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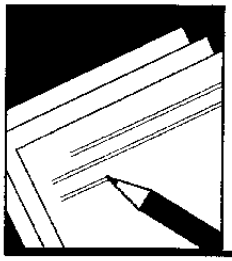

IMF Policy Discussion Paper

Economic Integration and the Exchange Rate Regime: Some Lessons from Canada

Vivek Arora and Olivier Jeanne

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Economic Integration and the Exchange Rate Regime: Some Lessons from Canada

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Abstract

The Canadian experience with a floating exchange rate regime can shed some light on the question of whether growing economic integration among groups of countries makes a fixed exchange rate, or even a common currency, more desirable. The Canadian experience, especially since the inception of the 1989 U.S.-Canada Free Trade Agreement, suggests that exchange rate flexibility has not prevented economic integration between Canada and the United States from increasing substantially, and has played a useful role in buffering the Canadian economy against asymmetric external shocks. A fixed exchange rate thus does not seem to be a prerequisite for economic integration. It may, however, have benefits for some countries that lack monetary credibility.

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I. Introduction

A question of current interest in many parts of the world is whether with growing economic integration among groups of countries a fixed exchange rate, or even a common currency, becomes more desirable. Canadian experience since the inception of the 1989 U.S.-Canada Free Trade Agreement can shed some light on this question. In spite of exchange rate fluctuations, economic integration between Canada and the United States increased substantially during the 1990s. At the same time, the evidence indicates that exchange rate flexibility has played a useful role in buffering the Canadian economy against the asymmetric economic shocks the economy has experienced vis-à-vis the United States. In sum, the Canadian experience thus far does not suggest that a fixed exchange rate is a necessary feature of economic integration, although a deepening of economic integration could over time change the nature of the tradeoffs between fixed and floating exchange rates.

II. Exchange Rate Volatility and Canada-U.S. Economic Integration

Exchange rate flexibility does not appear to have significantly impeded economic integration between Canada and the United States. Canada's trade regime is very open, with over 90 percent of imports entering duty free and an average trade-weighted tariff rate of 0.9 percent (see World Trade Organization (2000)). Trade with the United States is essentially duty free, with only imports of a few supply-managed agri-food products being restricted. The degree of Canada-U.S. integration is most evident in Canada's international transactions data. In 1999, Canada's external trade in goods and nonfactor services with the United States was equivalent to 65 percent of Canadian GDP (or 79 percent of total Canadian

trade), up from 36 percent of GDP (or 70 percent of total trade) in 1989.[2] By contrast, the share of intra-regional trade in GDP among European Union countries remained at roughly 30 percent during the decade (Table 1).[3] Nevertheless, "home bias" in consumption (a preference for domestically produced goods) remains substantial in Canada. Estimates indicate that trade between two Canadian provinces is anywhere from 2½ times (Wei (1998)) to 20 times (McCallum (1996)) as large as trade between a Canadian province and a U.S. state. Obstfeld and Rogoff (2000) attribute the home bias largely to trading costs, with exchange rate uncertainty being only one, and not necessarily the most important, factor in such costs.

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[2] Trade integration with Mexico, Canada's other partner under the North American Free Trade Agreement (1994), has also grown. Canadian barriers to Mexican trade have been reduced; the very few tariffs that remain (except those on a few supply-managed products) are scheduled to be eliminated by 2003. The share of Mexico in Canada's merchandise trade rose from 1¼ percent in 1993 to 1¾ percent in 1999, and exceeds the share of several industrial countries. (For example, the share of France in Canadian trade stayed unchanged at 1 percent during the period, and that of Germany declined from 1¾ percent to 1½ percent.)

[3] The data in Table 1 are based on merchandise trade, rather than total trade in goods and nonfactor services, because bilateral trade data on nonfactor services were not available for several countries.

Table 1. Selected Countries: External Trade Within Regions, 1989-99 1/
(in percent)

	Regional Trade/Total Trade		Regional Trade/GDP	
	1989	1999	1989	1999
	With United States			
Canada	72	81	31	58
Mexico	69	81	15	49
Mercosur 2/	21	20	2	4
	With Other EU Countries			
Europe (selected countries)				
Austria	69	69	38	46
Belgium-Luxembourg	76	71	90	93
Denmark	67	69	33	37
Finland	59	59	25	34
France	62	63	23	28
Germany	62	55	32	26
Greece	67	61	24	17
Ireland	73	62	74	76
Italy	61	59	21	22
Netherlands	73	68	65	72
Portugal	74	79	44	42
Spain	63	69	18	28
Sweden	67	59	31	36
United Kingdom	56	50	24	20
EU weighted average	64	61	30	31
	With Other Mercosur Countries			
Latin America (selected countries)				
Argentina	17	27	3	5
Brazil	7	14	1	3
Paraguay	35	53	16	18
Uruguay	37	42	13	12
Mercosur weighted average	11	20	1	4

Sources: Staff calculations based on IMF Direction of Trade Statistics; Statistics Canada; and WEO database.

1/ Based on aggregate merchandise trade (exports plus imports).
2/ Argentina, Brazil, Paraguay, and Uruguay.

Factor market integration between Canada and the United States is also close. With Canada-U.S. financial flows being generally free of controls during the past 50 years, capital mobility between the 2 countries is high. The United States accounts for over half of

Canada's gross foreign direct investment assets and liabilities and for two-thirds of Canada's net international liability position.[4] Labor mobility between Canada and the United States, although it remains relatively limited as a share of the total labor force, has increased in recent years, especially among skilled workers.

According to the theory of optimum currency areas, the existence of separate currencies reduces the volume and welfare gains of international trade through several channels, including the cost of currency conversion, exchange rate risk (or the cost of hedging against it), and a reduction in the informational value of price signals. There is no direct evidence on the empirical magnitude of most of these costs.[5] The limited evidence that is available is on the currency conversion costs, which seem to be small in Canada like in other countries. The currency conversion costs incurred in the Canadian foreign exchange market are estimated at around 0.2–0.3 percent of Canadian GDP annually (Murray, 1999; Macklem et al., 2000), which is in line with historical estimates of transaction costs in Europe prior to the introduction of the euro.[6]

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[4] In terms of capital flows, in recent years the United States has accounted for just over half of Canada's direct investment inflows and outflows, roughly the same as the proportion of intra-EU direct investment. The United States accounted for over four-fifths of Canadian equity investment inflows and outflows in 1999, while intra-EU equity flows accounted for about half of the total among EU countries in recent years.

[5] Direct evidence on the costs of exchange rate uncertainty and distorted price signals is not available. One difficulty in measuring the cost of exchange rate risk is that it depends not only on the volatility of the exchange rate, but also on its correlation with other economic variables. Exchange rate flexibility can decrease true economic uncertainty if the exchange rate is used to buffer real shocks.

That exchange rate volatility has not prevented a high degree of trade integration between the United States and Canada in the 1990s is consistent with the empirical evidence on other countries and other periods. Most time-series and cross-country studies have indicated that the impact of exchange rate volatility on the volume of trade is very small (Frankel and Wei (1993), De Grauwe (1988), Rose (2000)). The small impact of exchange rate volatility on trade is generally attributed to the availability of many instruments by which firms can hedge their currency exposure. Estimates based on Rose (2000) suggest that fixing the Canadian-U.S. dollar exchange rate would have increased bilateral trade by approximately 2 percent in the 1990s.

The adoption of a *common currency*, however, could have a much larger impact on trade flows than simply fixing the exchange rate. A common currency eliminates currency conversion costs and is a more definitive commitment to monetary integration than a fixed exchange rate regime. It may also induce integration in other policy areas, such as harmonization of standards and regulation. Rose (2000) finds that, other things equal, two countries that share the same currency trade three times as much as they would with different currencies. While Rose's results may not be directly applicable to industrial countries,

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[6] Currency conversion costs (the bid-ask spreads and commission fees that households and nonbank enterprises pay to banks for foreign currency conversion) for the European Community as a whole were estimated at 0.2–0.3 percent of GDP by the European Commission (1990). The costs of cross-border payments and the in-house currency transaction costs incurred by firms added another 0.1 percent of GDP.

including Canada,[7] they do point to a possibly important qualitative difference between fixed exchange rate regimes and common currencies.

III. The Role of Exchange Rate Flexibility in Buffering the Canadian Economy Against External Shocks

An international comparison suggests that during the past 20 years the Canadian dollar has fluctuated by less against the U.S. dollar than have several other floating currencies (Table 2). This is true at several horizons: for example both 1-month and 12-month exchange rate volatilities versus the U.S. dollar have been smaller in Canada than in other countries. The relatively low exchange rate volatility is consistent with the behavior of central bank interest rates, which have fluctuated more in Canada than in the United States, Japan, and Germany, as well as with the volatility in foreign exchange reserves (an indicator of exchange market intervention), which has been relatively large in Canada.[8]

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[7] Rose's study is based on a "gravity" model of bilateral trade flows and controls for a number of other determinants of trade, such as common borders, common language, as well as the endogeneity of exchange rate volatility to trade. His results, however, are largely driven by the behavior of trade flows in a group of developing and/or very small countries (CFA franc countries and a number of small territories and dependencies), and could attribute to a common currency the effects of integration in other policy areas.

[8] Fluctuations in Canadian foreign exchange reserves and central bank interest rates fell markedly after the September 1998 change in foreign exchange intervention policy, when the Bank of Canada decided to stop its previous practice of frequent interventions and instead limit interventions to exceptional cases when the exchange rate was considered to be significantly misaligned and intervention could influence market assessments about the currency's fundamental value.

Table 2. Selected Countries: Volatility in Exchange Rates, Interest Rates, and Foreign Exchange Reserves, 1980-2000 1/

	Canada							
	1980-1998 2/	1998-2000 3/	United States	Japan	Germany	United Kingdom	Australia	New Zealand
Exchange rate versus U.S. dollar								
1-month horizon	1.0	1.1	-	3.0	2.8	2.7	2.4	2.6
6-month horizon	2.8	3.3	-	9.1	8.8	8.5	7.0	8.4
12-month horizon	4.4	4.6	-	12.6	13.0	11.9	10.3	13.2
Central bank interest rate								
1-month horizon	0.7	0.2	0.7	0.2	0.3	1.0	0.8	1.3
6-month horizon	2.2	0.5	1.9	0.8	0.8	1.8	2.1	3.1
12-month horizon	2.9	0.8	2.5	1.3	1.4	2.7	3.0	3.9
Foreign exchange reserves								
1-month horizon	21.5	5.4	6.7	3.9	7.6	5.4	11.4	17.7
6-month horizon	44.9	9.9	26.5	15.8	14.3	17.0	40.6	32.8
12-month horizon	61.1	12.3	46.9	30.2	18.1	34.3	68.0	46.8

Source: Staff calculations based on IMF International Financial Statistics.

1/ Volatility is measured by the standard deviation of the change in a variable over various horizons (monthly, 6-monthly, 12-monthly).

2/ Covers the period until the September 1998 change in foreign exchange intervention policy.

3/ Covers the period after the September 1998 change in foreign exchange intervention policy.

The relative stability of the Canada-U.S. exchange rate seems to reflect the close correlation between the Canadian and U.S. business cycles. The output gap and the inflation rate—the variables that determine the policy interest rate in a monetary policy Taylor rule—show a close synchronization between the Canadian and U.S. business cycles over the past 20 years (Figure 1). Canadian short-term interest rates, as a result, have moved broadly in line with U.S. rates. Canadian and U.S. monetary policies, however, were less closely aligned in the early 1990s, when the Canadian policy interest rates were set significantly above U.S.

rates.[9] Perhaps as a result of this divergence, the output gap was wider and the inflation rate lower in Canada than in the United States during the 1990s.

A key question is whether the exchange rate has played a useful role in periods when the Canadian economy has been hit by significant asymmetric shocks. The evidence suggests that an important source of asymmetric shocks is fluctuations in commodity prices, which affect U.S. and Canadian terms of trade very differently because Canada is a net exporter of commodities while the United States is a net importer (Thiessen (1999), Murray (1999)). During the past two decades, changes in world commodity prices have tended to be accompanied by opposite movements in the Canadian and U.S. terms of trade (Figure 2). Fluctuations in commodity prices have been positively correlated with the Canadian terms of trade and negatively correlated with the U.S. terms of trade.[10] The terms of trade could be a significant source of shocks in the Canadian economy, given the relatively large share of commodities in Canada's exports (35 percent in 1999) and in Canadian GDP (11 percent in 1999).

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[9] This period of policy divergence seems to reflect different assessments of inflation risk as well as the more uncertain fiscal outlook in Canada. In particular, during certain episodes—including in late 1994 and early 1995—one factor that constrained the Bank of Canada's ability to ease monetary conditions was investors' concerns about Canada's large fiscal deficit. The fiscal consolidation that has occurred since then in Canada has contributed to a better policy mix and given monetary policy somewhat greater latitude to operate.

[10] This is consistent with the conclusions of several analyses using vector autoregressions that the supply shocks experienced by Canada and the United States are very asymmetric. Bayoumi and Eichengreen (1994) and Arora (1999) report that macroeconomic shocks in Canada and the United States are asymmetric in several dimensions: their correlation is low and their sizes, as well as the speed of adjustment to them, are significantly different in the two countries.

The evidence also suggests that the exchange rate responded to shocks in commodity prices in a stabilizing way. An increase in the U.S. dollar price of commodities is correlated with an offsetting appreciation of the Canadian currency. Impulse responses based on vector autoregressions show that the Canadian dollar appreciates in the long run, in both real and nominal terms, in response to a permanent increase in the U.S. dollar price of non-energy commodities.[11] Almost 90 percent of the real adjustment is achieved by a change in the nominal exchange rate. Under a fixed exchange regime, the same real exchange rate adjustment would have to be achieved through a change in the Canadian price level, which presumably would be more disruptive for economic activity. The statistical evidence is supported by the experience during episodes in which Canada was hit by large asymmetric shocks. In 1998, for example, Canada suffered a substantial drop in commodity prices, as a result of the crisis in Asia and other emerging economies. The Canadian economy weathered the shock in part through a significant depreciation of the currency that mitigated the impact of the shock for Canadian exporters of primary commodities and commodity-based goods, and encouraged net exports of manufactured goods. Under a fixed exchange rate, Canadian exporters would have faced a much larger decline in the nominal demand for their products, while the Canadian monetary authorities might have had to increase interest rates to defend the fixed peg, possibly generating a recession (Laidler, 1999).

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[11] See Djoudad et al. (2000). By contrast, the Canadian dollar tends to depreciate in response to an increase in the price of energy, as Amano and van Norden (1993) have shown in their estimation of the "Bank of Canada equation" for the exchange rate. This asymmetry, according to the Bank of Canada, could reflect the more energy-intensive production of some Canadian exports.

Although the benefits of exchange rate flexibility for macroeconomic stabilization in Canada may be large, they are difficult to quantify precisely. A recent study by the Bank of Canada takes a first step in this direction (Macklem et al. (2000)). The study compares the implications of different monetary and exchange rate regimes in terms of macroeconomic volatility, using simulations based on a stylized dynamic general equilibrium model with sticky nominal wages and calibrated using Canadian data. The simulations assume that the pattern of variation in the Canadian terms of trade mirrors the historical volatility of the relative price of non-energy commodities and manufacturing imports. The impact on output of the high volatility observed in the relative price of non-energy commodities and manufacturing imports is mitigated by the flexibility of the nominal exchange rate. If the floating regime is abandoned in favor of a fixed exchange rate, the study concludes that the volatility of macroeconomic variables would increase significantly. Switching from a floating regime with inflation targeting to a fixed exchange rate regime increases the volatility of aggregate income from 2.2 percent to 3.2 percent, because the nominal exchange rate can no longer be used to buffer the shocks in commodity prices.

In addition to its role in buffering external shocks, exchange rate flexibility has been useful in the adjustment to long-term trends in Canadian competitiveness. Under a fixed exchange rate, such an adjustment might have led to deflationary pressures in the Canadian economy. Since the end of the Bretton Woods system, the Canadian dollar has depreciated by around 1½ percent annually in real terms relative to the U.S. dollar. The depreciation was due in part to the secular decrease in the price of commodities and the slower pace of productivity growth in the traded-goods sector in Canada relative to the United States. The

economic adjustment to these long-run trends has been achieved primarily by a nominal depreciation of the Canadian dollar. If the nominal exchange rate had been fixed, the same real depreciation would have required a lower inflation rate in Canada. As a result, some periods in which the Canadian inflation rate was very close to zero could, under a fixed exchange rate, have been marked by deflation, complicating the task of monetary policy because of downward rigidity in nominal wages and the zero bound on nominal interest rates.

It has been argued, however, that exchange rate flexibility has contributed to lagging Canadian productivity performance, as Canadian firms have been able to count on exchange rate depreciation to compensate for lower competitiveness (Harris, 2000). According to this view, a fixed exchange rate regime would slow or even stop the erosion in Canadian productivity and living standards relative to the United States. There is no evidence, however, that the coincidence of Canadian dollar depreciation and the slower pace of Canadian productivity growth reflect a causality from the former to the latter (as opposed to, say, Balassa-Samuelson effects). Indeed, cross-country growth studies do not find any impact of the exchange rate regime on growth in industrial economies (Ghosh et al., 1997).

IV. Lessons From the Canadian Experience

The fact that exchange rate flexibility has not hindered Canada-U.S. economic integration does not mean that exchange rate flexibility is necessarily the best policy for all free trade areas.[12] Indeed, various exchange rate regimes appear to have worked well in other

[12] Further, in regions where integration has progressed beyond the dimensions envisaged in NAFTA, it is possible that the costs of exchange rate flexibility may be higher than in North America.

free trade areas. In the EU/European Economic Area, fixed rates under the Bretton Woods system were followed by fixed rates and monetary union among several members, while others adopted a floating rate regime during most of the post Bretton Woods period. Among Mercosur countries as well, the absence of a common exchange rate regime has been accompanied by growing integration. Since 1991, Argentina has had a currency board, Brazil a variety of exchange regimes, Uruguay a crawling band regime, and Paraguay a floating regime with varying degrees of intervention. Merchandise trade among the Mercosur countries as a share of their total merchandise trade increased from 12 percent in 1991 (when Mercosur was initiated) to 20 percent in 1999.[13]

With the credibility of monetary policy well established in Canada, some arguments used in other parts of the world in favor of fixing exchange rates are less relevant in Canada. For example, several countries that moved toward hard pegs benefited from a "convergence gain" as their long-term interest rates fell toward those of the anchor country. In Europe, long-term interest rates in Italy and Spain, for example, fell markedly toward German levels during the period leading up to adoption of the euro (Figure 3).[14] In Canada, however, long-term spreads versus the United States have been much smaller than spreads in Europe and

[13] At the same time, exchange rates among Mercosur members have fluctuated much more than Canada-U.S. exchange rates and at times have generated considerable trade tensions.

[14] The reduction in long-term rates in these countries also reflected other policy measures, especially fiscal consolidation in line with the Maastricht requirements.

have even been negative at times in recent years.[15] Losses of confidence, such as in the early 1990s, have been tempered by the clearly anti-inflationary stance of monetary policy and by interest rates being allowed to adjust (Crow (1995)).

Flexible exchange rates have sometimes raised a concern about balance-sheet risk. If a large proportion of domestic liabilities is denominated in foreign currency, large exchange rate fluctuations can disrupt domestic financial markets. In Canada, however, the Canadian dollar, while it has tended to absorb shocks, has not fluctuated excessively over short horizons. In addition, while the proportion of foreign-currency liabilities in the banking system has increased over the past decade (from 33 percent to 42 percent during the period 1989–99), reflecting growing integration with world markets, the proportion of foreign-currency assets has increased in tandem (from 31 percent to 40 percent).[16] The proportion of foreign-currency liabilities seems to be lower than in several other industrial countries, and does not pose the same problems as in emerging economies (Calvo and Reinhart, 2000). Foreign currency loans to residents have remained relatively small as a share of chartered banks' assets, rising from 5 percent in 1989 to 6 percent in 1999.

The size of a country relative to others in a monetary union or fixed exchange rate arrangement has implications for the net benefits to the country, and, in this regard, the

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[15] Although Canada-U.S. long-term spreads fell during the mid-1990s, the reduction was related mainly to Canada's fiscal efforts, rather than any expectations of currency convergence.

[16] A close matching of foreign currency liabilities and assets is not always a guarantee against financial disruption in the event of a major exchange rate shift, especially if the bulk

(continued...)

situation of Canada vis-à-vis the United States is somewhat different from that of several European countries vis-à-vis each other (see Thiessen (2000)). The Canadian economy is much smaller than the United States, while the euro area includes several economies of roughly equal size. Given its size and trade specialization, the United States is relatively insensitive to the exchange rate policies of its smaller trade partners—although trade frictions with Canada have occasionally arisen in some sectors. The argument that a fixed exchange rate system benefits its participants by preventing competitive devaluations that ultimately undermine the political support for free trade thus applies with less force to North America than to Europe. The risk of self-defeating "beggar-thy-neighbor" policies is likely to be larger in free trade areas where countries are more similar in size and compete in the same markets.

Finally, the implications of a common currency in terms of transfer of national sovereignty are very different in NAFTA than in the euro area. If Canada were to peg to the U.S. dollar or to adopt a common currency, it would effectively be adopting U.S. monetary policy, in contrast to Europe where the relative size of partners is less unequal and each country thus has more influence on aggregate monetary policy.

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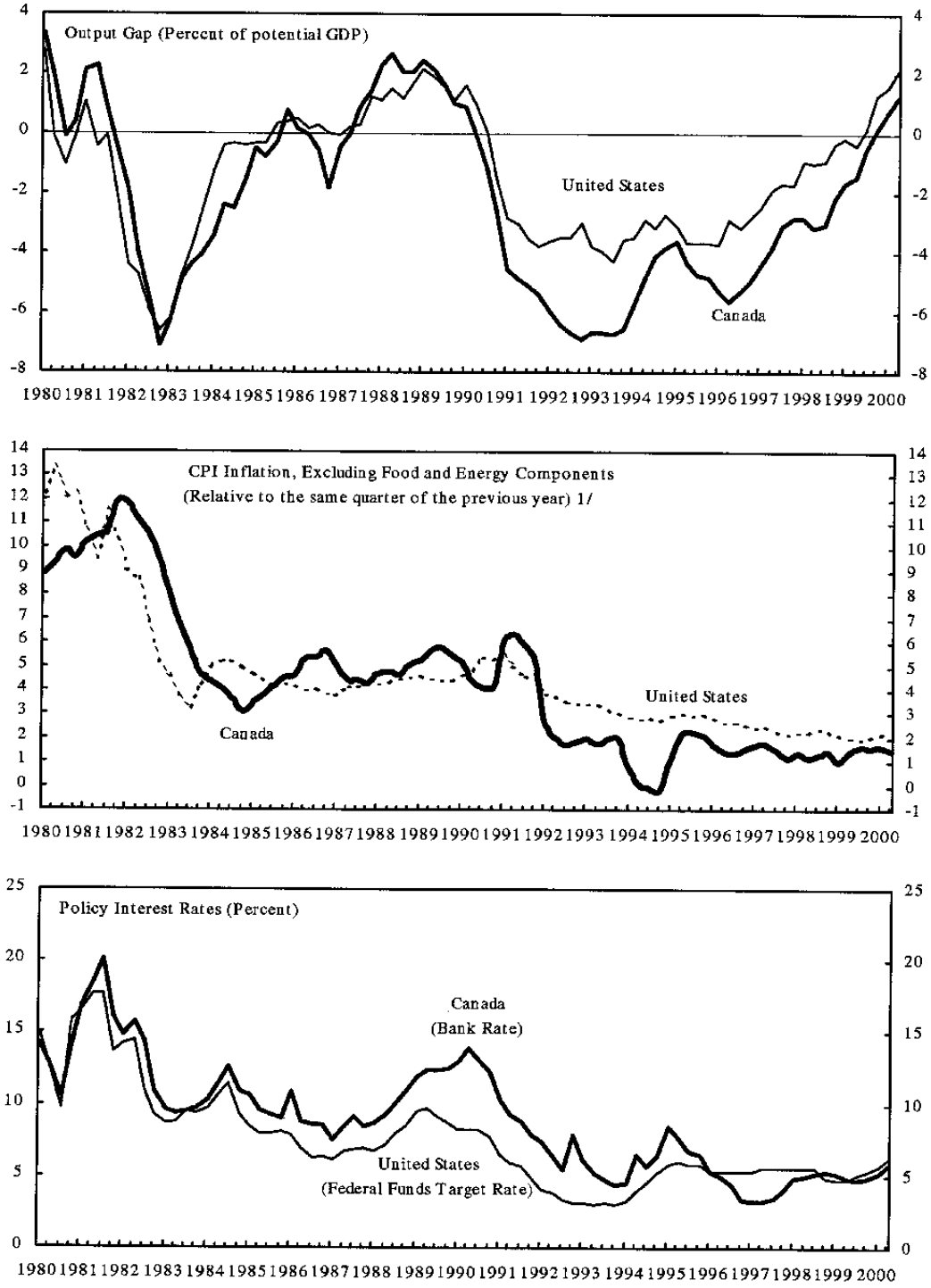
of lending is to unhedged borrowers. This does not, however, appear to be the case in Canada.

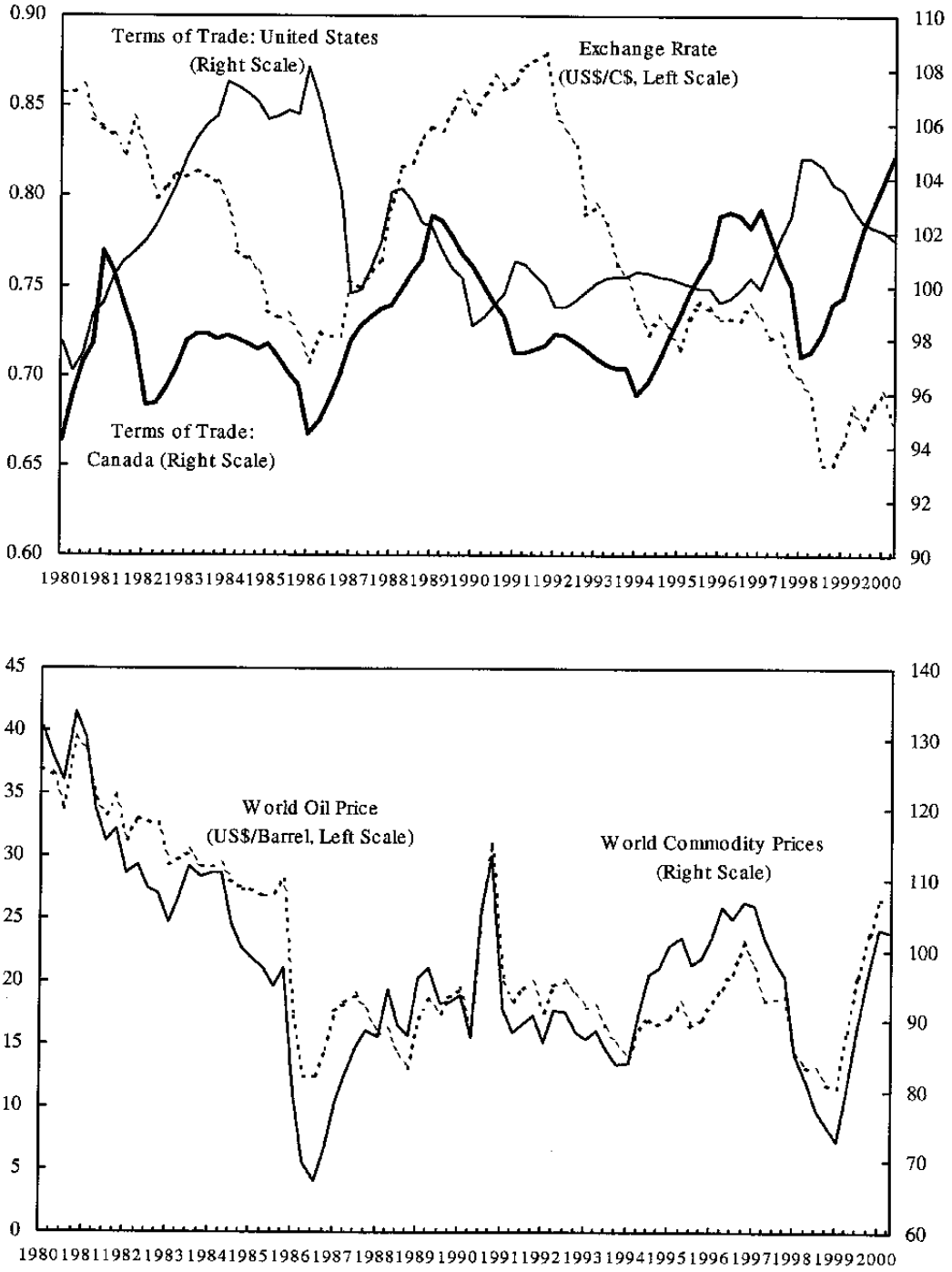
Figure 1. Canada and the United States: Output Gap, Inflation, and Interest Rates (1980-2000)



Sources: Bank of Canada; Cansim; and the United States Federal Reserve.

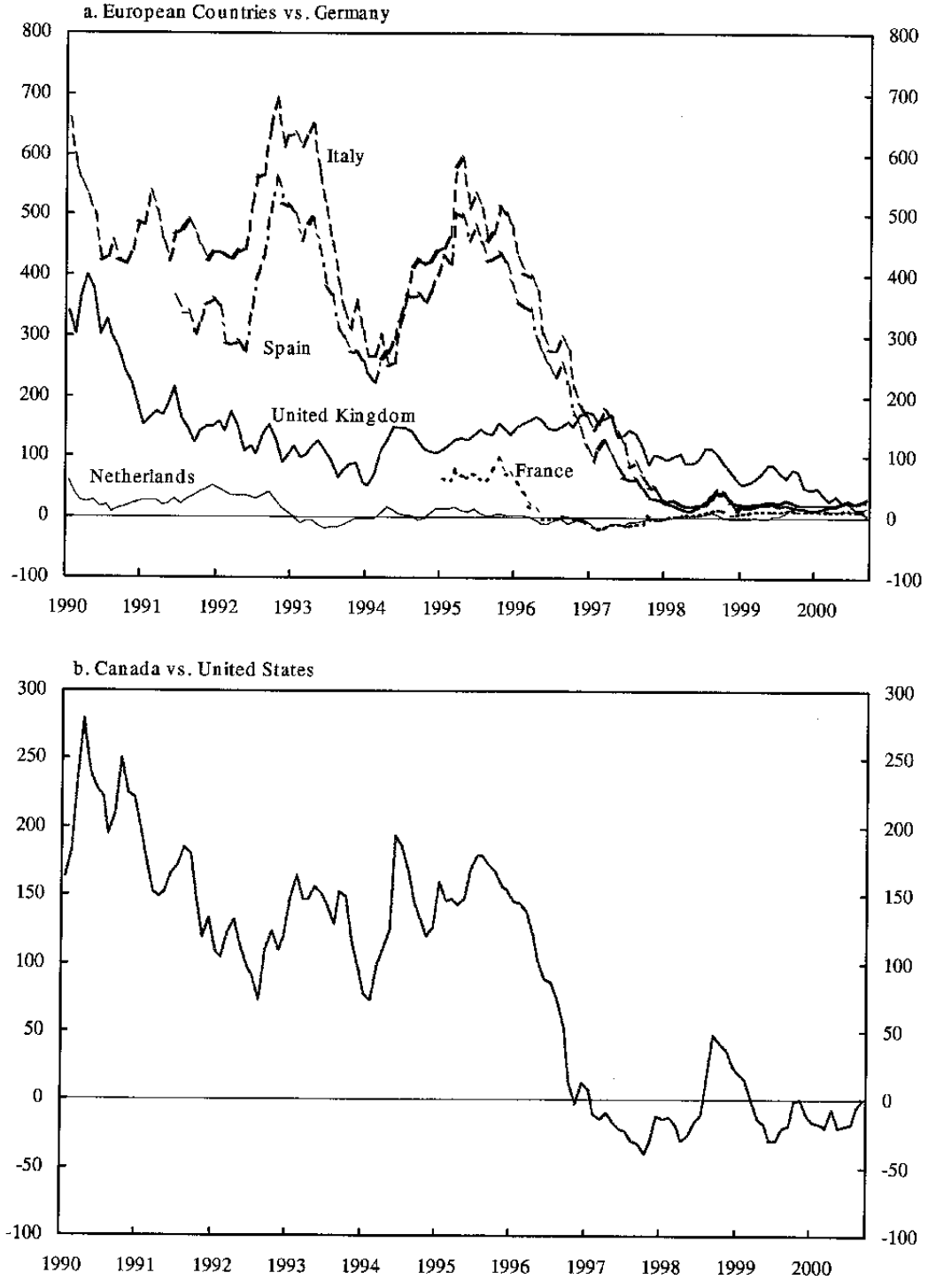
1/ For Canada, this variable was used instead of the core CPI (which, in Canada, also excludes the effects of indirect taxes) because the core CPI series was not available for the period before 1984.

Figure 2. Canada and the United States: Terms of Trade, Exchange Rate, and Commodity Prices, 1980-2000
(Index 1995=100)



Sources: CANSIM (Statistics Canada); and World Economic Outlook.

Figure 3. International Comparison: Ten-Year Government Bond Spreads 1990 - 2000 (Basis Points)



Sources: Datastream; and Bloomberg.

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