is obtained by simply dividing the Canadian consumer price index by the U.S. consumer price index. Naturally, the real relative price of Canadian output divided by its nominal relative price is an index of the U.S. dollar price of the Canadian dollar.

Chart 3.2 tells pretty much the same story as Chart 3.1. Canada's price level moved rather closely with the price level in the United States, although it has tended to rise slightly relative to the U.S. price level on average since 1970, and has risen about 5 per cent in relation to it in the early 1980s. Between 1950 and 1980 the value of the Canadian dollar in terms of the U.S. dollar moved very closely with the value of Canadian goods in terms of U.S. goods. This supports the conclusion reached earlier that the domestic authorities tended to follow a long-run monetary policy similar to that followed abroad, and have let adjustments in the exchange rate take care of international real relative price changes.

Recent Policy

Since 1980, however, the authorities have allowed a rise in the real price of Canadian output in terms of U.S. output to be reflected in a rise in our internal price level relative to the price level of the U.S. Indeed, the rise in the Canadian price level has been more than would have been required to accommodate real relative price adjustments. As a result, the Canadian dollar has depreciated in terms of the U.S. dollar.

Turning back to Chart 3.1, we note that since 1980 the Canadian price level has risen relative to an output-weighted average of the price levels of all major industrial countries, not just the United States. But the increase relative to all industrial countries is not nearly so pronounced in relation to past trends as is the increase relative to the U.S. The increase in the real price of our output in terms of output in the rest of the world has been accommodated to some degree by a

relative rise in our price level. But primarily, it has been reflected in an increase in the value of our dollar in terms of a weighted average of all other currencies.

An International Comparison

To pursue this issue further, it is necessary to look at what happened to the real and nominal prices of U.S. output in terms of the output of the other industrial countries. This is shown in Chart 3.3. From 1950 to 1970 both the real and nominal prices of U.S. output tended to decline very gradually with little variation around trend. The international value of the U.S. dollar remained nearly constant over the period, as would be expected from the fact that most exchange rates were fixed.

But, after 1970 a major change occurred. The price index of U.S. goods in terms of foreign goods began to fall, reaching by 1978 a value almost one-third lower than its 1970 level. This adjustment of real relative prices was accommodated partly by a decline in the nominal price level in the U.S. relative to abroad (or in other words, by a lower rate of inflation in the U.S. than elsewhere) and partly by a decline in the value of the U.S. dollar in world markets.

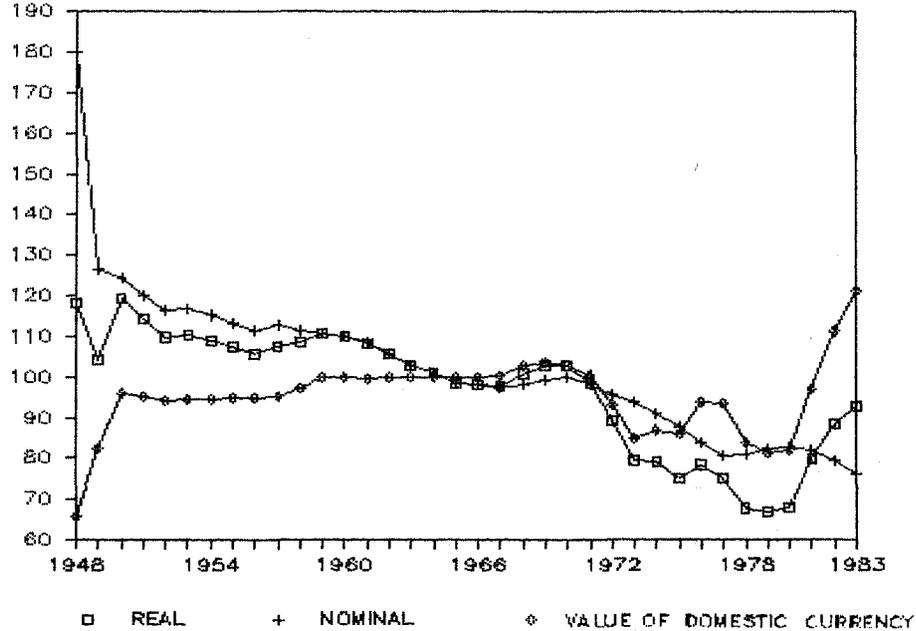
Since 1980, this trend has begun to reverse itself. The price of U.S. output in terms of output in the other industrial countries has been rising. This has been reflected entirely in an appreciation of the U.S. dollar against the other currencies and not at all in a rise in the U.S. nominal price level relative to price levels abroad.

Prices of North American Goods

It is evident that during these past three years North American-produced goods have tended to become more and more expensive in terms of goods produced elsewhere. As well, this increase in real output prices has been greater in Canada than the United States. As a result, both the U.S. and Canadian dollars have tended to appreciate on balance against currencies of the other industrial countries. The U.S. price level has tended to fall relative to the average price level in the other industrial countries, while the Canadian price level has tended

CHART 3.3: RELATIVE OUTPUT PRICES
U.S. Vs. Other Industrial Countries

Index
1965-66 = 100



Source: International Monetary Fund, **International Financial Statistics**.

to rise, although all of these nominal relative price adjustments have been small in percentage terms. Because the Canadian price level has had a slight tendency to rise relative to the price level in the United States, the Canadian dollar has tended to devalue in terms of the U.S. dollar.

These structural adjustments in the international economy may well have continued into 1984. However, had they proceeded unaltered we would expect to be observing an appreciation of the Canadian dollar in terms of the European currencies and a depreciation in terms of the U.S. dollar. On balance, that has not occurred during the first six months of 1984. Our dollar declined with respect to all of the major currencies in the first two months of 1984 and has recovered only partially with respect to all but the U.S. dollar by the end of July. Perhaps the answer is to be found in some shorter-run influences.

APPENDIX REAL AND NOMINAL EXCHANGE RATES

The relationship between the real price of domestic goods in terms of foreign goods, the nominal price of domestic goods in terms of foreign goods and the implicit external value of the domestic currency can perhaps be understood better if we present a simple example. Suppose that we have three countries whose output price indexes and exchange rates are as follows:

	OUTPUT PRICE INDEXES 1975 = 100			EXCHANGE RATES: IN UNITS OF A-CURRENCY	
	Country <u>A</u>	Country <u>B</u>	Country <u>C</u>	Country <u>B</u>	Country <u>C</u>
1975	100	100	100	3.5	1.3
1976	118	120	121	3.8	1.1
1977	122	121	123	5.1	0.9
1978	125	126	125	6.5	0.8
1979	130	129	131	4.9	0.6
1980	135	135	134	4.0	0.5

To obtain the real relative price of Country A's goods in terms of the rest of the world's goods, otherwise known as the real exchange rate, we must first convert the price indexes of Country B and Country C into A-currency equivalents. These indexes are obtained as follows:

$$(P_b)_a = ((P_b) (R_b))/3.5$$

$$(P_c)_a = ((P_c) (R_c))/1.3$$

P_b and P_c are the output price indexes in the table above, $(P_b)_a$ and $(P_c)_a$ are the price indexes obtained after adjusting by the exchange rates, and R_b and R_c are the respective prices of B-currency and C-currency in units of A-currency, the exchange rates appearing in the table above. Each country's price level is thus multiplied by the price of its currency in units of A-currency and the resulting expression is then divided by its exchange rate in 1975 to convert the new price series to indexes with the base 1975 = 100.

Country A's real exchange rate -- the real relative price of its goods in terms of foreign goods -- can be obtained by

taking the ratio of its price level to a weighted average of the exchange rate adjusted price levels of the other two countries, with the weights being the share of these countries in the rest of the world's output. Letting X_b and X_c be the outputs of countries B and C, we have the following expression for Country A's real exchange rate:

$$RR_a = (X_b/(X_b + X_c)) (P_b)_a + (X_c/(X_b + X_c)) (P_c)P_a$$

The nominal relative price of country A's goods in terms of foreign goods is equal to the ratio of its output price index to a weighted average of the unadjusted output price indexes of countries B and C. Formally, this is

$$NPA = (X_b/(X_b + X_c))P_b = (X_c/(X_b + X_c))P_c$$

The calculated values of Country A's real exchange rate and the nominal relative price of that country's goods in terms of foreign goods, under the assumption that countries B and C are of equal size, are shown in the columns three and four from the left below.

**REAL EXCHANGE RATE: NOMINAL RELATIVE PRICES:
IMPLICIT INTERNATIONAL VALUE
OF THE DOMESTIC CURRENCY**

	$(P_b)_a$	$(P_c)_a$	Real Exchange Rate Country A:	Nominal Price Ratio Country A:	Implicit Value A-Currency
1975	100.0	100.0	100.00	100.00	100.00
1976	130.3	102.4	101.43	97.93	103.58
1977	176.3	85.1	93.32	100.00	93.32
1978	234.0	76.9	80.41	99.60	80.73
1979	180.6	60.5	107.86	100.00	107.86
1980	154.3	51.5	131.18	100.37	130.69

Column five gives the implicit international value of Country A's currency. This is calculated by dividing the real exchange rate by the nominal price ratio. When the price level in Country A rises relative to the price level in the rest of the world the international value of A-currency falls, and when Country A's price level falls relative to the price level abroad the international value of A-currency rises.

The real exchange rate, nominal price level in terms of foreign prices and implicit international value of the domestic currency are plotted for Country A in Chart 3.4.

Note both from the table and the chart that nominal prices in country A increased roughly in proportion to nominal prices in the rest of the world, so that the nominal relative price of A's goods in terms of foreign goods is nearly constant. As a result, the real exchange rate and the implicit international value of the domestic currency move almost in unison. This is the pattern we typically observe when we look at these relative price calculations for the major industrial countries. It implies, as we argue in detail in the text, that all countries tend to follow roughly the same monetary policies over the business cycle, with the result that their nominal price levels tend to fluctuate quite closely together, apart from differences in trend. Nominal exchange rates then adjust to accommodate variations in the country's real exchange rate. These occur because of changes in technology and demand in the world economy that affect the real relative prices of the different countries' outputs.

To pursue this analytical framework a bit further, suppose for the sake of argument that Country A maintained fixed nominal exchange rates with respect to both B and C, but that developments in world demand and technology kept her real exchange rate the same as calculated in that table above. The implicit international value of A-currency would now be constant and would appear as the horizontal line in Chart 3.5.

The real exchange rate and the nominal relative price of A-goods in terms of foreign goods now move in unison. (It is unnecessary to reproduce the table above because we know beforehand that the implicit external value of the country's currency must be 100.0 in all years and the nominal price ratio must be identical with the real exchange rate given in the previous table.) The changes in the real international value of A-goods now result in an equivalent change in Country A's nominal price level relative to nominal prices abroad -- since exchange rates are fixed, the only way the relative prices of

CHART 3.4

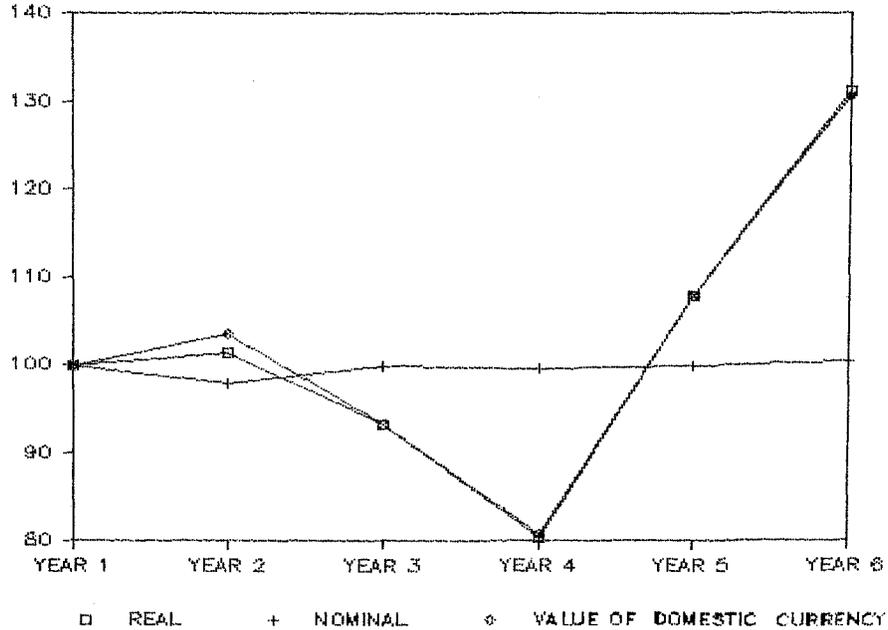


CHART 3.5

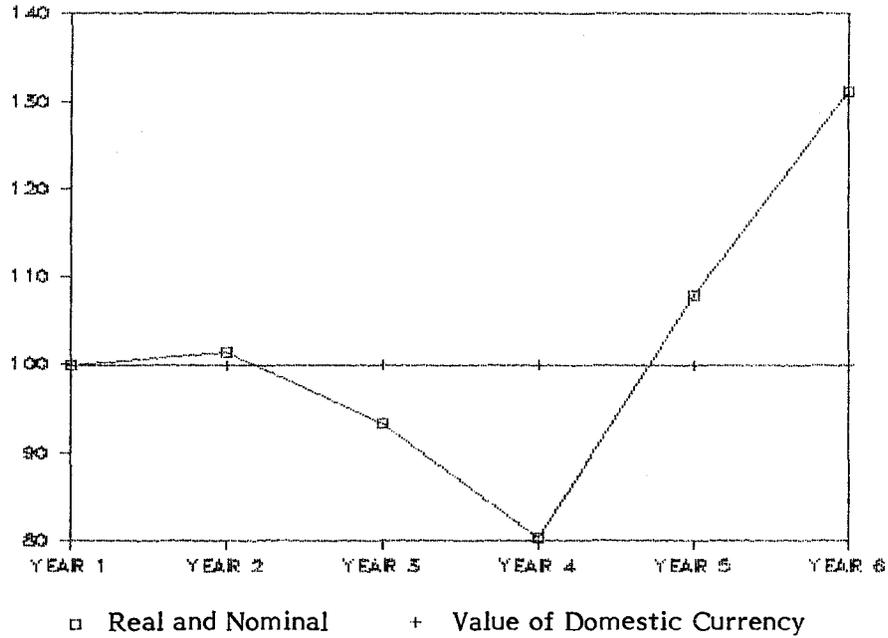
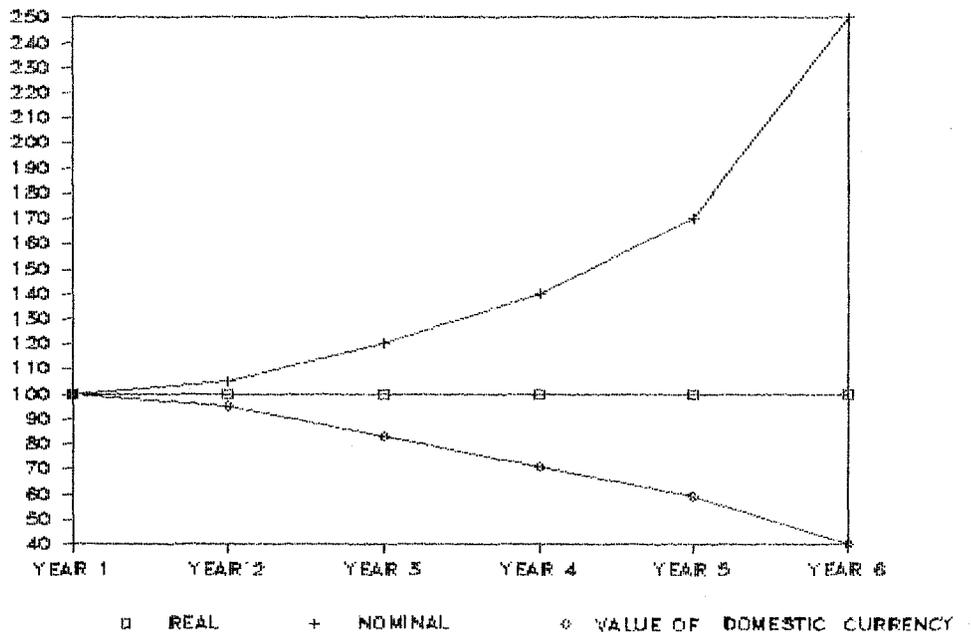


CHART 3.6



A-goods can fall or rise in the world market is through a fall or rise in their prices in A-currency.

Finally, consider the special case where changes in international demand and technology either do not occur, or occur in such a way as to leave the real relative price of A-goods in terms of foreign goods constant. In this case, Country A's real exchange rate is constant, and appears on Chart 3.6 as a horizontal line. If monetary policy in country A also happens to be the same as abroad, so that A's price level rises or falls concomitantly with the price levels in countries B and C, the nominal price ratio and the implicit international value of A-currency will also be constant. All three curves in the chart will be horizontal lines on top of each other. However, suppose that the government in Country A undertook excess monetary expansion, unmatched by monetary expansion abroad with the result that A experienced more inflation than the rest of the world over the period. Country A's nominal price ratio will rise and the implicit external value of A-currency will fall as shown in Chart 3.6. This is the well-known case of purchasing power parity, in which a country's exchange rate can be obtained simply by taking the ratio of the nominal price levels at home and abroad.

SHORT-RUN INFLUENCES ON THE DOLLAR

Recapitulation

We have shown that in the long run the international value of the dollar depends on a combination of real and monetary factors. A switch of world demand toward or away from Canadian goods will necessitate a rise or fall in the real price of our goods in terms of foreign goods. Alternatively, our products can rise or fall in price relative to foreign goods because of changes in technology that increase or reduce the real cost of goods produced in Canada relative to goods produced abroad. If the underlying rates of inflation in Canada and abroad are unchanged, such a change in the real price of Canadian goods in world markets can take place only through a change in the external value of the Canadian dollar. If the real price of Canadian goods in world markets rises, our dollar will appreciate. If our goods fall in price in terms of foreign goods, the value of our dollar must fall.

In addition, the value of the dollar can be affected over the long run by differences in Canadian relative to foreign inflation. When domestic monetary policy tends to be more expansionary than foreign monetary policy over the long run, our level of nominal prices will tend to rise relative to the level of nominal prices abroad. If nothing has happened to the fundamental real forces of demand and supply (which determine the real relative prices of our goods in terms of foreign goods) the rise in our price level relative to the foreign price level must result in a decline in the value of the Canadian dollar in world markets. That is, the price of the Canadian dollar in terms of foreign currency must fall by exactly the same amount as the price of Canadian goods in Canadian dollars rises, so that the price of our goods in foreign currency can remain unchanged.

This long-run analysis assumes that the real relative price of our goods in terms of foreign goods is unaffected by monetary factors -- i.e., that monetary expansion leads to a change in the level of nominal prices but not to a change in

the real price of our goods abroad. While this is a very reasonable assumption for the long run, it can be easily demonstrated that monetary factors can affect real relative prices in the short run.

A. Portfolio Pressures

Short-run portfolio pressures on the exchange rate

Suppose that the Canadian authorities expand the domestic money supply, and that the demand for money in Canada remains unchanged. Domestic residents can be expected to react by converting some of these newly acquired funds into non-monetary assets in order to re-balance their portfolios. The resulting market pressure will spill over into the world capital market as domestic residents end up trying on balance to purchase assets from foreigners. There will be an excess supply of Canadian dollars and a corresponding excess demand for foreign currency on the foreign exchange market, causing the international value of our dollar to fall.

Since asset markets respond very quickly to shifts in demand, we can expect the above adjustment of the exchange rate to occur very quickly after the change in domestic monetary expansion. Goods prices, on the other hand, respond rather slowly to monetary changes. As a result, the depreciation of our dollar in response to portfolio pressure will not be accompanied by a corresponding rise in our price level in the short run, although the price level will rise in the long run. In the short run, our real exchange rate will fall concomitantly with the decline in our dollar.

This cheapening of our goods in world markets causes world demand to shift off foreign goods and onto ours, with the result that excess aggregate demand is created in the Canadian economy. Output and employment eventually rise in Canada and, ultimately, as businesses and workers adjust their wages and prices in response to market conditions, our price level will rise more or less in proportion to the increase in our money stock. Our dollar will devalue proportionally with the increase in our price level and the real relative price of Canadian goods in terms of foreign goods will return to its original level.

Short-run monetary effects

Thus, domestic monetary expansion and contraction can have an effect on the international value of our dollar in the short run before these monetary changes can have any effect on domestic output and employment or on the level of domestic prices. And short-run changes in the real relative price of our goods in terms of foreign goods can be caused by such portfolio-induced movements in the exchange rate. This contrasts with the long run, where it is fundamental demand and supply forces which cause the movements in the real relative price of our goods in terms of foreign goods, which in turn alters the external value of our dollar.

This distinction between the short- and long-run relationship of the exchange rate with the real price of our output in terms of foreign output is especially important in interpreting Charts 3.1, 3.2, and 3.3 in the previous chapter. There, we felt comfortable ascribing major movements of the exchange rate to corresponding changes in the real price of our goods in world markets. This was because the major adjustments occurring in these variables persisted for several years. We could not have much confidence that the observed year-to-year changes in the exchange rate were caused by corresponding real relative price changes. It could well have been portfolio-induced exchange rate adjustments that caused the changes in the real price of our goods in terms of foreign goods.

Domestic vs. foreign portfolio pressure

Suppose now that the domestic and foreign money supplies expand in the same proportion, again with unchanged demands to hold money. World residents as a whole will now be trying to balance their portfolios by converting some of these funds into non-monetary assets. However, since the monetary expansion is world-wide and the domestic and foreign money stocks increase in proportion, there will be no tendency for an international movement of assets to occur. There will be equal portfolio pressure in all nations.

Instead, this world pressure on asset markets will lead to a fall in interest rates. This will eventually stimulate investment and output and employment in all countries. And the price levels in all countries will ultimately rise in response to this excess world aggregate demand. But even in the long run

there will be no exchange rate effect. For the Canadian and foreign price levels will rise in tandem, and nothing would change the fundamental demand and supply factors determining the real relative price of Canadian in terms of foreign goods.

Another case

Now suppose that the money supply is expanded abroad but not in Canada, and that the demand to hold money remains stable world-wide. Foreign residents have excess money holdings which they will try to convert in part into non-monetary assets. In contrast, domestic residents will have no reason to want to adjust their portfolios. As foreigners try to buy bonds and other assets they will put upward pressure on asset prices and downward pressure on interest rates in the world capital markets. Since Canada is a part of that world capital market, the interest rates faced by Canadian residents, both on foreign and domestic assets, will fall.

At these lower interest rates, the interest earnings foregone by holding wealth in monetary form are smaller, and domestic residents have an incentive to increase the fraction of their wealth held in monetary form. They will thus move to sell assets to foreigners in return for money. In this way the increase in the money supply abroad spills over into domestic asset markets. The desire of Canadian residents to sell assets abroad creates an increased demand for Canadian dollars on the foreign exchange market, and a corresponding increased supply of foreign currency, as foreigners try to convert foreign into domestic funds to buy securities from Canadians. The price of our dollar in foreign currency will tend to rise -- i.e., the Canadian dollar will appreciate in value. In the absence of changes in the domestic and foreign price levels in the short run, the real price of our goods in terms of foreign goods will tend to rise correspondingly.

No central bank is an island

Portfolio pressure-induced changes in the external value of our dollar thus arise not on account of Canadian monetary expansion or contraction by itself, but on account of an expansion or contraction of the Canadian relative to the foreign money supply. Expansion in Canada accompanied by equivalent expansion in the rest of the world will not lead to a change in

the exchange rate. But monetary expansion in Canada unaccompanied by monetary expansion abroad will cause our dollar to fall in the short run, while monetary expansion abroad unaccompanied by expansion in Canada will cause our dollar to rise. If the rest of the world pursues tight money, and the Bank of Canada does not follow suit, the Canadian dollar will decline in world markets. The Bank can prevent this by expanding the domestic money supply in line with the monetary expansion abroad.

It is therefore insufficient to look at the Canadian money supply alone to determine whether the recent devaluation of our dollar was caused by excess monetary expansion on the part of the Bank of Canada. One must look at monetary expansion in the rest of the world as well. Downward portfolio pressure on the Canadian dollar arises from excess domestic relative to foreign monetary expansion.

Portfolio pressure from changes in the demand for money

Portfolio pressure on the exchange rate arises when Canadian residents try to adjust their money holdings by purchasing or selling non-monetary assets abroad in return for money. This happens when domestic residents have greater excess money holdings than foreigners, or a greater deficiency of money holdings than foreign residents. The above discussion has focused solely on excess or deficient money holdings arising from changes in the domestic and foreign money supplies. But portfolio pressure on the exchange rate can equally well result from changes in domestic and foreign residents' demand for money.

For example, if Canadian residents decide for some reason that they want to hold greater money holdings than before they will attempt to sell non-monetary assets to foreigners. This will create an excess demand for the Canadian dollar on the foreign exchange market as Canadians convert into home currency the foreign currency received from the sale of non-monetary assets abroad. Our dollar will appreciate in the international market. Similarly, if Canadians for some reason decide they want to hold lower money balances, they will attempt to buy non-monetary assets from foreigners and our dollar will depreciate in terms of foreign currency.

Relative demand for money

As was the case for money supply changes, what matters is the relative gap between desired and actual money holdings by Canadians as compared to foreigners. If foreigners try to reduce their money holdings our dollar will appreciate. If they try to hold more money, our dollar will fall in value abroad. An equal increase in desired money holdings on the part of both domestic and foreign residents will have no effect on the exchange rate, though it will lead to changes in world interest rates and eventually income, employment and prices in all countries.

The possibility of portfolio adjustment effects on the exchange rate arising from shifts in domestic and foreign residents' demands for money seriously complicates the interpretation of empirical evidence. The fact that we might observe a greater increase in the stock of money in Canada than abroad does not necessarily mean that we should expect the Canadian dollar to decline in value. It may be that Canadian residents' demand for money increased and the Bank of Canada expanded the money supply to accommodate this increase in demand, forestalling portfolio pressure on the exchange rate. In like manner, the fact that we might observe no excess monetary expansion in Canada relative to the rest of the world does not necessarily mean that an observed fall in our dollar was not due to short-run portfolio pressure. Canadian residents' demand for money balances may have declined, leading to an attempted purchase of non-monetary assets abroad and a decline in the value of our dollar.

B. Expectations

A self-fulfilling prophecy

It is widely believed that the expectation of an imminent depreciation of the Canadian dollar will cause it to depreciate -- i.e., that expectations are self-fulfilling. To consider this proposition, let us suppose that, all of a sudden, the market comes to expect that the Canadian dollar will be devalued over the next three months. There is an obvious way that a speculator can act on this belief. He can sell Canadian dollars forward three months. The speculator enters into a contract to deliver Canadian dollars in three months at a price agreed upon now. If this "forward" price is the same as the current market or "spot" price, the speculator can expect to

make a profit by purchasing the dollars at a lower price when the time comes to deliver them than the price agreed upon under the forward contract.

Naturally, if everyone expects that the Canadian dollar will devalue, everyone is going to try to profit in this way. As a result, the forward price of the Canadian dollar (i.e., the currently agreed upon contract price at which the dollar will be sold in three months) will be bid down until it equals the market or spot price people expect to occur at that time.* Once this has happened, it will no longer pay to sell the Canadian dollar forward. To be sure, one will be able to purchase dollars more cheaply in three months. But the forward price at which we could now agree to sell these dollars three months hence will be lower than the current price by exactly the same amount.

An implication

One interesting implication of this is that we can determine whether people on balance are expecting the Canadian dollar to devalue over the next three months by observing the forward exchange rate. If the Canadian dollar is selling at a forward discount -- i.e., its forward price in foreign currency is below its current market or spot price -- the market on balance expects that it will depreciate over the next three months. If the dollar is selling at a forward premium -- i.e., its forward price exceeds the spot price in foreign currency -- the market is expecting that it will appreciate over the next three months.

A deviation of the forward price of the Canadian dollar from its spot price also has implications for Canadian interest rates. Suppose, for example, that the dollar is trading at a forward discount under circumstances where Canadian and foreign interest rates happen to be the same. This presents investors with a marvelous opportunity. One can sell Canadian securities, transfer the funds abroad, and purchase foreign securities that mature in three months. An equivalent amount of foreign currency can then be sold for Canadian dollars three

* We abstract from risk, insurance, interest costs, for simplicity of exposition.

months forward at the going forward rate. Since interest rates at home and abroad are the same, the investor's interest earnings are not affected by shifting the funds abroad. But the amount of Canadian dollars received from the forward sale of foreign currency will exceed the amount of dollars shifted abroad because the dollar is trading at forward discount. The investor will profit by the difference between the forward and spot rates.

Too many cooks

Of course, everyone will try to do this, and when all investors try to sell Canadian securities they will bid their price down and Canadian interest rates up, relative to foreign rates. This rise in domestic interest rates will reduce the profit from the transaction. The gain from the three month forward sale of foreign currency for Canadian dollars will be offset by the fact that lower interest will be earned during the three months on the funds shifted abroad than would have been earned had the funds been kept at home.

Naturally, the tendency of investors in the aggregate to take advantage of these "arbitrage" opportunities will drive interest rates up in Canada relative to the rest of the world by an amount just equal to the forward discount on our dollar. We can expect, therefore, that when our dollar is at a forward discount our interest rates will tend to be higher relative to foreign interest rates, and when it is at a premium our interest rates will tend to be lower relative to foreign rates.

Opportunity costs

Low interest rates tend to encourage people to hold larger stocks of money balances because the sacrifice in earnings from holding the lower interest yielding monetary assets is smaller. And high interest rates mean a greater differential yield on non-monetary assets, encouraging people to hold less money. Thus, when investors come to expect that the Canadian dollar will devalue over the next three months and it begins trading at a forward discount, Canadian interest rates will be driven up relative to foreign rates. This will cause domestic residents to want to hold reduced money balances.

The resulting attempt to convert money into non-monetary assets by purchasing securities abroad will put downward pressure on the value of the Canadian dollar.

Similarly, when the market expects that the Canadian dollar will appreciate in the future, the dollar begins trading at a forward premium and Canadian interest rates fall relative to interest rates abroad. Canadian residents increase the amount of money they want to hold, selling non-monetary assets abroad and creating upward portfolio pressure on the dollar.

These expectational effects on the exchange rate are really just another example of portfolio pressures resulting from shifts in the demand for money. These pressures result in a complicated way from the effect of exchange rate expectations on the forward value of the dollar and hence on domestic relative to foreign interest rates.

Currency switching

Expectations of future changes in the value of our dollar can also have a direct effect on the demand for money. Consider importers, exporters and currency traders who normally hold inventories of the whole range of currencies in which they do business. They may respond to a belief that the Canadian dollar is going to fall in the near future by reducing the amount of their working balances of Canadian dollars and increasing their inventories of other currencies. They would simply convert Canadian dollars into foreign currency on the foreign exchange market. This, of course, will drive down the international value of the Canadian dollar. Similarly, an expectation that the Canadian dollar is going to appreciate will cause traders to hold a larger fraction of their currency inventories in Canadian dollars and less in foreign currency, with the result that the international value of the Canadian dollar will be bid up.

Does a decline in the dollar cause inflation?

We must again look at the question of whether, as is popularly believed, a decline in the international value of the Canadian dollar causes domestic inflation. And again, the answer is no. Short-run exchange rate adjustments arise from changes in the supply and demand for money balances in the domestic economy as compared to abroad. If a greater excess supply of money arises in the domestic economy than abroad, there will not only be a decline in our dollar but upward pressure on our price level as well. However, both the depreciation and the upward pressure on our price level are caused by the excess

supply of money -- the depreciation is not the fundamental cause of the rise in prices. If a greater excess supply of money arises abroad than in the domestic economy, our dollar will appreciate. This appreciation will offset the rise in the foreign price level that will ultimately occur in response to the excess supply of money abroad. It will, in fact, permit our price level to remain constant in the face of the appreciation of the dollar. We must conclude that the exchange rate plays a supporting role in the economy, adjusting as a consequence of more fundamental economic changes, not causing them.

What accounts for the popular view that a depreciation of our dollar causes domestic inflation? This view arises because of the observed direct effect of exchange rate alterations on the domestic currency prices of export and import goods, whose foreign currency prices are fixed abroad. These observed price changes are real, but they apply only to some of the wide range of prices that make up the general price level. The overall level of prices in the economy must be consistent with the existing demand and supply of money and can only alter when either the supply or demand for money change. Any increase in some prices resulting from a devaluation must therefore be counter-balanced by a decrease in other prices to maintain the overall price index at a level consistent with the existing demand and supply of money. Indeed, it is often a decline in those other prices that causes the declining dollar in the first place.

C. Monetary Policy

A choice

It is obvious from the analysis of this chapter that an important potential determinant of day-to-day and week-to-week movements of the international value of our dollar is the difference between Canadian and foreign monetary policy. Any tendency of the Bank of Canada to create a domestic money supply in excess of that warranted by monetary conditions in the rest of the world will be immediately felt in downward pressure on the dollar in the foreign exchange market. And any tightening of domestic money relative to monetary conditions abroad will almost immediately result in an appreciation of our dollar in foreign markets.

This creates somewhat of a dilemma for domestic monetary policy. When "unwarranted" monetary ease or tightness appears in the rest of the world, the Bank of Canada is faced with a choice. It can create the same degree of monetary ease or tightness in the Canadian economy. If it does, our dollar will remain steady in world currency markets and there will be a duplication in Canada of the cyclical variations in output, employment, and prices in the rest of the world.

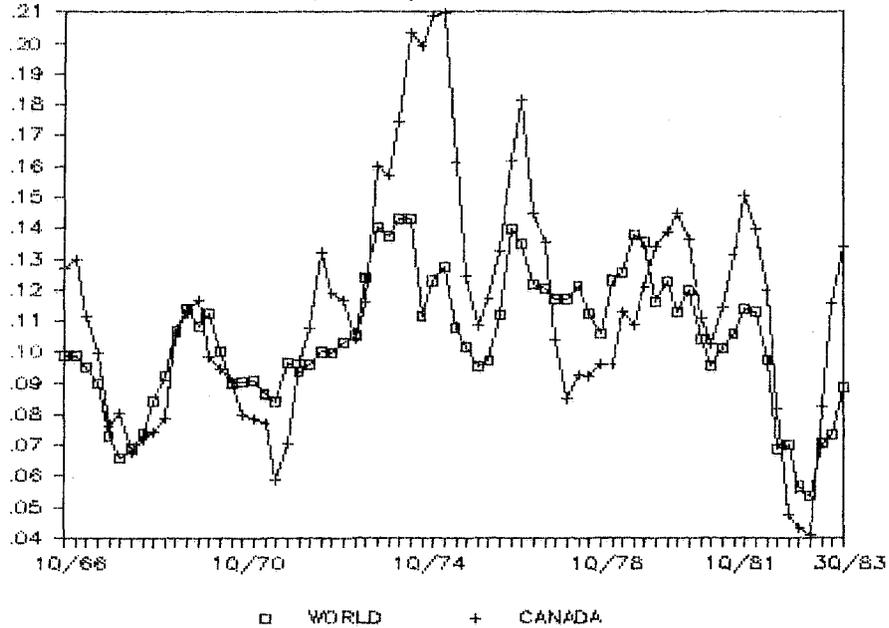
Alternatively, it can pursue an independent policy, creating a stable level of domestic money growth in the face of variable money growth abroad. This will result in an appreciation of the Canadian dollar in response to expansionary credit conditions abroad and a depreciation of our dollar when monetary conditions abroad are contractionary. While these exchange rate movements will lead to pressures on output and employment in the opposite direction to those abroad, it does not necessarily mean that cyclical variations in Canadian output will be avoided. I have suggested elsewhere¹ that a Canadian business cycle inverse to the world business cycle could well be created. In any event, it is not clear that the variability of output in Canada will be reduced over the long run by the pursuit of constant domestic money growth in the face of variable credit conditions abroad. It depends on the structure of the Canadian economy in comparison with the rest of the world.

Acquiescence

It is apparent from Chart 3.1 that the Bank of Canada has traditionally dealt with this problem by following what I call an acquiescent monetary policy -- i.e., by more or less continuously producing the same credit conditions in Canada as exists in the rest of the world. This conclusion follows from these facts: the price level in Canada has varied very little in relation to the price level abroad; and the Canadian dollar, though showing major variations, has been reasonably stable on a year-to-year basis. Moreover, as is clear from an examination of Chart 4.1, the business cycle in Canada has tended to follow roughly the same course as the business cycle in the rest of the world.

Indeed, it is fair to say that, apart from the United States, most countries have traditionally followed acquiescent monetary policies during the past 15 years of generally flexible foreign exchange rates.² The result has been that world

CHART 4.1: NOMINAL INCOME GROWTH
Quarterly: Year to Year



Source: Statistics Canada: Cansim Mini Base .

monetary policy has tended to be dominated by the largest country, the United States.³ Changes in the U.S. money supply and in the demand for money in that country tend to lead to portfolio pressure on the U.S. dollar prices of other countries' currencies. Because of their smaller size, these "peripheral" countries tend to be more concerned about these exchange rate variations than is the United States. The international value of each of the smaller countries' currencies is very sensitive to small differences between domestic monetary conditions and those in the rest of the world. The monetary authority in each of these countries, acting independently, has a tendency to try to mitigate exchange rate fluctuations by creating the same credit conditions at home as exist abroad. As a result, the United States takes on the role of central or key currency country in the international monetary system even when exchange rates are flexible.

Orderly markets

The underlying force which drives central banks to follow acquiescent monetary policies is the desire to maintain "orderly" credit markets. Changes in exchange rates arising from fundamental real forces affecting the demand and supply of domestic goods in world markets occur rather gradually. They do not involve portfolio pressure in the domestic capital market. Any attempt of the monetary authorities to "lean against" these exchange rate alterations will result in portfolio pressure and "disorderly" conditions in the financial markets.

On the other hand, exchange rate changes due to portfolio pressure resulting from a shift in monetary policy in the rest of the world do create "disorder" in domestic financial markets. An attempt of the monetary authorities to lean against these changes will thus have a soothing and stabilizing effect on domestic asset markets. So it is quite natural that a competent central bank which views itself as the custodian of domestic financial stability will tend to engage in an acquiescent response to world financial developments.

Acquiescent monetary policy does not require that the country have the same inflation rate as the rest of the world. Asset markets get adjusted to the normal or expected rate of inflation in a country. A domestic monetary policy which finances that inflation rate and brings about a persistent and orderly depreciation of the currency in proportion to the excess of domestic over world inflation will lead to orderly

capital markets. Disorderly financial markets will result when the domestic authorities do not respond to easy or tight credit conditions abroad with correspondingly easy or tight credit conditions relative to long-term domestic monetary trends. With acquiescent monetary policy, the domestic business cycle will be roughly the same as the world business cycle, but will not necessarily have the same trend rate of inflation as abroad.

D. Government Intervention

"Leaning against" depreciation

We have shown that the authorities can control the exchange rate by varying domestic credit conditions relative to credit conditions abroad. This avenue of control is not always recognized in public policy pronouncements and, in fact, discussions of domestic monetary policy often exclude specific reference to the international value of the currency. On the other hand, policy makers are quick to claim an influence on the exchange rate through the direct purchase or sale of domestic currency in return for foreign currency on the foreign exchange market. Indeed, the Canadian government made substantial sales of U.S. dollars in early and mid-1984 in order to "lean against" the downslide of the Canadian dollar.

What effect does this direct intervention have? At the simplest level it would seem that a sale of foreign for domestic currency would be a sure-fire way of raising the international value of our dollar. The supply of foreign currency and the demand for domestic currency on that market is clearly increased by the government action.

But we must consider how this foreign exchange market intervention is financed. If the sale of foreign currency in return for Canadian dollars is allowed to lead to an equivalent reduction of the domestic money supply, then there must necessarily be an upward effect on the value of our dollar. But such an exchange rate would arise from any reduction in our money supply, no matter how it is brought about. The more important question is whether a sale of foreign currency in return for Canadian dollars would lead to a rise in the world market price of our dollar when the Bank of Canada acts to neutralize any effect of this operation on the domestic money supply.

Neutralization

When the effects on the domestic money supply are neutralized, the Bank of Canada, in effect, buys a quantity of domestic bonds equivalent in value to the foreign currency it is selling on behalf of the government.

There is no doubt that a sale of foreign currency on the international market in return for Canadian dollars will constitute, by itself, an increased demand for our dollar. But a purchase of domestic bonds by the Bank of Canada increases the amount of money in the hands of the domestic public. Portfolio balance requirements will lead the private sector to try to convert these excess money holdings into non-monetary assets, leading to downward portfolio pressure on the Canadian dollar. Since domestic income and wealth have not changed, there is no reason for the amount of money balances Canadians are willing to hold to increase. So the amount of money private residents will want to unload on the international market in return for non-monetary assets will be exactly equal to the amount created by the Bank. This, in turn, will be exactly equal to the amount of Canadian dollars the Bank is purchasing through its direct intervention in the foreign exchange market on the government's behalf.

A nil effect

The net effect of the demand for our dollar on the international market must therefore be zero. The Canadian authorities end up buying domestic bonds from the public in return for Canadian dollars. They then buy these dollars back in return for foreign currency. The public uses the dollars received from the sale of domestic bonds to the Bank of Canada to buy non-monetary assets from foreigners. Where does the public get the foreign currency with which to do this? From the Bank, when the latter sells it on the foreign exchange market for Canadian dollars. The authorities, in turn, acquire this foreign currency abroad by selling short-term foreign currency dominated assets or by incurring non-monetary liabilities to foreigners.

The direct foreign exchange market intervention thus turns out to be a paper shuffling operation. Our net ownership of foreign assets on public account is reduced, and our net ownership of foreign assets on private account is increased -- all by the same amount. The reduction of our holdings of foreign assets on public account is exactly counter-balanced

by an increase in public holdings of domestic bonds. And the increase in our private holdings of foreign assets is exactly offset by a decline in private holdings of domestic bonds. Only through a possible timing effect of these ultimately offsetting transactions could the international value of our dollar change. But such a change would necessarily be temporary, lasting only until the securities and money markets have adjusted. It is reasonable, however, to suppose that these markets adjust very quickly.⁴

Thus, as long as the Bank of Canada manages the domestic money supply independently of the government's direct intervention in the foreign exchange market, there is little reason to believe that such direct intervention will have a significant effect on the international value of the Canadian dollar. And if the Bank allows the foreign exchange operations of the government to affect the money supply, our dollar will be affected in the same way as when the money supply is varied by other means.

INTEREST RATE DIFFERENTIALS AND THE DOLLAR

A Contrast

Little attention has been paid to the role of differentials between domestic and foreign interest rates in determining the dollar's value. Interest differentials were considered in the previous chapter only insofar as they were related to the forward premium or discount on the dollar. This is in contrast with much popular wisdom. The general view of policy makers and analysts of current economic conditions is that high domestic relative to foreign interest rates cause the Canadian dollar to appreciate, while low domestic relative to foreign rates cause it to depreciate. Consider, for example, a recent analysis by the Conference Board of Canada.

...to hold domestic interest rates significantly below U.S. interest rates would necessarily involve a further depreciation of the dollar. In fact, it might be argued that the recent narrow spreads between Canadian and U.S. short-term rates contributed significantly to the sharp depreciation of the dollar this year.¹

Or, as a recent survey in the **Globe and Mail** succinctly put it,

...low interest rates in Canada -- unless they were matched by equally low rates in the United States -- would lead to a fall in the dollar. This mechanism, which has become painfully obvious over the past three years in Canada, is caused when liquid capital flees Canada to seek higher returns south of the border.²

There are two components to this popular view about interest rates and the dollar. First, there is the notion that international movements of capital "respond" to changes in domestic relative to foreign interest rates. And second, there is the view that the Bank of Canada can manipulate domestic interest rates. The first of these propositions is logically inconsistent with the fundamental principles of economics, and the second is, for the most part, inconsistent with the facts.

Capital Flows and Interest Rate Differentials

The idea that capital flows respond to domestic/foreign interest rate differentials is founded on the very reasonable proposition that asset holders will shift their portfolios in the direction of assets yielding a higher return. At any point in time, investors will hold a mix of assets that gives them an appropriate balance between risk and return. Greater returns can be achieved by investing more in higher yielding assets, but this reduces the degree of diversification of the portfolio and therefore involves a greater degree of risk. The actual mix of assets held will depend on the investor's attitude towards risk.

When the interest rates on one or more elements in the portfolio rise, investors will find it worthwhile to shift their portfolios a bit towards the assets whose interest rates have risen, re-establishing an appropriate balance between risk and return. A rise in Canadian interest rates relative to those in the rest of the world will therefore lead world investors to try to shift a portion of their portfolios out of foreign and into domestic assets. It is this tendency of investors to shift towards higher return assets that leads to the view that capital will flow into Canada when domestic interest rates rise relative to foreign rates.

The Fallacy of Composition

There is no doubt that individual asset holders will respond in this way to a rise in Canadian interest rates. And any individual acting alone could clearly sell foreign assets and buy Canadian ones. However, all individuals cannot do this at the same time. When everyone tries to sell foreign assets and buy Canadian ones, they bid down the prices of foreign assets and increase the prices of Canadian ones. Interest rates will thus tend to fall in Canada and rise abroad. This will occur until it is no longer profitable for investors to shift their portfolios in the direction of domestic holdings.

Because Canada is such a small country in relation to the rest of the world, the rise in foreign interest rates will be minimal, and virtually all the adjustment will take the form of a fall in Canadian interest rates. Any tendency of Canadian interest rates to rise above a level consistent with investor's views about the relative attractiveness of Canadian securities, therefore, will bring about an immediate reaction from world

investors. They will try to shift from foreign to Canadian securities, driving Canadian interest rates back to their equilibrium level.

As a result, no actual net movement of capital between the two countries will occur. When individual actions are viewed in the aggregate, domestic/foreign interest rate differentials do not cause international capital movements. On the contrary, it is the attempt of individuals in the aggregate to move capital that causes changes in domestic relative to foreign interest rates. Investors' willingness to hold Canadian as compared to foreign assets is what determines the differential between Canadian and foreign interest rates.

Real and Nominal Interest Rates

The second proposition underlying the current view about interest rate differentials and the dollar is that the Bank of Canada can control Canadian interest rates. According to popular wisdom, the bank forces domestic interest rates up or down by intervening in securities markets, and these interest rate changes induce the capital flow which brings about a change in the external value of the dollar.

Again, the conventional view does not pay adequate attention to the integrated nature of world capital markets. It ignores the fact that asset markets in Canada are but a tiny part of a world-wide market for securities. Before proceeding further, however, it is necessary to devote some attention to the distinction between nominal and real rates of interest.

It is well known that in an inflationary environment, lenders have to charge borrowers rates of interest high enough to compensate for the fact that inflation will erode the dollars with which the loan will be repaid in the future. If the expected rate of inflation is 10 per cent, for example, the real amount of goods that can be purchased with the face value of the loan will be reduced by 10 per cent for every year the loan is outstanding. If the rate of interest charged the borrower is, say, 12 per cent, the real return to the lender and the real cost to the borrower will be only 2 per cent. The remaining 10 percentage points simply compensate for the fact that the dollar in which the face value of the loan is measured will be worth 10 per cent less at the end of the year than at the beginning.

Inflation Premium

The rate of interest actually charged on a loan is called the nominal interest rate. It contains an inflation premium to compensate for the effect of expected future changes in the value of the dollar on the real value of the amount borrowed. The real rate of interest is the nominal interest rate minus the expected rate of inflation. It is the rate of interest that is really paid on the loan.

Nominal interest rates are what we really observe when we look at the published interest rates on government bonds, commercial paper, treasury bills, etc. Real rates of interest are never observed. To figure out what they are, we must subtract the expected rate of inflation from the observed nominal rates. But the expected rate of inflation is a subjective matter. It is what wealth owners "think" the inflation rate is going to be in the future. We can only guess what that might be. We do so on the basis of recent observed inflation rates and government pronouncements about future policy. For example, the interest rates on 90-day prime commercial paper in Canada were in the neighbourhood of 12.5 per cent in mid-1984. The actual inflation rate was around 5 per cent at the time. If people expect the inflation rate to remain constant in the future, then the real interest rate on 90-day commercial paper is 7.5 per cent, 12.5 per cent minus 5 per cent. But if the future inflation rate is expected to be higher than 5 per cent, say 8 per cent, then the real rate of interest is only 4.5 per cent. Nominal interest rates can be high because credit is tight and real interest rates are therefore high. Or they can be high because the expected rate of inflation is high.

While nominal interest rates are what we observe, it is the real rates of interest that are relevant for consumption, saving, and investment decisions. Thus, it is real interest rates that the Bank of Canada must control if it is to influence investment and spending in the Canadian economy.

Can the Bank of Canada Control Domestic Interest Rates?

The popular view is that the Bank of Canada determines interest rates by controlling the tightness of credit -- rates can be reduced, therefore, if the Bank will just ease up and more generously finance the needs of trade.

Suppose that the Bank does this. Say, it buys government bonds in the market and thereby increases the monetary reserves of the chartered banks and the stock of money in the hands of the public. Let's assume for the sake of argument that this has no direct effect on people's expectations about the rate of inflation. As shown in the previous chapter, the infusion of money into the economy causes wealth owners to try to re-balance their portfolios by converting some of it into other assets. This desire to purchase securities (or make loans) leads to an easing of credit conditions. But this pressure on securities markets cannot have much effect on Canadian interest rates, as domestic wealth owners have the option of buying assets abroad rather than accepting lower interest rates on domestic securities. This spillover of domestic monetary expansion onto the world capital market will create an excess supply of the Canadian dollar in international currency markets, and lead to a fall in its value. The increase in the money supply thus leads to a depreciation of the dollar with little if any effect on interest rates in Canada.

Relaxing the Assumption

But we have assumed that the expected rate of inflation is unaffected. This may not be the case. A large segment of the financial community is well aware that excess monetary expansion leads to more inflation. As soon as it becomes known that the money supply is increasing at a faster rate than usual, the expected rate of inflation may well increase. The expansionary policy may thus lead to an increase in observed nominal interest rates rather than a decline as was hoped, with very little or no effect on the real rate of interest.

We could go one step further. The public's expected rate of inflation may rise as soon as the Bank of Canada's expansionary policy is announced, and there may be an immediate upward effect on interest rates before the Bank even gets around to expanding credit.

It is visionary to think that the Bank of Canada can control real interest rates in the way popularly supposed. But there is no doubt that the Bank can control nominal interest rates. It lowers nominal rates in the long run, however, not by expanding credit as the political pressures of the day would have it do, but by contracting it. By reducing the money

supply and contracting credit, the Bank ultimately reduces the inflation rate. Sooner or later this must be reflected in a decline in the expected rate of inflation and in a concomitant reduction in observed nominal interest rates. Similarly, expansionary monetary policy must eventually raise nominal interest rates.

Indirect Method

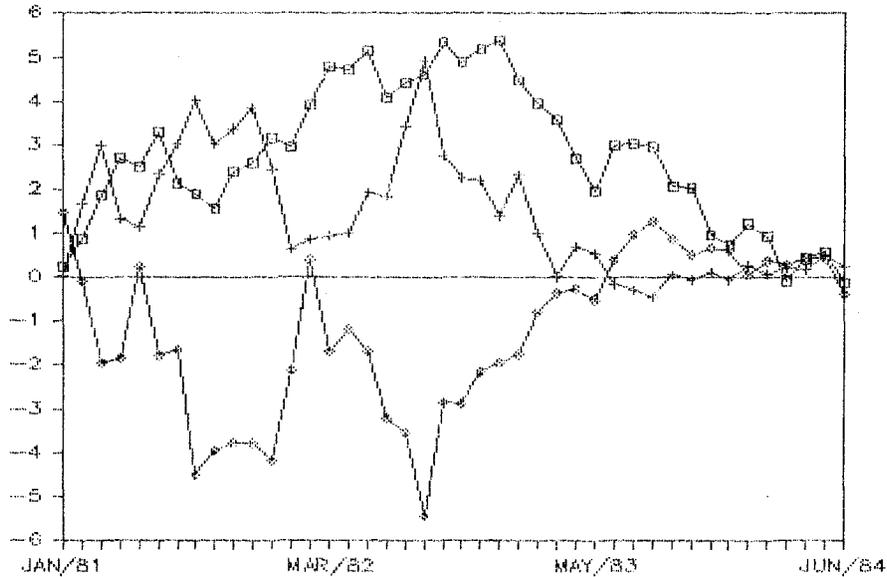
There is an indirect way in which the Bank of Canada can influence real interest rates that we must now consider. Take the case where the Bank expands credit and causes the Canadian dollar to depreciate. If it forces the dollar down below the level at which financial markets think it will eventually settle, investors will start to anticipate a future appreciation. A forward premium will arise as speculators purchase Canadian dollars in futures markets. As demonstrated in the previous chapter, this will cause Canadian interest rates to be bid down in relation to those abroad. (Otherwise a sure profit could be made by switching foreign asset holdings into Canadian funds, covering one's position by buying foreign currency forward to the date of maturity of the newly acquired domestic securities.) This effect on domestic interest rates is sustainable only until the level of prices in the domestic economy adjusts in response to the excess domestic monetary expansion and the Canadian dollar reaches a level consistent with the rise in Canadian relative to foreign prices. It also depends on the presumption that speculators will react in a particular way. But plausible surmise is not a sound basis for public policy.

Finally, we should also note that none of these arguments rule out the possibility that the Bank of Canada could by direct market intervention have a significant effect, for a period of time at least, on interest rates on particular assets or small groups of assets. What is relevant for overall economic policy, however, is not the interest rate on this or that particular asset, but the level of interest rates in general.

Causes of Recent Movements in Canadian Relative to U.S. Interest Rates

Chart 5.1 shows the differential between Canadian and United

CHART 5.1: INTEREST AND INFLATION DIFFERENTIALS
Canada Minus the U.S.



□ Inflation Differential + Interest Differential ◇ Forward Premium of Canadian Dollar

Source: Bank of Canada: **Statistical Summary** and **Weekly Financial Statistics** •

States interest rates over the period 1981 - 1984. It also shows the difference between the inflation rates of the two countries as well as the forward premium on the Canadian dollar in terms of the U.S. dollar. As in Chart 2.3, the interest rate figures are 90-day prime commercial paper rates. Canadian interest rates were well above U.S. interest rates for most of 1981 and 1982, and slightly above the U.S. rates in the early months of 1983. From mid-1983 to mid-1984, there has been little difference in the two countries' interest rates.

A quite strong inverse relationship between the Canada/U.S. interest rate differential and the forward premium on the Canadian dollar is also evident from Chart 5.1. When interest rates were high in Canada relative to the U.S., the Canadian dollar tended to be at a substantial discount. As interest rates in the two countries moved towards equality, the forward discount disappeared. This suggests that to a great degree observed interest rate differentials were the result of expectations about the future course of the exchange rate.

Anticipations

There are two reasons why people might anticipate a depreciation of the Canadian dollar. First, they might expect a higher rate of inflation in Canada than in the United States and correctly realize that a depreciation of the Canadian dollar equal to the difference between the Canadian and U.S. inflation rates will be necessary to maintain the real price of Canadian goods in terms of foreign goods constant. Second, they might anticipate that Canadian goods are going to become cheaper in real terms in world markets. If so, the Canadian dollar will have to depreciate in the future to accommodate these real relative price adjustments in the absence of differences in the Canadian and U.S. inflation rates.

It is apparent from Chart 5.1 that the rise in Canadian relative to U.S. interest rates in the first nine months of 1981 was associated with an increase in inflation in Canada relative to the United States. And the decline in Canadian relative to U.S. interest rates since mid-1983 has been associated with a fall in the Canadian relative to the U.S. inflation rate. In recent months both interest rates and inflation rates have been about the same in the two countries.

How can we account for the fall in our interest rates relative to the U.S. since late 1982, and the rough equality of rates in the two countries in late 1983 and 1984? This can be explained by the equalization of the expected inflation rates in the two countries. It is associated with the downward movement of our inflation rate into line with the inflation rate in the United States.

A Puzzle

But one is puzzled by the following fact. Throughout 1982 and 1983, except for a brief period in the latter half of 1982, interest rates were lower than would be expected in Canada relative to the United States. And this applies to the forward discount on the Canadian dollar as well. Both were lower than would be expected in view of the substantially greater rate of inflation in Canada.

This suggests one of two things. Either the difference in expected inflation rates between Canada and the U.S. was substantially less than the difference in actual inflation rates during this period. Or alternatively, people were anticipating that Canadian goods were going to become relatively more expensive in real terms. If the latter is true, the downward pressure on the dollar due to excess expected inflation was partially offset by upward pressure due to an expected increase in the real price of our goods abroad. This anticipated increase in the real price of our goods in world markets could have resulted from an expectation that Canadian monetary policy was going to be tighter than in the United States, or from an expectation that underlying real forces of technology and demand were going to favour Canadian goods.

In either case, we cannot draw any conclusion from Chart 5.1 about the reasons for the decline in the international value of the Canadian dollar since late 1983, and more particularly, since March of 1984. All that can be said is that it appears from the absence of a significant forward premium or discount that the market was not anticipating a major change in the value of our dollar at the time.

Lowering Domestic Interest Rates by Taxing Domestic Residents' Holdings of Foreign Assets

It has been recently suggested³ that Canadian interest rates should be lowered by imposing a tax on foreign asset holdings of Canadian residents. This would force them to hold Canadian assets instead. The resulting increase in the demand for domestic securities will, it is argued, drive Canadian asset prices up and domestic interest rates down.

But there is a problem with this proposal. It ignores the fact that foreigners hold more assets in Canada than Canadians hold abroad. As well, it fails to take into account the fact that domestic and foreign assets are likely to be very good substitutes in foreigners' portfolios. Faced with the tax, Canadian investors will sell foreign securities and purchase domestic ones. The sale of assets abroad to foreigners will be accomplished with virtually no change in foreign asset prices and interest rates. This is because Canadians hold a trivial proportion of the total stock of foreign assets.

In contrast, the purchase of an equivalent amount of domestic assets from foreigners would be more likely to cause Canadian assets prices to fall and Canadian interest rates to rise. This is due to the fact that a significant fraction of the outstanding stock of Canadian assets will have to change hands. But it would seem that foreign investors would regard foreign assets as very good substitutes for Canadian ones. If so, it would require a very small reduction in Canadian interest rates to induce them to relinquish enough of their holdings to satisfy the demand of Canadian investors. It is difficult to see how a major decline in interest rates in Canada can be brought about by this type of policy. Moreover, any resulting decline in domestic interest rates is obtained by effectively denying Canadian residents the freedom to invest their wealth abroad.

WHAT CAUSED THE RECENT DECLINE?

Demand and Technology

The value of the Canadian dollar in U.S. currency has fallen about 6 per cent between March and July 1984 and nearly 25 per cent between 1977 and mid-1984. In terms of an output-weighted average of the currencies of the 15 major industrial countries, our dollar has fallen about 13 per cent from 1977 to 1984 and perhaps 5 per cent from March to July 1984. The overall 13 per cent decline since 1977 was composed of a fall of well over 20 per cent between 1977 and 1980 followed by a recovery of more than two-thirds of that amount between 1980 and 1983 and a further downturn of over 5 per cent since January 1984.¹

Consider for a moment the more than 20 per cent decline in the international value of our dollar with respect to the average of the other major currencies between 1977 and 1980. It was accompanied by an equal decrease in the real value of Canadian goods in terms of foreign goods, with no increase in our price level relative to the foreign price level. Since this adjustment occurred over a three-year period, it can hardly be ascribed to a temporarily expansive monetary policy. We are left with the conclusion that the fall in the dollar was due to the impact of unspecified real forces of demand and technology that made our goods relatively cheaper in world markets. We know little about these real forces, because no research has yet been done to try to unravel them.

A similar conclusion can be reached about the rather substantial improvement in the value of our dollar in terms of other industrial countries' currencies between 1980 and 1983. This was accompanied by an increase in the real relative price of Canadian goods in terms of foreign goods. The fact that there was a slight increase in the price level in Canada relative to the price level abroad suggests that monetary conditions on average tended if anything to be easier here than in the rest of the world. Since we are again looking at a three year span, there is no basis for attributing the improvement of

the dollar to temporary portfolio pressure resulting from tight money in Canada relative to abroad. The only alternative is to conclude that real forces of demand and technology tended to favour Canadian goods.

When we come to the dramatic decline in the value of the dollar between March and July 1984, we are looking at only a five-month period. The possibility that portfolio pressure from temporarily expansive monetary conditions in Canada relative to abroad could have caused this decline cannot now be ruled out. This holds true if the real relative price of Canadian goods in terms of foreign goods also declined during the period.²

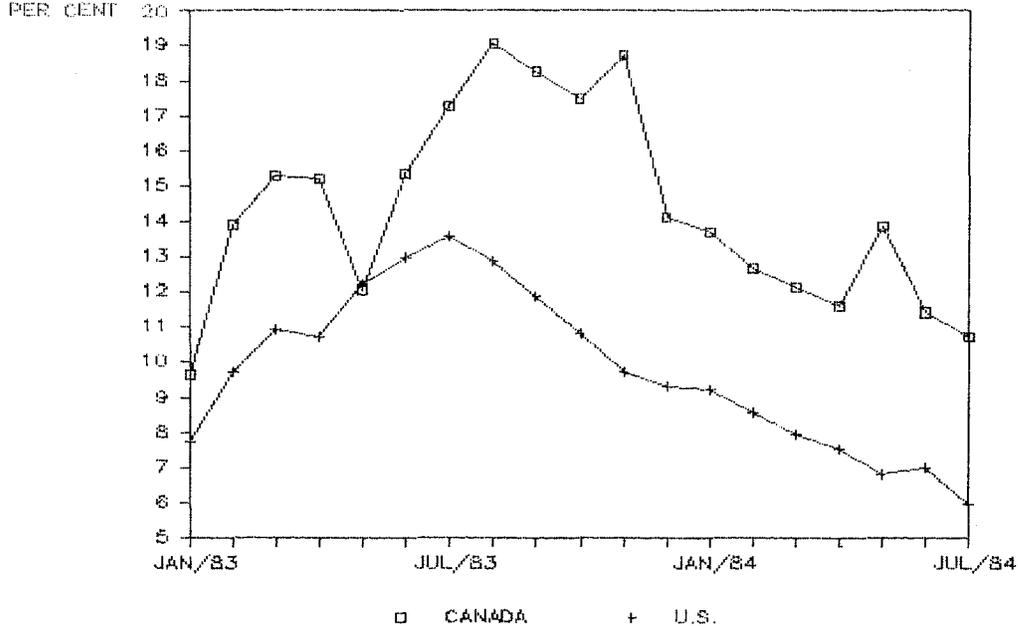
Easier credit conditions?

We must recognize that the real demand for our goods in world markets could well have declined. This could have accounted for the observed fall in the dollar during this five month time period.³ But given the short time period over which the downturn occurred, it is very possible that the observed exchange rate movements could have resulted from easier credit conditions in Canada than abroad.

Chart 6.1 plots the year-over-year changes of the narrowly defined money stocks in Canada and the United States for 1983 and 1984, and Chart 6.2 plots the corresponding figures for broadly defined money. Narrowly defined money consists of currency plus chequable deposits minus items in transit, while broadly defined money equals narrowly defined money plus non-chequable savings and other fixed term and notice deposits.⁴ The quarter-over-quarter percentage growth rates of narrowly defined money in Canada and the United States and various other industrial countries are given in Table 6.1.

Ideally, we would want to compare Canadian monetary growth with monetary growth in the rest of the world. But sufficient data for the other industrial countries are not yet available to permit such a comparison. World monetary growth tends to closely follow U.S. monetary growth in any case, mainly because the United States makes up about one-half of the rest of the world as we define it here. The two charts suggest that the year-over-year rates of monetary growth followed pretty much the same trends in Canada and the United States since the beginning of 1984 except for a

CHART 6.1: MONEY GROWTH: CANADA AND THE U.S.
 Year-Over-Year Percentage Rate of Change: Currency Plus Chequable Deposits*

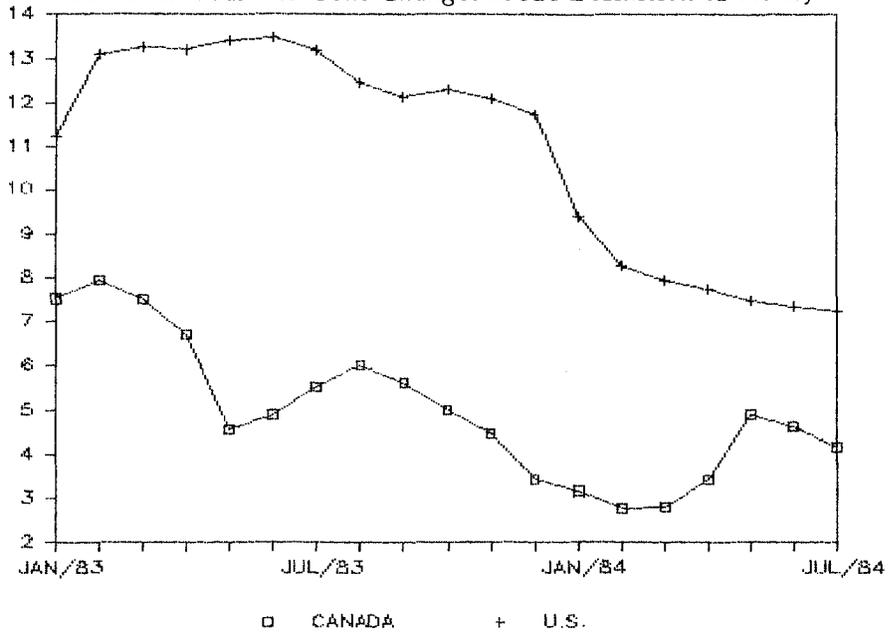


*Minus items in transit.

Source: Bank of Canada, **Weekly Financial Statistics** and Federal Reserve Bank of St. Louis, **International Economic Conditions**.

CHART 6.2: MONEY GROWTH: CANADA AND THE U.S.
 Year-Over-Year Per Cent Change: Broad Definition of Money*

PER CENT CHANGE



*Broad money equals narrow money plus non-chequable savings and other fixed term and notice deposits.
 Source: Ibid.

greater expansion in Canada of narrowly defined money in May and broadly defined money in April and May. The quarter-over-quarter percentage rates of growth in Table 6.1 show a dramatic switch from declining to increasing narrow money growth between the first and second quarters of 1984. But as Chart 6.1 and Chart 6.2 make clear, the main monetary changes occurred in April and May. Since the decline in the Canadian dollar began in March, there is no basis for concluding that these monetary expansions caused it.

Proxy Variables

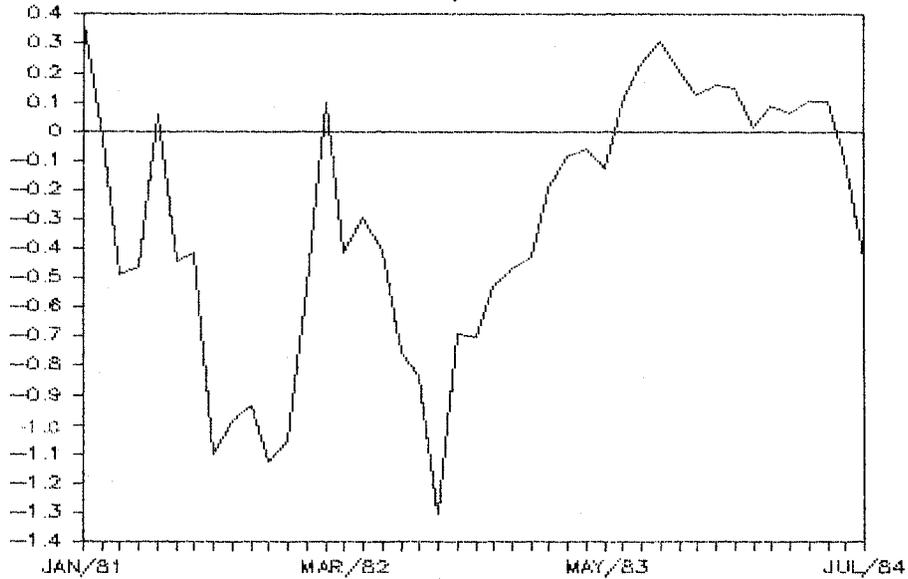
But credit conditions depend on the demand for money as well as the supply. Is it likely that a decline in the demand for money occurred in Canada relative to the rest of the world in the early months of 1984? Since we cannot observe the demand for money directly, we must look for changes in variables that affect it. Two such variables are income and prices. Based on available first quarter 1984 data for Canada and the United States and the scattered figures available for the other major industrial countries (see Table 6.1), real income growth would appear to have been less in Canada than abroad. This would reduce the demand for money in Canada compared to abroad, making monetary conditions more expansionary than would be indicated by the money supply figures alone. On the price side, there exists little basis for concluding that inflation was significantly lower in Canada than abroad, relative to earlier performance. It is thus hard to believe that inflation differences caused any greater reduction in the demand for money in Canada.

There is thus some basis for concluding that the demand for money declined in Canada relative to abroad during early 1984. However, quite a bit of variability in quarter to quarter income growth can be observed for other periods in which no exchange rate movements occurred. The conclusion that the demand for money shifted on account of real income changes is not one in which we can have much confidence.

Speculation

Finally, we must consider the possibility that the decline in the dollar resulted from a speculative run. This might have

CHART 6.3: CANADIAN DOLLAR
Forward Spread in U.S. Cents



Source: Bank of Canada, **Weekly Financial Statistics**.

been based on an anticipation by the market that a future deterioration of the value of the dollar would occur. In this case the depreciation would have resulted from self-fulfilling expectations. These speculative effects, of course, also operate through a reduction in the demand for money in Canada relative to the rest of the world, but one not based on real income or price level changes. If speculative factors of this sort were operating, we would expect asset holders to be selling the Canadian dollar short. In this case Canadian currency would have been at a forward discount during most of 1984. In fact, as Chart 6.3 indicates, the Canadian dollar was selling at a forward premium, albeit a very small one, during the first five months of 1984.

It is pretty clear from the above discussion that not enough evidence is available to permit any certain judgement about the cause of the recent decline in the international value of the Canadian dollar. We can, however, rule out the possibility that it was a speculative blip. Either real forces were at work tending to lower the real price of our goods in terms of foreign goods in world markets, or the Bank of Canada was trying to maintain domestic credit conditions too easy relative to credit conditions abroad -- but we can't say which.

DO WE NEED TO WORRY?

The Wealth of Nations

The ultimate question, of course, is whether recent declines in the value of our dollar present a problem for the Canadian economy. Should we worry about the dollar? Should we be upset if the dollar depreciates another 20 per cent in the next year or so?

Quite clearly, the answer is no! The wealth of a country depends on the amount of real resources it has at its disposal and how efficiently it uses them. High levels of real income and employment and a stable price level are the basic ingredients of domestic prosperity. The international value of the dollar plays no more than a bit part in this drama.

We can expect substantial movements in the international value of the Canadian dollar, up as well as down, under the most favourable economic conditions. Throughout the 1950s and 1960s when economic growth was persistent and prices were stable, the external value of the dollar moved quite dramatically. There was a 15 per cent appreciation in the early 1950s and an equivalent depreciation in the early 1960s, followed by another appreciation in the early 1970s. The period as a whole was one of high employment and price stability when judged by current standards. These movements in the international value of the dollar, as well as the very substantial depreciation between 1972 and 1980, were the result of the on-going real forces of demand and technology. These caused the real prices of goods produced in Canada to change, on average, relative to the real prices of goods produced abroad. We know very little about the nature of these real forces. Clearly, however, exchange rate changes arising from them are nothing to fear.

A Safety Valve

Indeed, had the government not allowed the exchange rate to move substantially from time to time during the past three

decades, we might well have had cause for worry. Our general price level would have had to rise relative to prices abroad by 15 per cent in the early 1950s, fall by 15 per cent in the late 1950s and early 1960s, rise by 8 to 10 per cent in the early 1970s, fall by 20 per cent between 1972 and 1980, and then rise again by 12 or 13 per cent from 1981 to 1983. These are internal price adjustments that we did well to avoid. Successive Canadian governments have shown good judgement in allowing the dollar to float.

Though it has not been a problem in the past, instability of our dollar could arise as a consequence of international monetary instability. Erratic shifts of foreign relative to domestic monetary policy will lead to erratic exchange rate adjustments. Fortunately, however, almost all the industrial countries are too small to transmit incompetent internal monetary management to the rest of the world. As a result, each alone bears the costs of its own mismanagement.

But one country, the United States, is large enough in relation to the rest of the world to create financial externalities. At the present time, the U.S. Federal Reserve essentially runs world monetary policy. Most other countries follow what I call acquiescent policies, creating within their own borders the same credit conditions as exist abroad. Any monetary instability arising in the United States thus has a tendency to spread all over the world.

A Dilemma

A failure of the U.S. Federal Reserve to create stable monetary conditions creates quite a dilemma for other countries. They can acquiesce and follow U.S. policy, in which case their currencies will be stable in relation to the U.S. dollar but their levels of output and employment will vary concomitantly with output and employment in the United States. Or they can adopt stable rates of domestic monetary growth at home and live with a different type of domestic stability: wide swings in their exchange rates resulting from differential credit conditions at home and abroad. These exchange rate adjustments will have their own effects on domestic output and employment, effects which might well lead to greater output and employment variability than would have occurred with an acquiescent domestic monetary policy. It would depend on the structure of the domestic economy, and

on how efficient speculators are in ironing out fluctuations in exchange rates. Almost nothing is known about the consequences of a stable rate of monetary expansion in one small country in the face of variable credit conditions abroad. The reason is that the situation is rarely observed -- the business cycle is usually world-wide.

Catastrophic monetary instability in the United States is not likely in modern times. Rather, substantial year-to-year variation in U.S. and world monetary growth is the norm. The year-over-year rate of world monetary growth is given for both narrowly and broadly defined aggregates in Chart 7.1. The world growth rates are weighted averages of the growth rates of Canada and the 15 other major industrial countries used in constructing indexes referred to earlier. The weights are the shares of the respective countries in world output in 1970. U.S. monetary growth follows much the same pattern as world monetary growth, and is an important influence on it.

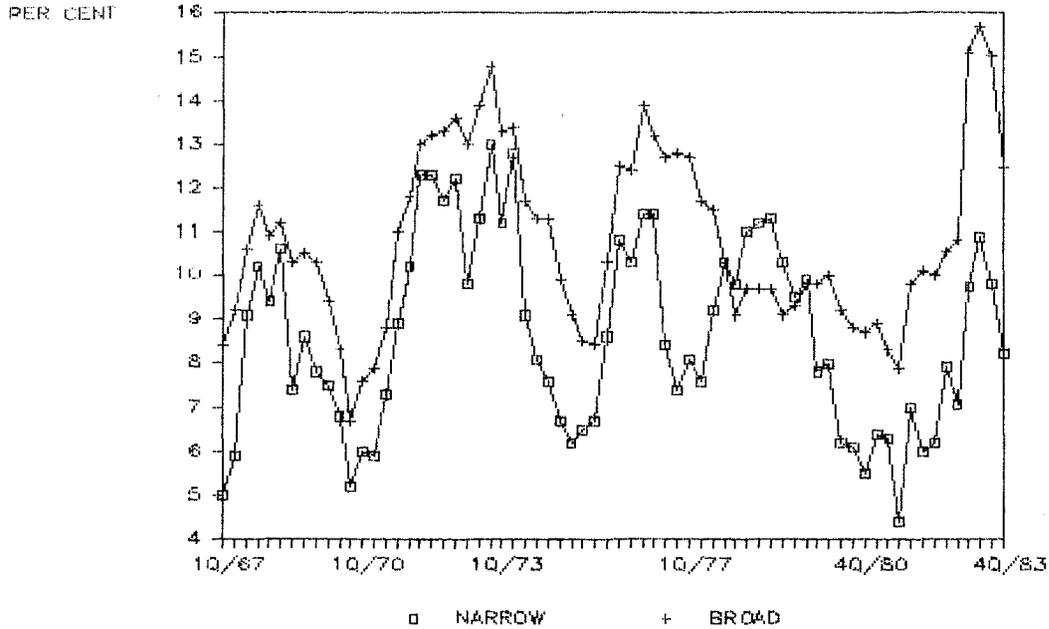
The Business Cycle

The cyclical nature of world monetary growth is evident in Chart 7.1. Peaks occurred in 1967-68, 1971-72, 1976-78, and 1983, with corresponding troughs in 1970, 1974, and 1981. Year-over-year world nominal income growth is shown quarterly in Chart 7.1.¹ The growth rates are weighted averages of the growth rates in the 16 major industrial countries including Canada and the United States, with the weights the same as used in the calculation of world monetary growth. Again, these world figures correspond closely with the U.S. figures.

As can be seen from Chart 7.2, world downturns occurred in 1969-70, 1973-74, 1979-80, and late 1981 and early 1982. Downturns in nominal income growth followed closely behind the corresponding downturns in money growth.

Canadian and world narrowly defined money growth is compared in Chart 7.3, and a corresponding comparison of broad money growth is shown in Chart 7.4. Growth of narrowly defined money in Canada is closely correlated with money growth abroad, although the fluctuations in Canada were of greater amplitude.² Broad money growth in Canada and the world at large are not that highly correlated. In fact, in the years 1981-1983 broad money growth in Canada varied inversely with world broad money growth as well as with Canadian narrow money growth.

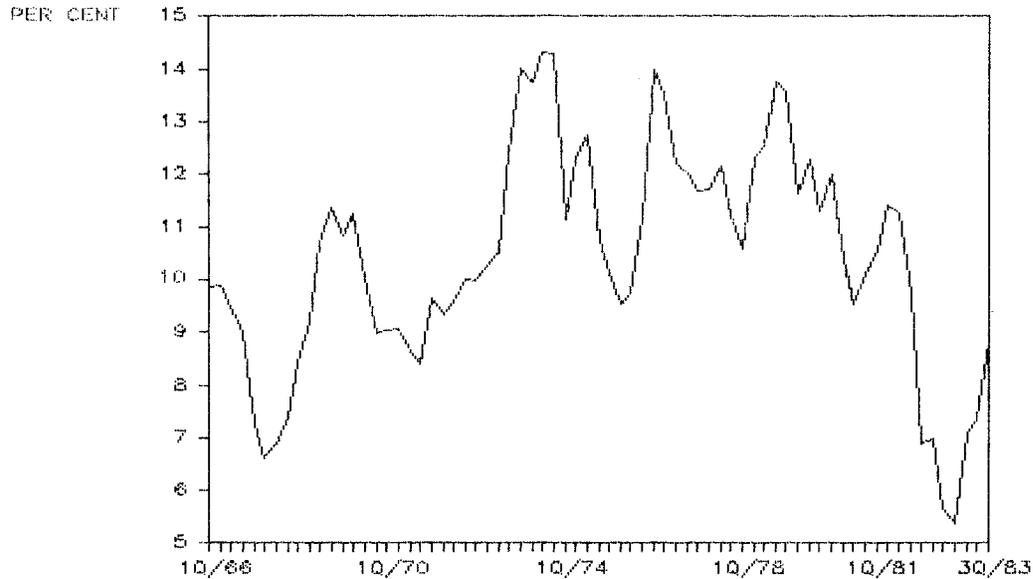
CHART 7.1: YEAR-OVER-YEAR MONEY GROWTH
World: Narrow and Broad Aggregates*



*Currency plus demand, time and fixed term deposits (see sources for details).

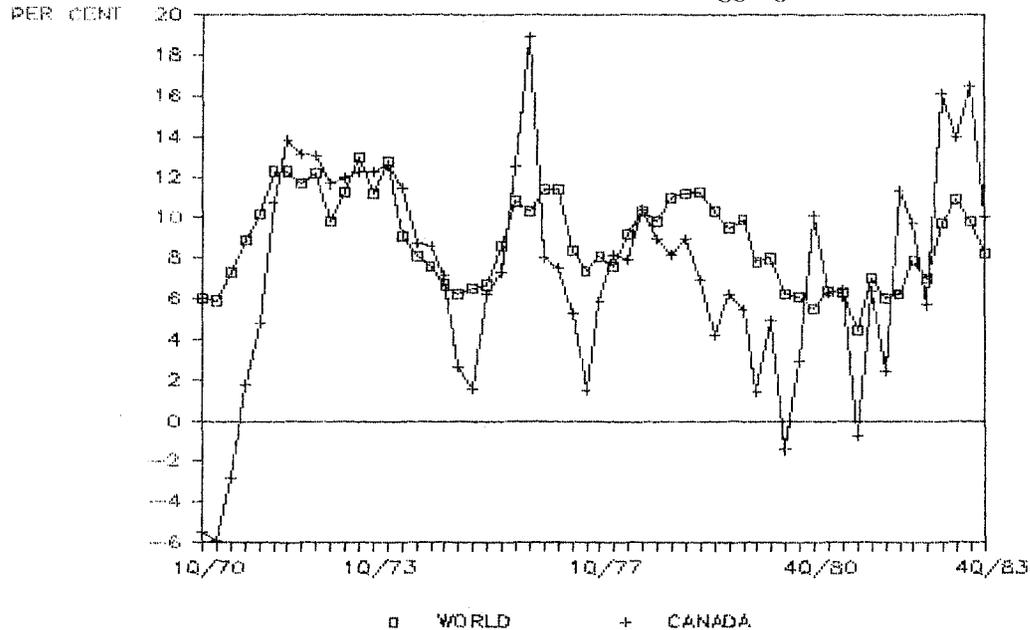
Source: International Monetary Fund, **International Financial Statistics**.

CHART 7.2: WORLD NOMINAL INCOME GROWTH
Quarterly: Year Over Year



Source: International Monetary Fund: **International Financial Statistics**.

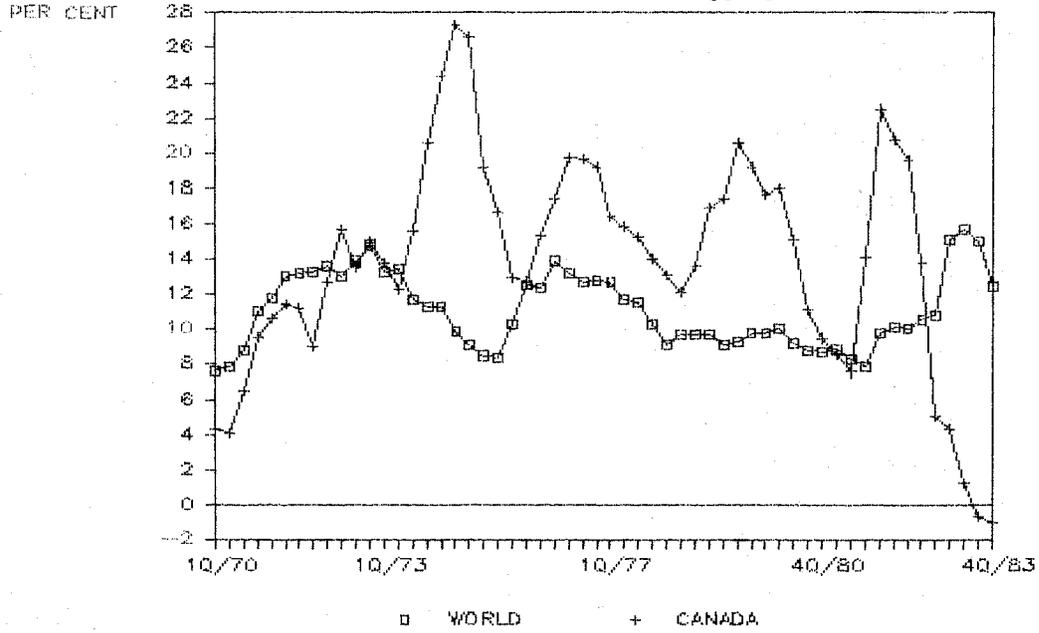
CHART 7.3: YEAR-OVER-YEAR MONEY GROWTH
Canada and World: Narrow Aggregate*



*Currency plus demand deposits less float (see sources for details).

Source: International Monetary Fund, **International Financial Statistics**.

CHART 7.4: YEAR-OVER-YEAR MONEY GROWTH
Canada and World: Broad Aggregate*



*Currency plus demand, time and fixed term deposits (see sources for details).

Source: International Monetary Fund, **International Financial Statistics**.

Behind the Veil

When we look behind the Canadian monetary aggregates, we find that this inverse relationship between the growth rates of narrowly and broadly defined money is the result of switches between demand and time deposits by holders of money in response to changes in the level of interest rates.³ If fixed term deposits are removed from the broad money aggregates, the resulting measure of broad money exhibits the same growth pattern as narrowly defined money during the 1981-1983 period.⁴ Fixed term deposits, which declined during the period, are perhaps the least liquid component of the broadly defined money aggregate. Since the growth rate of an aggregate that does not include them corresponds with the growth rate of narrowly defined money, narrowly defined money growth is probably the more accurate indicator of the state of Canadian monetary policy.

The cyclical variations in economic activity in Canada that have occurred in the past will continue to occur in the future unless the U.S. Federal Reserve's approach to monetary policy changes. These are beyond domestic control unless the Bank of Canada breaks with tradition and charts an independent monetary course. If the Bank were to successfully stabilize the domestic economy independently of fluctuations abroad, we would observe more variability in the international value of the Canadian dollar than has occurred in the past. In this sense, therefore, our problem is not too much variation in the dollar, but too little!

However, we must be careful. The Federal Reserve System in the United States is run by competent people who have as much desire and incentive to stabilize output and employment as do our policy makers in Canada. Because of the limitations of knowledge, the unavoidable frailties of the human spirit, and the internal political pressures upon them, they can't do it. Could the Bank of Canada do better?

In my judgement, it could not. First, there is no reason to expect that, as an institution, the Bank of Canada could pursue the social interest more competently and vigorously than does the U.S. Federal Reserve System. And second, the channels through which monetary policy operates in a small economy embedded in a world-wide capital market are quite different than those through which monetary policy operates in a key currency country like the United States. The latter can act as if the rest of the world does not exist. Monetary

policy in the United States operates on world aggregate demand through its effects on the general level of interest rates. Monetary policy in Canada and other small peripheral economies, to the extent that it diverges from U.S. monetary policy, operates on local aggregate demand through its effects on the international value of the country's currency. Thus, to successfully pursue an independent course in the face of excess monetary expansion in the U.S., a country like Canada must create an independent offsetting contractionary policy operating through the exchange rate. These exchange rate effects on output and employment must exactly offset the interest rate effects of expansionary U.S. policy. Similarly, our authorities must pursue an independent expansionary monetary policy to offset through exchange rate movements the world-wide effects of contractionary monetary policy in the U.S. This is a tall order indeed.

Naive monetarism might suggest that all that the Bank of Canada need do is produce a stable rate of domestic monetary growth. Unfortunately, however, a simple monetary rule like this will not work. When world interest rates rise, the demand for money in Canada will decline, making a constant rate of money supply growth expansionary. When world interest rates decline, our demand for money will increase, making a constant rate of domestic money growth contractionary. The result will be a domestic business cycle inversely correlated with that abroad. Whether we would be better off than we are now is a question that cannot be answered on the basis of existing knowledge.

CHAPTER 1

- 1 Luncheon address by Gerald K. Bouey, Governor of the Bank of Canada on the occasion of a Meeting of the Board of Governors of the Bank of Canada in Charlottetown, Prince Edward Island, June 26, 1984.

CHAPTER 2

- 1 The chart gives the percentage change in the consumer price index in each month over the same month of the previous year.
- 2 The figures on which the chart is based are seasonally adjusted.

CHAPTER 3

- 1 The index constructed in the text includes the 15 major industrial countries with which Canada trades. These are Austria, Australia, Belgium, Denmark, France, West Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States.
- 2 We use the relative shares in the 1963-1966 period because it is the most recent four-year period in which exchange rates and prices were relatively stable.
- 3 It would, of course, be better to use the GNP deflators rather than consumer price indexes, but these were not readily available for a sufficient number of countries.
- 4 The countries used and the weights in the rest of the world's index are the same as those used in calculating the real world price of domestic output.

- 5 This weighted average exchange rate differs from what is frequently called the "effective exchange rate" in that calculations of the latter usually weight the individual countries' exchange rates by some measure of the shares of the respective countries in total Canadian trade.
- 6 See Chapter 1, footnote 1.

CHAPTER 4

- 1 See J.E. Floyd, **World Monetary Equilibrium: International Monetary Theory in a Historical-Institutional Context**, London: Philip Allan, 1984 (Forthcoming).
- 2 See Floyd, ibid.
- 3 The U.S. produces about 50 per cent of the total output of the world's major industrial countries.
- 4 An important implication of the above argument is that sales of U.S. dollars on the foreign exchange market by the Canadian government do not involve a reduction of Canadian wealth as the popular press would have us believe. Any reduction in government assets is exactly counter-balanced by an equal increase in privately held assets.

CHAPTER 5

- 1 **Executive Summary: Quarterly Canadian Forecast**, The Conference Board of Canada, July 1984.
- 2 Article by Thomas Walkom, **Globe and Mail**, August 27, 1984.
- 3 Professor Bruce Wilkinson, Commentary on CBC Radio, August 28, 1984.

CHAPTER 6

- 1 This discussion is based on Chart 2.2. and Chart 3.1.

- 2 We could not, of course, relate what happened to this real price ratio because sufficient data were not yet available as of the date of this writing.
- 3 One would be surprised to find that sufficient improvements in technology occurred in Canada relative to the rest of the world to lower the average relative price of our goods in terms of foreign goods by as much as 5 per cent in the short space of five months.
- 4 For precise definitions, see Bank of Canada, **Statistical Summary**, and Board of Governors of the Federal Reserve System, **Federal Reserve Bulletin**.

CHAPTER 7

- 1 The close correspondence between Canadian and world nominal income growth is shown in Chart 4.1.
- 2 This is, of course, not inconsistent with acquiescent monetary policy. It just means that the demand for money in Canada varies more widely over the business cycle than the demand for money abroad.
- 3 See J.E. Floyd, "Split Reserve Requirements and Monetary Control in Canada," unpublished manuscript, University of Toronto, 1982.
- 4 Between January 1982 and June 1983, the year-over-year growth of broadly defined money fell from 19.6 per cent to 4.19 per cent. When fixed term deposits are removed, the year-over-year growth rate of the resulting broad money aggregate increased from 9.25 per cent to 10.2 per cent over the period in question.

APPENDIX A: DATA FOR CHARTS 2.1, 5.1 AND 6.3

**U.S. DOLLAR PRICE OF CANADIAN DOLLAR,
FORWARD SPREAD IN U.S. CENTS,
AND FORWARD PREMIUM ON CANADIAN DOLLAR ***

		Spot Rate US \$ Per <u>Can \$</u>	Forward Spread, <u>US Cents</u>	Forward Premium <u>on Can \$</u>
1981	January	0.8398	0.3691	1.463
	February	0.8342	-0.0240	-0.097
	March	0.8395	-0.4884	-1.940
	April	0.8398	-0.4644	-1.843
	May	0.8327	0.0600	0.240
	June	0.8306	-0.4455	-1.787
	July	0.8254	-0.4119	-1.663
	August	0.8177	-1.1007	-4.487
	September	0.8328	-0.9846	-3.940
	October	0.8314	-0.9382	-3.760
	November	0.8422	-1.1280	-3.780
	December	0.8438	-1.0547	-4.167
1982	January	0.8435	-0.5335	-2.107
	February	0.8237	0.0971	0.393
	March	0.8194	-0.4149	-1.687
	April	0.8165	-0.2940	-1.200
	May	0.8104	-0.4072	-1.673
	June	0.7841	-0.7524	-3.200
	July	0.7875	-0.8381	-3.533
	August	0.8031	-1.3074	-5.433
	September	0.8099	-0.6914	-2.847
	October	0.8131	-0.7010	-2.873
	November	0.8155	-0.5273	-2.153
	December	0.8076	-0.4705	-1.943
1983	January	0.8141	-0.4299	-1.760
	February	0.8148	-0.1964	-0.803
	March	0.8155	-0.0858	-0.350
	April	0.8116	-0.0616	-0.253
	May	0.8138	-0.1229	-0.503
	June	0.8116	0.0986	0.403
	July	0.8114	0.2342	0.963
	August	0.8106	0.3084	1.267
	September	0.8114	0.2095	0.860
	October	0.8118	0.1232	0.507
	November	0.8086	0.1608	0.663
	December	0.8020	0.1496	0.623
1984	January	0.8011	0.0125	0.053
	February	0.8013	0.0874	0.363
	March	0.7874	0.0635	0.270
	April	0.7816	0.1024	0.437
	May	0.7726	0.1035	0.447
	June	0.7670	-0.0913	-0.397
	July	0.7553	-0.4369	

* Data is multiplied by 100 to conform to scaling requirements of Chart 5.1.

APPENDIX B: DATA FOR CHART 2.2
VALUE OF DOLLAR IN OTHER CURRENCIES

INDEX JANUARY 1983 = 100

		<u>US \$</u>	<u>POUND</u>	<u>FRANC</u>	<u>MARK</u>	<u>YEN</u>
1983	January	100.00	100.00	100.00	100.00	100.00
	February	100.09	102.78	101.62	101.64	101.46
	March	100.18	105.79	103.72	101.06	102.56
	April	99.69	103.38	107.72	101.82	101.81
	May	99.97	99.87	109.54	103.25	100.90
	June	99.69	101.32	112.81	106.35	102.86
	July	99.68	102.67	114.66	108.14	103.04
	August	99.58	104.27	118.25	111.42	104.60
	September	99.68	104.63	118.56	111.27	103.77
	October	99.72	104.79	117.11	108.64	99.79
	November	99.33	105.84	119.74	111.64	100.34
	December	98.52	108.07	121.91	113.38	99.25
1984	January	98.41	109.96	124.85	115.76	98.89
	February	98.43	107.47	120.69	111.18	98.82
	March	96.72	104.51	114.23	105.11	93.62
	April	96.01	106.27	115.32	106.33	92.93
	May	94.91	107.49	118.25	109.15	93.98
	June	94.22	107.64	117.11	108.03	94.56
	July	92.78	110.62	119.82	110.68	97.78

APPENDIX C: DATA FOR CHARTS 2.3 AND 5.1

PRIME 90-DAY COMMERCIAL PAPER RATES
CANADA AND THE UNITED STATES

		<u>Canada</u>	<u>U.S.</u>	<u>Differential Canada Minus United States</u>
1981	January	17.25	17.20	0.05
	February	17.15	15.49	1.66
	March	17.00	13.99	3.01
	April	17.50	16.15	1.35
	May	19.00	17.86	1.14
	June	19.20	16.88	2.32
	July	21.25	18.21	3.04
	August	22.20	18.16	4.04
	September	19.60	16.58	3.02
	October	18.80	15.42	3.38
	November	15.40	11.56	3.84
	December	15.65	13.20	2.45
1982	January	14.90	14.27	0.63
	February	15.00	14.13	0.87
	March	16.15	15.20	0.95
	April	15.50	14.49	1.01
	May	15.60	13.68	1.92
	June	17.05	15.22	1.83
	July	15.65	12.22	3.43
	August	14.20	9.29	4.91
	September	13.10	10.33	2.77
	October	11.45	9.19	2.26
	November	10.95	8.76	2.19
	December	10.25	8.84	1.41
1983	January	10.85	8.52	2.33
	February	9.50	8.48	1.02
	March	9.30	9.27	0.03
	April	9.30	8.60	0.70
	May	9.35	8.81	0.54
	June	9.30	9.44	-0.14
	July	9.35	9.63	-0.28
	August	9.35	9.81	-0.46
	September	9.30	9.22	0.08
	October	9.30	9.35	-0.05
	November	9.50	9.40	0.10
	December	9.85	9.90	-0.05
1984	January	9.80	9.53	0.27
	February	9.85	9.78	0.07
	March	10.60	10.39	0.21
	April	10.75	10.59	0.16
	May	11.50	11.00	0.50
	June	11.78	11.52	0.26
	July	12.91	11.71	1.21

APPENDIX D: DATA FOR CHARTS 2.4 AND 5.1

CANADA AND U.S. INFLATION RATES:
YEAR OVER YEAR PERCENTAGE CHANGE OF CPI

		<u>Canada</u>	<u>U.S.</u>	Differential Canada Minus <u>U.S.</u>
1981	January	11.953	11.707	0.246
	February	12.207	11.337	0.870
	March	12.427	10.550	1.877
	April	12.702	10.021	2.681
	May	12.329	9.841	2.488
	June	12.867	9.572	3.295
	July	12.878	10.734	2.143
	August	12.764	10.866	1.898
	September	12.541	10.965	1.576
	October	12.650	10.240	2.410
	November	12.164	9.563	2.601
	December	12.099	8.940	3.159
1982	January	11.416	8.445	2.971
	February	11.611	7.675	3.936
	March	11.570	6.790	4.780
	April	11.270	6.559	4.711
	May	11.890	6.729	5.162
	June	11.200	7.114	4.086
	July	10.913	6.487	4.426
	August	10.531	5.895	4.636
	September	10.362	5.013	5.349
	October	9.971	5.073	4.898
	November	9.789	4.596	5.193
	December	9.265	3.872	5.392
1983	January	8.254	3.752	4.502
	February	7.404	3.458	3.946
	March	7.222	3.638	3.584
	April	6.630	3.940	2.690
	May	5.450	3.483	1.966
	June	5.576	2.581	2.995
	July	5.456	2.430	3.026
	August	5.521	2.561	2.959
	September	4.960	2.898	2.062
	October	4.930	2.890	2.039
	November	4.196	3.236	0.960
	December	4.545	3.796	0.749
1984	January	5.346	4.128	1.218
	February	5.497	4.570	0.927
	March	4.663	4.738	-0.074
	April	4.922	4.501	0.421
	May	4.823	4.241	0.582
	June	4.089	4.227	-0.138

APPENDIX E: DATA FOR CHART 2.5

PER CENT OF LABOUR FORCE UNEMPLOYED:
 CANADA AND THE UNITED STATES
 (Seasonally Adjusted)

		<u>Canada</u>	<u>U.S.</u>
1981	January	7.3	7.4
	February	7.2	7.3
	March	7.4	7.2
	April	7.0	7.1
	May	7.2	7.3
	June	7.2	7.3
	July	7.2	7.2
	August	6.8	7.3
	September	8.1	7.5
	October	8.1	7.8
	November	8.2	8.1
	December	8.6	8.4
1982	January	8.5	8.5
	February	8.8	8.7
	March	9.3	8.9
	April	9.9	9.2
	May	10.4	9.2
	June	11.1	9.4
	July	11.9	9.7
	August	12.2	9.7
	September	12.4	10.0
	October	12.8	10.3
	November	12.7	10.6
	December	12.8	10.6
1983	January	12.4	10.3
	February	12.5	10.2
	March	12.5	10.2
	April	12.4	10.1
	May	12.3	9.9
	June	12.1	9.8
	July	11.9	9.3
	August	11.6	9.3
	September	11.3	9.1
	October	11.2	8.7
	November	11.1	8.3
	December	11.1	8.1
1984	January	11.2	7.9
	February	11.3	7.7
	March	11.4	7.7
	April	11.4	7.7
	May	11.7	7.4
	June	11.2	7.0
	July	11.0	7.4

APPENDIX F: DATA FOR CHARTS 3.1, 3.2, and 3.3

REAL AND NOMINAL RELATIVE PRICES AND VALUE OF DOMESTIC CURRENCY:
CANADA VS. REST OF THE WORLD, UNITED STATES VS. REST OF THE WORLD
AND CANADA VS. UNITED STATES

INDEX 1963 - 1966 = 100

	<u>Canada Vs. Rest of the World</u>			<u>U.S. Vs. Rest of the World</u>			<u>Canada Vs. U.S.</u>		
	Real Exchange Rate	Ratio of Nominal Price Levels	Implicit Inter-national Value of Domestic Currency	Real Exchange Rate	Ratio of Nominal Price Levels	Implicit Inter-national Value of Domestic Currency	Real Exchange Rate	Ratio of Nominal Price Levels	U.S. Price of Can \$
1948	108	118	92	118	180	66	100	93	108
1949	101	104	97	104	126	82	99	94	105
1950	105	108	89	119	125	96	97	98	99
1951	109	109	101	114	120	95	103	100	103
1952	116	108	108	110	116	94	111	100	110
1953	114	106	108	110	117	95	108	98	110
1954	115	105	109	109	115	95	110	99	111
1955	113	105	107	107	113	95	109	99	110
1956	112	104	108	106	111	95	109	99	110
1957	116	104	111	108	113	95	111	99	113
1958	115	104	111	109	111	97	110	99	111
1959	118	104	113	111	111	100	112	99	113

1960	116	103	112	110	110	100	110	99	111
1961	109	103	107	108	108	100	105	99	107
1962	102	101	101	106	106	100	100	99	101
1963	100	100	100	103	103	100	99	99	100
1964	100	100	100	101	101	100	100	100	100
1965	100	100	100	99	99	100	100	100	100
1966	100	100	100	98	98	100	101	101	100
1967	101	101	100	98	97	100	102	102	100
1968	102	101	101	101	98	103	102	102	100
1969	102	100	102	103	99	103	101	101	100
1970	103	98	105	103	100	103	102	98	103
1971	103	96	108	99	98	100	104	97	107
1972	102	96	106	89	96	93	108	98	109
1973	96	96	99	79	94	85	108	100	108
1974	98	95	103	79	91	87	110	100	110
1975	93	95	98	75	88	86	107	101	106
1976	100	94	106	78	84	94	113	103	110
1977	91	93	98	75	81	93	106	104	102
1978	81	95	86	68	81	84	100	106	95
1979	77	94	82	67	82	81	95	104	92
1980	75	91	82	68	83	82	93	100	92
1981	82	92	88	80	82	97	92	102	90
1982	88	95	92	88	79	111	94	107	88
1983	92	95	97	93	76	121	96	110	88

APPENDIX G: DATA FOR CHARTS 4.1 and 7.2

YEAR-OVER-YEAR RELATIVE RATE OF
NOMINAL INCOME GROWTH,
CANADA AND THE WORLD

		<u>CANADA</u>	<u>WORLD</u>
1966	Q 1	12.7	9.9
	Q 2	13.0	9.9
	Q 3	11.1	9.5
	Q 4	10.0	9.0
1967	Q 1	7.6	7.3
	Q 2	8.0	6.6
	Q 3	6.8	6.9
	Q 4	7.2	7.4
1968	Q 1	7.4	8.4
	Q 2	7.9	9.2
	Q 3	10.5	10.7
	Q 4	11.3	11.4
1969	Q 1	11.7	10.8
	Q 2	9.8	11.2
	Q 3	9.4	10.0
	Q 4	9.0	9.0
1970	Q 1	8.0	9.0
	Q 2	7.9	9.1
	Q 3	7.7	8.6
	Q 4	5.9	8.4
1971	Q 1	7.1	9.6
	Q 2	9.8	9.3
	Q 3	10.8	9.6
	Q 4	13.2	10.0
1972	Q 1	11.9	10.0
	Q 2	11.7	10.3
	Q 3	10.5	10.5
	Q 4	11.6	12.4

1973	Q 1	16.0	14.0
	Q 2	15.7	13.7
	Q 3	17.5	14.3
	Q 4	20.3	14.3
1974	Q 1	19.9	11.1
	Q 2	20.9	12.3
	Q 3	21.0	12.8
	Q 4	16.1	10.7
1975	Q 1	12.4	10.2
	Q 2	10.9	9.5
	Q 3	11.7	9.7
	Q 4	13.3	11.2
1976	Q1	16.2	14.0
	Q2	18.2	13.5
	Q3	14.5	12.2
	Q4	13.5	12.0
1977	Q1	10.4	11.7
	Q2	8.5	11.7
	Q3	9.3	12.2
	Q4	9.2	11.2
1978	Q1	9.6	10.6
	Q2	9.6	12.3
	Q3	11.3	12.5
	Q4	10.8	13.8
1979	Q1	12.1	13.6
	Q2	13.4	11.6
	Q3	13.9	12.3
	Q4	14.5	11.3

APPENDIX H: DATA FOR CHARTS 6.1 and 6.2

YEAR-OVER-YEAR MONEY GROWTH:
CANADA AND THE UNITED STATES

		<u>CANADA</u>		<u>UNITED STATES</u>	
		<u>Narrow</u>	<u>Broad</u>	<u>Narrow</u>	<u>Broad</u>
		<u>Aggregate</u>	<u>Aggregate</u>	<u>Aggregate</u>	<u>Aggregate</u>
1983	January	9.6	7.5	7.7	11.2
	February	13.9	7.9	9.7	13.1
	March	15.3	7.5	10.9	13.3
	April	15.2	6.7	10.7	13.2
	May	12.1	4.6	12.2	13.4
	June	15.3	4.9	13.0	13.5
	July	17.3	5.5	13.6	13.2
	August	19.1	6.0	12.9	12.5
	September	18.3	5.6	11.9	12.1
	October	17.5	5.0	10.8	12.3
	November	18.7	4.5	9.7	12.1
	December	14.1	3.4	9.3	11.7
1984	January	13.7	3.2	9.2	9.4
	February	12.7	2.8	8.6	8.3
	March	12.2	2.8	8.0	8.0
	April	11.6	3.4	7.5	7.8
	May	13.9	4.9	6.8	7.5
	June	11.4	4.6	7.0	7.3
	July	10.7	4.2	6.0	7.2

APPENDIX I: DATA FOR CHARTS 7.1, 7.3, and 7.4

YEAR-OVER-YEAR MONEY GROWTH
CANADA AND THE WORLD

		CANADA		WORLD	
		<u>Narrow Aggregate</u>	<u>Broad Aggregate</u>	<u>Narrow Aggregate</u>	<u>Broad Aggregate</u>
1966	Q1			8.2	10.4
	Q2			7.5	10.2
	Q3			6.1	9.2
	Q4			5.0	8.1
1967	Q1			5.0	8.4
	Q2			5.9	9.2
	Q3			9.1	10.6
	Q4			10.2	11.6
1968	Q1			9.4	10.9
	Q2			10.6	11.2
	Q3			7.4	10.3
	Q4			8.6	10.5
1969	Q1			7.8	10.3
	Q2			7.5	9.4
	Q3			6.8	8.3
	Q4			5.2	6.7
1970	Q1	-5.5	4.3	6.0	7.6
	Q2	-5.9	4.0	5.9	7.9
	Q3	-2.8	6.4	7.3	8.8
	Q4	1.8	9.6	8.9	11.0
1971	Q1	4.8	10.6	10.2	11.8
	Q2	10.7	11.5	12.3	13.0
	Q3	13.9	11.2	12.3	13.2
	Q4	13.1	9.1	11.7	13.3
1972	Q1	13.1	12.7	12.2	13.6
	Q2	11.7	15.7	9.8	13.0
	Q3	12.0	13.6	11.3	13.9
	Q4	12.3	15.0	13.0	14.8
1973	Q1	12.2	13.7	11.2	13.3
	Q2	12.6	12.3	12.8	13.4
	Q3	11.5	15.6	9.1	11.7
	Q4	8.8	20.6	8.1	11.3
1974	Q1	8.6	24.4	7.6	11.3
	Q2	7.2	27.3	6.7	9.9
	Q3	2.7	26.7	6.2	9.1
	Q4	1.5	19.2	6.5	8.5

1975	Q1	6.2	16.7	6.7	8.4
	Q2	7.3	13.0	8.6	10.3
	Q3	12.5	12.7	10.8	12.5
	Q4	19.0	15.4	10.3	12.4
1976	Q1	8.0	17.5	11.4	13.9
	Q2	7.5	19.8	11.4	13.2
	Q3	5.3	19.7	8.4	12.7
	Q4	1.5	19.2	7.4	12.8
1977	Q1	5.9	16.5	8.1	12.7
	Q2	8.2	15.8	7.6	11.7
	Q3	7.9	15.3	9.2	11.5
	Q4	10.4	14.0	10.3	10.3
1978	Q1	8.9	13.1	9.8	9.1
	Q2	8.1	12.1	11.0	9.7
	Q3	8.9	13.6	11.2	9.7
	Q4	6.9	16.9	11.3	9.7
1979	Q1	4.2	17.4	10.3	9.1
	Q2	6.2	20.5	9.5	9.3
	Q3	5.5	19.2	9.9	9.8
	Q4	1.4	17.7	7.8	9.8
1980	Q1	4.9	18.0	8.0	10.0
	Q2	-1.4	15.1	6.2	9.2
	Q3	2.9	11.1	6.1	8.8
	Q4	10.1	9.5	5.5	8.7
1981	Q1	6.3	8.5	6.4	8.9
	Q2	6.4	7.6	6.3	8.3
	Q3	-0.7	14.1	4.4	7.9
	Q4	6.4	22.5	7.0	9.8
1982	Q1	2.4	20.7	6.0	10.1
	Q2	11.3	19.6	6.2	10.0
	Q3	9.7	13.7	7.9	10.6
	Q4	5.8	5.1	7.0	10.8
1983	Q1	16.1	4.3	9.7	15.1
	Q2	14.0	1.3	10.9	15.7
	Q3	16.5	-0.7	9.8	15.0
	Q4	10.0	1.0	8.2	12.5