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**Would a North American monetary union  
protect Canada and Mexico against the  
ravages of “Dutch disease”?**

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## **Would a North American monetary union protect Canada and Mexico against the ravages of “Dutch disease”?**

### **Introductory Paragraph**

After the formation of the North American Free Trade Agreement (NAFTA) in 1994, enthusiasts of regional integration in North America turned their attention to “deeper” forms of integration, especially a customs union or monetary union.<sup>1</sup> Interest in proposals for deeper integration peaked around the turn of the new millennium, both north of the 49th parallel and south of the Rio Grande (Río Bravo). Although the unilateralist turn of US foreign policy under President George W. Bush since 2001 has lessened enthusiasm for deeper integration with the US in both Canada and Mexico, these sorts of proposals remain “in the air” and could easily be revived by future North American governments.

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## INTRODUCTION

After the formation of the North American Free Trade Agreement (NAFTA) in 1994, enthusiasts of regional integration in North America turned their attention to “deeper” forms of integration, especially a customs union or monetary union.<sup>1</sup> Interest in proposals for deeper integration peaked around the turn of the new millennium, both north of the 49th parallel and south of the Rio Grande (Río Bravo). Although the unilateralist turn of US foreign policy under President George W. Bush since 2001 has lessened enthusiasm for deeper integration with the US in both Canada and Mexico, these sorts of proposals remain “in the air” and could easily be revived by future North American governments.

One new trend that has revived interest in a monetary union, at least in Canada, is the sharp rise in oil and other raw materials prices in the first decade of the 21st century. For both Canada and Mexico, this has meant large influxes of foreign exchange from energy exports (and, in Canada, other primary commodity exports); in Mexico, increased foreign exchange earnings from oil exports have been augmented by record levels of remittances from Mexican migrants working in the US. In both countries, the rising inflows of foreign exchange have allegedly contributed to high values of the national currencies that have inhibited the competitiveness of their manufacturing sectors—the very industries that earlier policy initiatives, including NAFTA, were intended to promote. In this context, some economists in Canada and Mexico are now arguing that their countries are suffering from “Dutch disease”—a term coined in the 1970s to describe the experience of the Netherlands during the 1960s when the discovery of North Sea gas pushed up the exchange rate.<sup>2</sup> The high value of the Dutch guilder at the time rendered Holland’s manufacturing sector less competitive and resulted in a certain degree of de-industrialization.

This chapter seeks to investigate, first, whether Canada and Mexico are indeed suffering from Dutch disease, and second, whether a North American Monetary Union (NAMU) is a viable solution—or whether this “cure” might be worse than the disease. On the first point, the data we will review below show that both the Canadian dollar and Mexican peso have appreciated in real terms over the past decade, and that these real appreciations have been associated with declines (either relative or absolute) in manufacturing output and employment in each country. The recent surge in real oil prices to levels not seen since the late 1970s (see Figure 1) makes the Dutch disease hypothesis a plausible explanation for these phenomena. However, since both currencies began to appreciate prior to the latest upsurge in oil prices, it is likely that other factors, particularly monetary policies, have also been important causes of the rising values of the Canadian and Mexican currencies, although there is somewhat stronger evidence for the Dutch disease diagnosis for Canada than for Mexico.

**[Figure 1 about here]**

Assuming that there is some truth to the Dutch disease diagnosis, the prescription of a NAMU has a fairly obvious logic: since the North American economy as a whole (which is dominated by the US) is not a major net exporter of oil, gas, and other primary commodities, a single North American currency would be unlikely to appreciate in response to a boom in energy and commodity prices. However, the potential gains for Canada and Mexico from eliminating exchange rate fluctuations driven by resource prices could be offset, depending on the exchange rate parities at which the Canadian dollar and Mexican peso would be converted to a new North American currency or (under some scenarios) to the US dollar, as well as the exchange rates that would then prevail between the North American currency and currencies in other global regions. Furthermore, advocates of a NAMU for combating Dutch disease ignore a simpler alternative,

which would be to adopt monetary policies that would act to offset the pressure for exchange rate appreciation in response to a natural resource boom.

Also, based on the precedent of the European Economic and Monetary Union (EMU), the type of fiscal policies that the member countries would be allowed to pursue and the nature of the monetary policy that the regional central bank would follow are important determinants of how a monetary union would affect its member countries. Ironically, both Canada and Mexico currently (and independently) follow monetary and fiscal policies that are similar in spirit (if not in exact design) to those of the EMU: their monetary policies are focused mainly on controlling inflation,<sup>3</sup> while their fiscal policies are targeted on preventing large budget deficits or achieving surpluses. How a NAMU would be regulated in this regard—what sort of monetary policy its central bank would follow, and what sorts of fiscal policies it would allow its member states—would therefore be a critical factor affecting whether the cure of monetary integration would be worse than the disease of an overly strong currency.

Although enthusiasm for a NAMU has waned at present, the proposals for creating one have engendered a significant amount of analysis and discussion that have, at least, clarified some of the likely parameters if a NAMU is ever to be formed. Unlike in the EMU, where the countries are more similar in size, the extreme asymmetries in North America—where Canada and Mexico's gross domestic products (GDPs) are, respectively, only 8 and 6 percent of US GDP—seem likely to ensure a subordinate role for these two countries in the formulation of monetary policy in a NAMU. Many observers have argued that the US would be unlikely to want to create a new, euro-like North American currency, and hence the formation of a NAMU would mean that Canada and Mexico would have to adopt the US dollar. This could be done unilaterally by each country, in which case it would be called “dollarization,” but it could also be

accomplished by expanding the US Federal Reserve System (Fed) to include Canada and Mexico. More specifically, some have argued that Mexico and Canada would essentially have to become mere Fed districts, similar to the existing 12 regional Feds in the US—with at most one seat on the Federal Open Market Committee (FOMC) for each country.<sup>4</sup>

Even if a new North American currency and North American Central Bank (NACB) were created, the profound asymmetries in North America make it likely that US interests would still have a preponderant role in setting monetary policies (Smith 2002). Needless to say, the prospect of such a diminished role for Canadians and Mexicans in setting their own monetary policies has diminished support for a NAMU in their respective countries; in effect, a NAMU that was politically acceptable in the US might not be politically acceptable in the other two countries. Nevertheless, the idea of taking monetary policy even further out of the hands of national political leaders could still be appealing to business interests and free-market ideologists in Canada and Mexico, not to mention politicians eager for a bold policy initiative, and therefore we proceed to analyze how a NAMU would or would not address the exchange rate and competitiveness problems of those two countries under today's circumstances.

## CANADIAN PERSPECTIVES

Canadian interest in greater North American monetary integration since the 1990s seems to have followed the ebbs and tides of the Canadian dollar vis-à-vis the US dollar. With the international value of the Canadian dollar hitting unprecedented lows and the proportion of trade with the US peaking under NAFTA during the late 1990s and early 2000s, a growing number of academics, pundits, and politicians in Canada began to propose greater monetary integration with the US.<sup>5</sup>

This reached its peak just after the launching of the euro in 1999 when, among other things, a motion proposed by Canada's political opposition to study the possibility of a currency union in North America, especially along the lines of the EMU, was entertained and defeated in the federal House of Commons. However, several alternatives to the current floating rate have been proposed, including the adoption of a fixed exchange rate, the abandonment of Canada's national currency (US-dollarization), and the formation of a NAMU with a new single currency.

Historically, interest in greater monetary integration appears to have been strongest in those sectors of the Canadian economy that are most heavily involved in foreign trade. Firms in the foreign sector often view the Canadian dollar as a "nuisance cost" largely because their revenues are in US funds but their costs are in Canadian dollars. A rising value of the Canadian dollar puts a squeeze on firms engaged in the export sector. Hence, industries with a certain degree of exchange rate exposure must engage in exchange rate risk-management strategies. Exchange rate hedging is commonplace, and companies can shield themselves over a short period by various currency options. These special administrative and transactions costs are faced only by business enterprises engaged in foreign trade, thereby making the latter more receptive to any proposal that would eliminate such costs.<sup>6</sup> Advocates of greater monetary integration have, therefore, traditionally emphasized the argument for the static efficiency gains from the reduction of transactions costs, relating not only to the elimination of exchange rate risk for business firms, but also to the elimination of the costs of converting currencies for the millions of Canadians who travel regularly to the US and Mexico for work or pleasure.

In addition to eliminating certain transactions costs, those partial to greater monetary integration have at times referred to at least one other important benefit of a NAMU that is often connected with the name of Robert Mundell, who argued that the regional configuration of a

currency area is very important. Canada is characterized by a great diversity of industries across regions, such as manufacturing in Ontario (where growth depends on low energy costs) and oil in Alberta (where economic performance depends on high energy prices). A common external shock to these regions, such as a major jump in the international price of oil, naturally hurts Ontario manufacturers and benefits Alberta's oil producers. However, the existence of a floating exchange rate only compounds the negative effect on Ontario exporters, since Canada's exchange rate also faces upward pressure from the rising price of oil. In this case, Ontario manufacturing exporters would be better off either with a fixed exchange rate vis-à-vis the principal importer of Canada's exports—the US—or with an outright monetary union. On the assumption that Canada is not an “optimal currency area” (OCA) but, somehow, North America is, the abandonment of Canada's floating exchange rate in favor of greater monetary integration could be viewed as beneficial to Canadian manufacturing exports.<sup>7</sup>

Interestingly, with a falling nominal and real exchange rate during the pre-2002 period, it was the former argument over the need to eliminate the above-mentioned transactions costs for Canadian consumers and the exchange-rate risk to exporting firms (much as the euro had been sold to the Europeans—see Emerson et al. 1992) that held sway. However, since 2002, with rising international energy prices accompanied by the meteoric rise in the Canadian dollar, it is the Mundellian argument relating to OCAs that now seems to be in vogue among those partial to greater monetary integration. In the Canadian media, this has been associated with the debate over whether Canada is being afflicted by the Dutch disease. Some are now pointing to the floating Canadian dollar as the cause of a similar growing distress in Canada's manufacturing sector. Since this controversy over the role of Canada's exchange rate hinges on whether or not the Canadian dollar has become strongly sensitive to fluctuations in international oil prices, let us



first discuss briefly the debate over the growing importance of energy in the determination of Canada's exchange rate.

### **Is the Canadian Dollar a Commodity Currency or a Petro-Currency?**

As displayed in Figure 2, the Canadian dollar was roughly at par with the US dollar in nominal terms at the end of the Bretton Woods era. Starting in the mid-1970s, the Canadian dollar went through two successive waves of depreciation until it hit bottom at the beginning of 2002. The first wave was associated with the oil price shocks of the 1970s followed by the major recession of the early 1980s. As the only one of the G-7 industrialized nations that is a major net exporter of primary products (with primary commodities constituting somewhat less than one-third of Canada's overall merchandise exports), Canada was hit badly not only by the oil price hikes that caused havoc in its industrial heartland, but also by the subsequent slump in primary commodity prices internationally, as industrial economies faced slower growth and descended into recession.

**[Figure 2 about here]**

The situation reversed during the late 1980s, when the Bank of Canada tightened its monetary policy, thereby raising interest rates and the value of the Canadian dollar. However, following the 1990-91 recession and a loosening of monetary policy, the Canadian dollar once again resumed its downward trend. The low primary commodity prices of the 1990s coupled with strong US economic growth during the Clinton era also contributed to a soaring US dollar vis-à-vis the anemic Canadian dollar, and the latter hit bottom only after the US economy slipped into recession, particularly in the winter of 2001-2. The initial recovery of the Canadian dollar in 2002-3 preceded the subsequent run-up in world oil prices, which began in the second half of

2004 (see Figure 1), and hence must be attributed to other factors (especially, low interest rates in the US that were not matched by Canadian interest rate cuts in 2002-3). The rapid increase in oil prices between late 2004 and 2008 may have contributed to the further appreciation of the Canadian dollar during that period. Nevertheless, it is worth noting that the Canadian dollar has appreciated by less than the euro relative to the US dollar during the 2002-8 period as a whole. Since the EMU is not an oil-exporting region, this suggests that one should not exaggerate the impact of oil or commodity prices relative to other factors such as monetary policy and market expectations in driving Canada's floating exchange rate.<sup>8</sup> For example, the Bank of Canada's failure to match the Fed's interest rate cuts in response to the US financial crisis in 2007-8, coupled with a loss of confidence in the US economy, also contributed to the Canadian dollar's surge at that time. Whatever the causes, by the first half of 2008, the Canadian dollar had returned to nominal parity with the US dollar and was near a record high value in real terms.

The combined effects of interest rates and commodity prices are reflected in an econometric equation developed by researchers at the Bank of Canada to forecast the evolution of the Canada-US exchange rate (see Murray et al. 2003). According to the Bank of Canada equation, the Canada-US exchange rate depends on three key market "fundamentals": a primary commodity price index (excluding energy), an energy price index (mainly oil, natural gas, and electricity), and a measure of the Canada-US short-term interest rate differential (the difference in the Canada-US 90-day commercial paper rates). Estimates of this equation have always shown that an increase in (non-energy) international commodity prices and an increase in Canadian short-term interest rates vis-à-vis US rates lead to an appreciation of the Canadian dollar, as expected. However, the results concerning the role of energy prices in influencing Canada's exchange rate have varied over time. In the original estimates based mainly on the experience of

the pre-1990s era, an increase in world energy prices, after controlling for the other variables, was found to lead to depreciation in the international value of the Canadian dollar (Murray et al. 2003). Hence, during the period when Canada had not yet become an important net exporter of energy, an increase in the international price of oil would have slowed down the world economy and would have reduced demand for Canadian exports, thereby putting downward pressure on Canada's exchange rate, as occurred during the late 1970s and early 1980s (Issa, et al. 2006).

Since the 1990s, however, Canada has become a significant energy exporter in the context of the North American energy market, the development of which was first facilitated by the Canada-US Free Trade Agreement of 1989 and subsequently reinforced under NAFTA. Because of Canada's vast oil sands reserves (officially second only to Saudi Arabia's conventional reserves) and the new continental energy environment, when the price of oil goes up, this now pushes up the demand for Canadian dollars and therefore leads to an appreciation in the international value of Canada's currency—as is now confirmed by more recent estimates of the Bank of Canada exchange rate equation and other estimates (Issa, et al. 2006; Bayoumi and Mühleisen 2006). Some have therefore suggested that, given the growing importance of energy exports, Canadian industry is now ailing from Dutch disease—i.e., a jump in the international price of oil puts upward pressure on the Canadian dollar and bleeds manufacturing exports. In light of this, it would seem that the continued rise in Canada's "petrocurrency" accompanying the increasing price of oil in recent years spells difficult times ahead for Canada's manufacturing sector, although the Bank of Canada exchange rate equation suggests that looser monetary policy (a lowering of Canadian interest rates relative to US rates) could help to prevent this.

## **The Dutch Disease in Canada**

In the media, there are numerous examples that provide anecdotal evidence of serious problems faced by Canadian firms resulting from the high exchange rate. One striking example that has made headlines is the Canadian movie industry—“Hollywood North”—which grew rapidly under the protection of a low Canadian dollar but is now being seriously battered by its appreciation. However, the most strongly hit sector is manufacturing, which, in absolute terms, has seen significant net job losses since late 2002 and early 2003. Rising oil prices and the appreciating Canadian dollar have negatively affected the manufacturing sector.

### **[Figure 3 about here]**

As shown in Figure 3, despite the relatively high growth of the Canadian economy that, until 2007, had been spurred on by high consumer spending and rising commodity prices, the share of manufacturing employment in total Canadian employment has declined sharply since its local peak in 2002-2003. Figure 3 reveals that, over the last twenty years, the manufacturing share of employment has not suffered such a dramatic decline since the deep recession of 1990-91. When looked at from the angle of real output, Figure 4 shows that the real output of the manufacturing sector peaked around 2000 after the high tech crisis, and completely lost its previous momentum compared to the output of the Canadian business sector as whole, which continued its upward climb. Since 2005, the output of the Canadian manufacturing sector fell significantly mainly as a result of declining exports. Hence, while high oil prices have favored western Canadian producers and have led to a quadrupling of the share of oil exports in the value of total merchandise exports from about 5 percent in 1996 to approximately 20 percent in 2008, this growth has occurred largely at the expense of manufacturing exports, which have been

declining as a share of the value of total exports.<sup>9</sup>

**[Figure 4 about here]**

Thus, although there is growing evidence that Canada is experiencing some of the symptoms of the Dutch disease, it is not clear to what extent the overvaluation of the Canadian dollar and the associated decline of the manufacturing sector should be attributed to oil prices versus other causes, particularly the strict inflation-targeting stance of monetary policy that has often held up Canadian interest rates relative to US rates. In terms of the evidence shown here, it appears that the decline in manufacturing employment did accelerate after 2004 when oil prices began to skyrocket (Figure 3), but manufacturing output began to stagnate earlier (Figure 4). Some researchers argue that it is still too early to tell whether the boom in the oil sector will turn out to be a terrible curse for the Canadian economy (Bergevin 2006), while others question altogether the significance of the Dutch disease diagnosis (Macdonald 2007). According to the latter, much of the decline in Canadian manufacturing between 2003 and 2006 was due to the so-called “China syndrome” as major emerging nations, notably China, have been integrated into the global economy. Indeed, with the Chinese yuan essentially pegged to the US dollar until 2005 (and appreciating very slowly since then), the Canadian dollar prices of Chinese imports have been falling since 2002, thus accelerating the decline of the manufacturing sector in Canada.

Nevertheless, if the oil-and-commodity boom does indeed turn out to be a curse, then policy makers will surely want to find remedies to this problem. Policies such as limiting wage growth (to ensure that unit labor costs do not rise thereby further compounding the problem of declining competitiveness) or limiting public and private spending in an overheated economy (so as to curb inflationary pressures) have been proposed. But these measures are hardly more than

what the Bank of Canada already does indirectly through its inflation targeting monetary policy, which (as argued above) has merely worsened the problem of an overvalued currency. A more interesting proposal, based on the Norwegian experience, is to constitute a separate petroleum fund financed by oil revenues upon which governments could rely so as to intervene and compensate sectors that are suffering as a result of the Dutch disease (Tremblay 2008). However, this could become a jurisdictional nightmare, not unlike the federal National Energy Policy of the early 1980s, because of the federal-provincial squabbling that would inevitably ensue.

An alternative and more straightforward solution to the problem of the ailing Canadian manufacturing sector would be to do away with the exchange rate—and the Canadian dollar—altogether! Needless to say, this is what would be preferred by all those partial to greater monetary integration (Courchene 2007, 2008; Grubel 2008). In principle, any one country in a currency union can be effectively insulated from Dutch disease, as long as the other member countries are not specialized in the same energy or commodity exports, and as long as the conversion to a single currency occurs at a competitive exchange rate. Could a monetary union therefore be the appropriate response to the alleged Dutch disease problem for Canada, or could it turn out to be worse than the disease itself? We shall discuss this question below, after we turn to an examination of these same issues in Mexico.

## MEXICAN PERSPECTIVES

In Mexico, as in Canada, enthusiasm for a possible monetary union or dollarization policy has receded since it peaked around 2000. In the late 1990s, the apparent success of NAFTA in stimulating trade and foreign direct investment (FDI) led some Mexican business interests to

promote a monetary union as the next step in the country's regional integration.<sup>10</sup> At that point, memories of the 1994-95 peso crisis were still fresh, and a monetary union was seen as a way of stabilizing the Mexican financial system and preventing another crisis. A monetary union was also seen as a means of ensuring price stability in a country where inflation had risen to a 35 percent annual rate in 1995 following the devaluation of the peso, and did not return to a single digit rate until 2000 (when it was a still high 9.5 percent). Since the US dollar was strong at the time, inflation hawks were interested in linking Mexico's currency to a stronger one (or simply adopting the latter). Moreover, the launch of the euro in 1999 naturally led to interest in emulating Europe's monetary integration in Mexico as well as in Canada.

Some of the reasons why Mexicans subsequently lost interest in a NAMU are well known, and mostly (although not entirely) political.<sup>11</sup> After Mexican President Vicente Fox Quesada made it a priority of his administration (2000-2006) to obtain better treatment of Mexican migrant workers in the US, he was effectively rebuffed by the Bush administration, which (following the attacks of September 11, 2001) focused instead on its anti-terrorist crusade in other parts of the world, including the invasion of Iraq. In spite of the growing problem of millions of "illegal" or "undocumented" Mexican migrants living in the US, the US Congress never passed a comprehensive immigration reform bill, and instead in 2006 it passed a punitive law mandating tougher enforcement of border security and the construction of a 700-mile border fence. These developments left most Mexicans in no mood to pursue wider integration efforts with the US.<sup>12</sup> Furthermore, for anyone who thought that Mexico should simply abandon an independent monetary policy and link the peso rigidly to the US dollar (for example, by establishing a currency board or unilaterally dollarizing), the Argentine crisis of 2002 provided a sharp lesson that such a policy was no sure route to financial stability.<sup>13</sup>

## **Macroeconomic Stabilization and Slow Growth in Mexico**

The economic incentives for Mexico to seek a monetary union have also diminished since 2000. Given Mexico's history of recurrent financial and currency crises from the 1970s to the 1990s, the attraction of a monetary union derived mainly from the promise of greater macroeconomic and financial stability, rather than from the more conventional efficiency gains contemplated in the concept of an OCA or the reduced "nuisance costs" that were formerly seen as most important in Canada. However, the Mexican government has achieved macroeconomic stabilization via other means, thereby lessening interest in a monetary union or dollarization.

In 2000, the Banco de México set a goal of making the country's inflation rate converge with US inflation (about 3 percent annually).<sup>14</sup> In combination with fiscal restraint, this inflation-targeting monetary policy has led to exactly the sort of macroeconomic stabilization that advocates of a monetary union had promised. Consumer price inflation fell to just below 4 percent in each year from 2005-7; this was only slightly above the Canadian and US inflation rates, which were in the range of about 2-3 percent in those years (International Monetary Fund, 2008). Although the Mexican economy suffered a mild recession in 2001 and a sluggish recovery in the next two years—coincident with a similarly prolonged slowdown in the US economy—there has been no repeat of a major crisis of the 1982-83 or 1994-95 variety. In this environment of relative macro stability and low inflation, the financial interests that might otherwise be supportive of creating a monetary union (or dollarizing) have no immediate reason to do so.

Mexico's real exchange rate has also stabilized to a remarkable degree in the past few



years. As can be seen in Figure 5, the peso exhibited tremendous volatility from the 1970s to the 1990s, with repeated real appreciations and crashes mirroring the boom-bust cycles in the Mexican economy. Since the early 2000s, the peso has fluctuated within much narrower bands than in the past, especially bilaterally with the US dollar. However, as Figure 5 also shows, the peso has stabilized in a zone where its real value is close to the pre-crisis peak levels of 1993-94, and far above its level in the late 1990s when Mexico enjoyed a brief export-led, post-NAFTA boom. Thus, the peso is again at a level that can be considered overvalued, and as a result Mexico's export-led growth model has faltered (see Blecker 2008).

**[Figure 5 about here]**

Indeed, Mexico's macroeconomic stabilization has been achieved at a considerable cost in terms of both slow short-run growth and limited progress toward long-term development goals. While developing countries in south and east Asia (for example, India and China) have been growing at annual rates in the range of 6-10 percent, Mexico has been lucky to reach a 4 percent annual growth rate of GDP in the last few years. Since Mexico opened its economy in 1987, its growth rate has averaged only 3.1 percent per year (in 1987-2007); starting with the year when NAFTA went into effect, the average growth rate for 1994-2007 is also merely 3.1 percent, or 3.7 percent if we consider only 1996-2007 following the recovery from the peso crisis.<sup>15</sup> This is very disappointing performance, considering that Mexico's growth rate averaged 6.4 percent per year during the three decades from 1951 to 1980 (Urquidi 2003).<sup>16</sup> In per capita terms, Mexico has slipped further behind the US than it was when it joined NAFTA in 1994.<sup>17</sup> The migration of millions of undocumented Mexican workers to the US over the past decade, under difficult and dangerous conditions, speaks volumes about the lack of job opportunities at decent wages in Mexico, where real wages have stagnated since 1994 and have fallen further

behind US levels.<sup>18</sup>

Paradoxically, then, by adopting a policy of macroeconomic stabilization at the expense of long-run growth, Mexico has effectively accomplished some of both the promises and the pitfalls of an EMU-type monetary union, without actually joining one. Similar to the European countries that have joined the EMU, Mexico has achieved low inflation and price stability at the expense of inadequate job creation in its formal sector (there is little open unemployment in Mexico, but a large number of workers are consigned to the informal sector at low incomes or else driven to emigrate), along with sluggish output growth, stagnant real earnings, and an overvalued currency. At present, Mexico uses its monetary policy strictly to achieve price stability—more like the European Central Bank (ECB) or Bank of Canada, and less like the US Fed, which has demonstrated a relatively greater willingness to engage in countercyclical monetary policy. Nevertheless, in the absence of a monetary union that would completely deprive it of an independent monetary policy, Mexico has the potential to change its policy framework, for example by targeting a lower real value for the peso or using monetary policy to stimulate output, if the political climate in the country should change.

### **Dutch Disease in Mexico?**

Since a brief oil boom in the late 1970s—which ended abruptly in the debt crisis of 1982-86—Mexico has become increasingly specialized in manufactured exports, which reached a peak of about 85 percent of the value of total exports in 1998-2001.<sup>19</sup> Nevertheless, Mexico remains a significant oil exporter, and the importance of oil exports has revived along with the high prices of the past few years. The Dutch disease concept is therefore possibly relevant to Mexico,

especially if it is widened to incorporate other sources of sudden windfalls of foreign exchange inflows that Mexico has experienced, such as the “hot money” financial investments of the early 1990s and more recently the upsurge in remittances from migrant workers in the US.

The same Bank of Canada research team that has developed an econometric equation for Canada’s real exchange rate has also developed a parallel one for Mexico (see Murray et al. 2003). Primary commodity prices other than oil are not included in the Mexican equation, since Mexico is not a major exporter of other primary products. With data estimated through the late 1990s, the equation shows unambiguous evidence for a positive, long-run effect of oil prices on the real value of the peso. Presumably, the rise in oil price since 2000 and the continued strength of the peso since that time would confirm the same positive relationship, if the data set were extended to include more recent years. Murray et al. (2003) did not include worker remittances in their exchange rate equation for Mexico, since those have become important only since their study was published, but one may surmise that inflows of foreign currencies (mostly US dollars) from migrant workers would have analogous effects to inflows of oil export revenue. However, interest rate differentials also affect the Mexican-US exchange rate, as they do the Canadian-US rate. Thus, monetary policy and oil prices both affect the value of the peso.

As noted above, the peso has leveled off at a real exchange rate that makes Mexico a relatively uncompetitive location for export production and export-oriented FDI, especially in manufactures.<sup>20</sup> As a result of the once-again overvalued peso, Mexico’s non-oil export revenue has grown slowly and its FDI inflows have stagnated since the early 2000s. Moreover, manufacturing employment—which Mexico had hoped would grow strongly following the creation of NAFTA—has stagnated, if not actually declined, in recent years. Although comprehensive annual data on Mexican manufacturing employment comparable to those shown

in Figure 3 for Canada are not available, the best available estimates show that the number of manufacturing jobs has fallen since peaking in 2000. Figure 6 shows that manufacturing employment in Mexico has declined since that time in both the export-oriented maquiladoras and other (non-maquiladora) manufacturing industries—more so in the latter, which produce for both export and domestic markets, but also in the former. This stagnation and decline in manufacturing employment corresponds to the period when the peso became chronically overvalued, as shown in Figure 5.

**[Figure 6 about here]**

Since the employment levels shown in Figure 6 are based on partial surveys, a more global measure of manufacturing output (as a percentage of GDP) is shown in Figure 7. The manufacturing share of GDP increased significantly in the late 1990s following the adoption of NAFTA (and while the peso was temporarily lower), but then declined back to its previous level after the peso appreciated in the early 2000s. However, as in the case of Canada, it remains to be seen to what extent the real appreciation of the peso can be attributed to higher oil prices, as is required for a Dutch disease diagnosis. Most of the rise in the peso occurred between about 1999 and 2002 (see Figure 5), before the boom in oil prices which really didn't take off until late 2004. In fact, the peso exhibits remarkable stability during the years of the recent jump in oil prices, although this could be due in part to Banco de México purchases of foreign exchange reserves that have prevented the peso from rising more.<sup>21</sup> Furthermore, the stagnation of manufacturing employment and the decline in the manufacturing share of GDP both began several years before the big increases in oil prices in 2004-8. Thus, while Mexico exhibits some symptoms of the Dutch disease, the application of this diagnosis remains at best uncertain.

**[Figure 7 about here]**

## **A Note on Mexico's Cross-Exchange Rate and Transportation Costs**

Since the peso has been relatively stable in terms of the US dollar over the past several years while the latter has been declining in value vis-à-vis the European currencies and Canadian dollar, the peso has effectively depreciated relative to other (non-US dollar) floating rate currencies. Thus, the peso fell more on a multilateral basis between 2003 and 2008 than it did bilaterally with the US dollar (see Figure 5). This may help Mexican exports to some extent, but Mexico does not export much to Europe or Canada, and the depreciation of the peso relative to European currencies also makes European imports more expensive. What is more important for Mexico is the cross-exchange rate of the peso with the currencies of the other semi-industrialized countries that export similar types of labor-intensive manufactures.<sup>22</sup>

In this regard, what is important is that the US dollar has depreciated much less relative to most Asian currencies, which tend to have fixed or managed exchange rates, than it has compared to the European or Canadian currencies. Especially, the Chinese yuan was fixed in nominal terms at 8.28 per US dollar from 1994 to 2005, when it was switched to a (heavily) managed float under which the yuan slowly appreciated to 6.86 per US dollar (or by a cumulative 17 percent) as of mid-2008.<sup>23</sup> Since Chinese inflation was lower than Mexican inflation during most of this period, the yuan depreciated significantly versus the peso in real terms between 1995 and 2007.<sup>24</sup> The real depreciation of the yuan relative to the peso, coupled with China's admission to the World Trade Organization in 2001, partly explain the growing shift of labor-intensive manufactures from Mexico to China (see Gallagher et al. 2008).

Of course, China's wages would still be an order of magnitude lower than Mexico's at

any conceivable exchange rate, and China has used more activist industrial policies to promote exports compared with Mexico's more "neo-liberal" approach during the past two decades. But forming a monetary union with the US would prevent Mexico from devaluing relative to the US dollar in an effort to become more competitive vis-à-vis the Asian exporters, an option that Mexico still retains even if it has chosen not to exercise it. Paradoxically, then, the formation of a NAMU could put another nail in the coffin of the NAFTA trade strategy, in which Mexico sought to become a manufacturing export powerhouse (and to create large numbers of industrial jobs) by attracting massive amounts of export-oriented FDI.

However, Mexico's unique geographic advantage as a semi-industrialized nation located next to the US implies that Mexico may obtain a unique benefit from high energy costs that has been little noticed until recently. High energy costs have significantly raised international transportation costs, which in turn are making some imports from China and other Asian countries less competitive in the North American market. This is leading some international companies to consider moving "outsourced" production back to Mexico, although the heaviest goods (such as steel) may be produced in the US itself (see Rubin and Tal 2008).

## **WOULD A NAMU SOLVE THE DUTCH DISEASE PROBLEM FOR CANADA AND MEXICO?**

It is of course true that creating a supranational North American currency comparable to the euro, such as the "amero" proposed by Grubel (1999)—or even the adoption of the US dollar by Canada and Mexico—would protect Canadian and Mexican industries from future increases in their countries' exchange rates. However, adopting a single regional currency would not protect

the industries of the member countries from future increases in the value of that currency relative to other national or regional currencies, such as the euro, British pound, and Japanese yen. For both Canada and Mexico, however, the US is by far their largest trading partner, so those fluctuations might not be as important for them as they would be for other countries that might want to link to the US dollar—as, for example, when Argentina adopted its fixed (1:1) peso-dollar exchange rate, in spite of having relatively little trade with the US.

In terms of avoiding Dutch disease, North America as a whole has a pattern of trade and migration flows that would probably dampen fluctuations in the value of a single regional currency related to energy prices and worker remittances.<sup>25</sup> If anything, the three NAFTA countries combined are probably net importers of energy products, since the US absorbs most of Canada and Mexico's oil and gas exports but still buys about two-thirds of its imported oil from other countries.<sup>26</sup> Since so much of the three countries' energy trade is intra-regional, global "oil shocks" would probably have much less impact on the exchange rate of the North American single currency (amero or dollar) with other global currencies than it presently has on the exchange rates of the Canadian dollar and Mexican peso.

By the same token, however, fixing the Canadian and Mexican exchange rates permanently to the US dollar (or to a new currency) would prevent those rates from depreciating in the event of unfavorable "shocks," including future declines in oil prices. Unless a compensating regional fiscal transfer mechanism was put in place (an unlikely prospect), Canada and Mexico would suffer more severe adjustment costs when hit by those sorts of shocks. This is especially true because the US is a large net importer of oil and other commodities from non-NAFTA countries, and hence would benefit from such a supply shock that was detrimental to Canada and Mexico—in which case, the dollar (or amero) might actually go up in value, just

when the latter two countries would need it to go down. Adjustment would then require a severe deflation in prices and incomes within each of those countries to absorb future negative oil price shocks, with potentially devastating effects on their manufacturing sectors. Thus, the loss of this important instrument of adjustment would mean that any future adverse shocks would have greater negative repercussions on incomes domestically in Canada and Mexico (see Bougrine and Seccareccia 2004).<sup>27</sup>

A further problem would arise if a NAMU was formed during a period like the current one, in which both Canada and Mexico's manufacturing sectors are already suffering from overvalued currencies. If the Canadian dollar and Mexican peso were converted to a North American currency (euros or US dollars) at anything like the present exchange rates, this would merely lock-in the current situation of currency overvaluation for Canada and Mexico. This would permanently institutionalize the negative effects of the Dutch disease in both countries—or else it would require severe deflation to adjust to the fixed conversion rates, not unlike what happened when Britain pegged the pound to gold at an overvalued rate after World War I, as famously described by Keynes (1925).<sup>28</sup> Therefore, it would be a profound and tragic mistake to lock-in the present, overvalued exchange rates in a NAMU in the name of preventing an epidemic of Dutch disease that has already broken out.

### **Fiscal and Monetary Policies Under a NAMU**

There is, however, a further problem concerning whether an EMU-type arrangement would be a positive improvement over the current status quo of independent floating exchange rates for Canada and Mexico. As pointed out elsewhere (see Seccareccia and Lequain 2006), the



establishment of the euro has been an historic monetary experiment that, some have argued, for the first time in centuries has given birth to a monetary system that formally separates money from the individual nation state. The policy system that underlies the two main pillars of the EMU—the Maastricht Treaty (1992) and the Amsterdam Stability and Growth Pact (1997)—was put in place specifically to secure this separation. This has meant a complete loss of the two principal instruments of macroeconomic stabilization policy—discretionary fiscal and monetary policy—at the national level.

According to the rules of the Treaty, fiscal policy is supposed to be severely constrained. Governments of EMU member states not only must fulfill the two fiscal requirements of keeping budget deficits within 3 percent of GDP and public debt-to-GDP ratios within a 60 percent of GDP ceiling, but also are required to target zero budget balances over the medium term. Supposedly, strong sanctions are imposed against those who do not meet these legal obligations, unless countries file cumbersome petitions for exceptions under the “severe recession” clause of the Treaty. There have been some prominent short-term violations of the 3 percent rule, however, and these have not always been subject to the legally mandated penalties—which suggests that the legal framework for fiscal policy in the EMU is impractical and unrealistic. Nevertheless, the Maastricht Treaty militates against the regular and accepted use of countercyclical fiscal policy, even if some countries follow its mandates more strictly than others.

With the practical disappearance of activist fiscal policy as tool for macroeconomic stabilization for the current twelve member states, control over the macroeconomy rests almost exclusively on monetary policy conducted by the ECB—a supranational, independent institution over which the European Parliament has no direct power. Hence, if such an EMU structure were

to be parachuted into the North American context, more active fiscal policy would no longer be possible in any one NAMU member. With a “one shoe fits all” monetary policy within the NAMU, the NACB (or expanded Fed) would not cater sufficiently to Canada’s or Mexico’s regional needs, since the latter countries would, as noted earlier, probably hold only one seat each on the governing board of a NACB or an expanded FOMC.<sup>29</sup>

However, North America is not Europe, and the likely predominance of the US in a NAMU would create some special opportunities and challenges for the two smaller partners. In terms of monetary policy, the Fed has shown itself to be more willing to adopt countercyclical interest rate cuts during recessions than the ECB, which only targets price stability. Even though the Fed is strictly concerned with US business cycle conditions at present, Canada and Mexico nevertheless benefit from the Fed’s more flexible stance to the extent that their business cycles are positively correlated with US cycles.<sup>30</sup> If Mexico and Canada were to join a NAMU in which the central bank (NACB or expanded Fed) followed current Fed procedures, those countries would actually be subject to a less strict inflation-targeting monetary policy than they currently have today. Nevertheless, they would not give up inflation control, since the Fed—in spite of its lack of official inflation targets and its relatively greater flexibility—has effectively contained US inflation within rather narrow bands (about 2-4 percent per year) since the early 1990s.

It is unclear whether Canada and Mexico would have to agree to strict fiscal targets in a NAMU, similar to those that have been imposed on EMU members. On the one hand, the US is unlikely to want to tie its own hands by giving up the right to run large budget deficits or to have the Fed hold US government debt. Therefore, if Mexico and Canada were to be treated as co-equals with the US, they should not be subject to any fiscal restrictions as a condition of joining a NAMU or having a seat on the FOMC. On the other hand, insofar as Mexico and Canada might

be treated as mere Fed districts, they could possibly be required to have balanced budgets or to meet certain arbitrary fiscal targets, more on the model of the US states, which cannot run current budget deficits as the US federal government can. It is possible that an expanded North American Fed or NACB would not be allowed to hold Canadian or Mexican government debt, and that the Bank of Canada and Banco de México might similarly be prohibited from doing so (although the Banco de México does not currently hold any Mexican government debt anyway).

In some ways, Mexico would have an easy time adjusting to EMU-like fiscal restrictions today, because the Mexican government already operates a fiscal policy that targets the fiscal balance itself, and which is therefore procyclical rather than countercyclical (see Moreno-Brid and Ros 2008: Ch 8; Esquivel 2008). Furthermore, the procyclical bias of Mexican fiscal policy is amplified by the reliance of the government on the national oil company Pemex for a substantial part of its tax revenue (see Puyana 2006). But for this very reason, a monetary union could lock-in a type of fiscal policy that Mexico would otherwise retain the option of changing in the future (for example, if the country were to focus more on infrastructure investments aimed at promoting long-run development, and stop targeting the fiscal balance itself).

Indeed, one should not discount the possibility that, at some future time, some interests in Mexico might seek a NAMU as a means of locking in the current monetary and fiscal policy regime. After all, one of the chief arguments in favor of NAFTA in the early 1990s was precisely that it would lock-in Mexico's liberalizing reforms of the late 1980s, especially the opening to foreign trade and investment, by preventing future Mexican governments from abandoning the country's commitment to liberalized trade and investment policies (Lustig 1998). A similar case could be made by proponents of the current macro policies, in the not-too-distant future, that Mexico should similarly lock-in its commitments to price stability and a balanced government

budget by joining a monetary union that would force it to maintain those commitments in perpetuity—especially if there appeared to be a realistic prospect of a future left-wing government that might seek to change those policy priorities—as noted previously by Bowles and Moreno-Brid (2008: 137).

Canada also would not encounter any significant political or institutional barriers in abiding by EMU-style fiscal rules under present conditions. In the Canadian context, successive governments since the mid-1990s have been committed not only to balanced budgets, but also to targeting budget surpluses so as to achieve a pre-established, long-term decline in the ratio of federal debt to GDP. As shown elsewhere, these persistent federal surpluses have been achieved at the cost of destabilizing private household finances, thereby leading to ever declining personal saving rates and rising household indebtedness (Seccareccia 2005). In much the same way, on the monetary front, Canada's central bank has already achieved the EMU's commitment to price stability via its official inflation targeting and, much like the federal government's commitment to "sound finance" and fiscal surpluses, the Bank of Canada has been officially targeting a 2 percent inflation rate over the last fifteen years or so.

Nevertheless, there is some evidence for countercyclical fiscal policy in Canada, in spite of the high average level of the budget surplus. According to Seccareccia and Lequain (2006), primary (cyclically adjusted) fiscal balances respond negatively to the unemployment rate in both Canada and the US, unlike in the EMU where the authors find a somewhat perverse positive response. Therefore, if a NAMU imposed any restrictions on Canada's fiscal autonomy, it could lessen the ability of the Canadian government to adopt countercyclical fiscal policies attuned to short-run conditions in the Canadian economy (and it would also prevent Canada from rethinking its current commitment to long-run, average budget surpluses).

## CONCLUSIONS

Both Canada and Mexico have experienced currency appreciations in recent years that have stymied the growth of their manufacturing sectors and reduced manufacturing employment. Since oil prices have also risen rapidly in recent years, some observers have leapt to the conclusion that these countries are suffering from Dutch disease, and that monetary integration with the US might be a solution. In the Mexican case, however, the currency appreciation largely preceded the rapid increase in oil prices (though there is some evidence of the central bank resisting further upward pressure on the peso by buying foreign exchange reserves), while in Canada the currency appreciation began earlier than the rise in oil prices and at most may have been aggravated by the latter. In both countries, strict inflation-targeting monetary policies have led the monetary authorities to tolerate overvalued currencies, to the detriment of real economic activity. Overall, currency overvaluation in these two countries seems to have resulted from a combination of monetary policy and commodity prices, not the latter alone—and alternative monetary policies could have prevented some of the appreciation that has occurred (for example, by matching US interest rate cuts).

If, nonetheless, Canada and Mexico were to participate in a North American scheme for monetary integration, under any politically conceivable set of arrangements neither country would be likely to retain adequate instruments to implement national stabilization policies in response to foreign demand shocks or to pursue other, longer-run objectives (such as addressing Mexico's profound development needs). Even though a NAMU could prevent future outbreaks of Dutch disease, it could also lock-in the currently overvalued exchange rates of the Canadian

dollar and Mexican peso, while also creating a deeper problem of disarming national authorities from pursuing macroeconomic stabilization policies or long-term growth strategies. An example of this is the incapacity of European countries to address their problems of deindustrialization and mass unemployment through both macroeconomic and exchange rate policies. Despite Europe's problem of long-term unemployment, under the EMU's constraining framework no national government is able to pursue a rigorous pro-growth policy, and the EU as a whole lacks the capacity to do this. Hence, greater monetary integration with the creation of currency blocs of either "peer groups" (as with the EMU) or "client states" (as with a NAMU) is not a viable solution to international currency problems, such as Dutch disease. What is needed is a more fundamental reform of the global payments system that would maintain intact the ability of national governments to pursue independent macroeconomic policies while still retaining their respective national currencies.<sup>31</sup> But such could only be achieved at a broader international level that the proliferation of regional currency blocs would preclude.

## NOTES

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<sup>1</sup> In theory, a group of countries should form a customs union—and a common market (with free mobility of labor as well as capital)—*before* forming a monetary union, as occurred in Europe (where the European Economic Community and its successor, the European Union, preceded the European Economic and Monetary Union). However, this has not stopped supporters of a monetary union in North America from proposing one before a customs union or common market could be formed in this continent.

<sup>2</sup> In this chapter, “exchange rate” always refers to the value of the home country currency, unless otherwise stated.

<sup>3</sup> Technically speaking, Canada and Mexico are considered to have “inflation-targeting” monetary policies, while the EMU has an apparently looser commitment to more vaguely defined “price stability,” but we believe that in practice the ECB has effectively focused on the inflation rate as the main (de facto) target of its monetary policies.

<sup>4</sup> Smith (2002: 386-87, 394n31) cites Bergsten (1999: 6) as making this argument. Smith (2002: 390) also cites Drummond et al. (2001) as arguing that “dollarization is the only viable fixed exchange rate regime for Canada since a pegged rate is not sustainable and the US is not interested in a currency union.” See, as well, Seccareccia (2006); and Kenen and Meade (2007: Ch 5) for a discussion of proposals to construct an augmented Fed including Canada and Mexico.

<sup>5</sup> See Smith (2002) for a balanced but largely sympathetic discussion of proposals for greater monetary integration in North America from that time period. See Grubel (1999) for a specific proposal involving the creation of a new currency, the “amero,” to be issued by a North American Central Bank. See also Kenen and Meade (2007: Ch 5) for further discussion of Canadian support for North American monetary integration.

<sup>6</sup> Estimates of the likely magnitude of Canadian savings in transactions costs from switching to a North American currency vary widely, but those savings are not likely to be large (and at most would be a one-time gain) that must be pitted against the cost of converting to a single currency. Grubel (1999: 9) provides some casual estimates in the range of 0.1 to 0.4 percent of GDP. See Seccareccia (2002, 2006) for a critical discussion of these estimates.

<sup>7</sup> See Courchene (1999, 2007, and 2008) and Grubel (2008); see also Bayoumi and Eichengreen (1994), who argue to the contrary that North America is not an OCA. Indeed, as emphasized by McKinnon (2000), Mundell's (1961) original insight was to show that OCAs ought to be smaller rather than larger. Both Mundell (1961) and Bayoumi and Eichengreen (1994) argue that, based on OCA criteria, North America should be divided north-south instead of east-west in terms of optimal currency zones. Hence, OCA criteria traditionally do not favor a large North American currency area as some current supporters of greater monetary integration have argued.

<sup>8</sup> From the peak of the US dollar in February 2002 through the last full month available at the time of this writing (June 2008), the US dollar fell (in nominal terms) by 44 percent relative to the euro versus 36 percent relative to the Canadian dollar. Data from US Board of Governors of the Federal Reserve System, statistical release G.5, "Foreign Exchange Rates (Monthly)," July 1, 2008, <[www.federalreserve.gov/releases/g5/](http://www.federalreserve.gov/releases/g5/)>. However, it should be noted that the euro could have been bolstered by its growing use as a reserve currency during this period.

<sup>9</sup> See Statistics Canada, CANSIM II series V173905, V173931, and V173932 (data for 2008 are the average for January-May).

<sup>10</sup> For example, Kenen and Meade (2007: Ch 5) cite the Mexican Bankers Association as voicing support for a single currency in North America in 1999. Bowles and Moreno-Brid (2008: 130-31) cite the Centro de Estudios Económicos del Sector Privado and the Mexican Council of Businessmen (the latter of which is described as "the voice of the Mexican entrepreneurial elite") as supporting dollarization in 1998-99.

<sup>11</sup> See Ibarra and Moreno-Brid (2001) and Bowles and Moreno-Brid (2008) for critical perspectives on Mexican proposals for monetary integration or dollarization circa 1989-2000; the latter also provide a retrospective on why the idea subsequently lost support in Mexico.

<sup>12</sup> Mexico, like Canada, has formally participated in the Bush administration's "Security and Prosperity Partnership" (SPP), since neither country can afford to say "no" to the US government. Nevertheless, Mexicans are under no illusions that the SPP offers them any economic benefits.

<sup>13</sup> One could argue that Mexico is very different from Argentina and might be a more appropriate candidate for dollarization or fixing its currency to the US dollar, given the much greater commercial integration of Mexico with the US compared with Argentina. Nevertheless, the Argentine crisis effectively deflated the credibility of the fixed exchange rate *cum* currency board option for large Latin American nations.

<sup>14</sup> According to Ramírez de la O (2004), the initial target date for this convergence was 2003—a date which he viewed as too ambitious, and which was not actually met. He argued that this policy was inappropriate, because it was bound to result in a real appreciation of the peso that would be detrimental to the country's long-run growth.

<sup>15</sup> Calculated from data in International Monetary Fund (2008).



<sup>16</sup> For additional perspectives on the slow growth of the Mexican economy in recent years, see Nadal (2003), Moreno-Brid, et al. (2005), Blecker (2008), and Ibarra (forthcoming).

<sup>17</sup> In the most recent year (2004) for which data are available on a purchasing power parity basis, Mexico's real per capita GDP as a percentage of real US per capita GDP was at its lowest point of any year in the preceding fifty years. See Penn World Table Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, September 2006 <pwt.econ.upenn.edu>.

<sup>18</sup> See Hanson (2006) for evidence on the wage differentials and incentives that induce Mexicans to migrate to the US and estimates of the number of migrants.

<sup>19</sup> Data are from World Bank, *World Development Indicators*, <www.worldbank.org>.

<sup>20</sup> Galindo and Ros (2008) find evidence that the Banco de México has followed an asymmetrical monetary policy that is biased toward peso appreciation, in the sense that the Banco generally tightens credit when the peso is falling but does not loosen credit when the peso is rising. But see the next note for possibly contrary evidence, which suggests that the Banco has attempted to limit the appreciation of the peso to some extent.

<sup>21</sup> Mexico's total foreign exchange reserves nearly doubled from US\$44.4 billion at yearend 2001 to US\$86.3 billion at yearend 2007 (International Monetary Fund, *International Financial Statistics*). The Banco de México reports that it increased its international reserves by US\$10.3 billion in 2007 alone, and another US\$6.1 billion in the first quarter of 2008 (balance of payments data, www.banxico.gob.mx). One could question whether all of this reserve accumulation represented intentional currency market intervention, but the net impact has to have been to hold the peso down in the face of pressures for it to rise further.

<sup>22</sup> See Blecker and Razmi (2008) and Razmi and Blecker (2008) on how changes in real cross-exchange rates among semi-industrialized countries (including Mexico) foster a "fallacy of composition" that limits these countries' ability to simultaneously pursue export-led growth.

<sup>23</sup> See U.S. Federal Reserve Statistical Release H.10, Foreign Exchange Rates (Daily) <www.federalreserve.gov/releases/h10/Hist/>, data for June 30, 2008. During the same period (February 2002 to June 2008), major floating-rate currencies such as the euro, British pound, and Canadian dollar have appreciated by more than 30 percent with the US dollar (see also note 8, above).

<sup>24</sup> The real value of the yuan relative to the peso fell by 31 percent from its peak in the fourth quarter of 1995 (following China's currency reform of 1994 and Mexico's peso crisis in 1994-95) to the fourth quarter of 2007, as measured by  $EP_{China}/P_{Mex}$ , where  $E$  is the nominal exchange rate (period average) in pesos/yuan (calculated by the ratio of pesos/US dollar to yuan/US dollar) and  $P_i$  is the consumer price index for country  $i$  (data from International Monetary Fund, *International Financial Statistics*). Chinese inflation exceeded Mexican inflation in 2007-8, but not by enough to reverse more than a decade of relatively lower average price increases in China.

<sup>25</sup> As already alluded to in note 7 above, Bayoumi and Eichengreen (1994) found that the effects of supply shocks vary not only between Canada, Mexico, and the US, but also across regions of each country, with resource-exporting regions in each country experiencing shocks that are more correlated on a north-south basis—that is to say, correlated with those of similar regions in the other countries than with other regions in their own country.

<sup>26</sup> In 2006, Canada and Mexico together accounted for 32 percent of US imports of crude oil (measured by quantity in barrels). See U.S. Census Bureau, “U.S. International Trade in Goods and Services, December 2006,” news release (February 13, 2007), FT900 Supplement, Exhibit 3 <[www.bea.gov/newsreleases/international/trade/2007/pdf/trad1206.pdf](http://www.bea.gov/newsreleases/international/trade/2007/pdf/trad1206.pdf)>.

<sup>27</sup> See also Murray, et al. (2003), who emphasize importance of the shock-absorbing role of the floating exchange rate in Canada, and who also note that Mexico’s adherence to a fixed nominal exchange rate in the past contributed to its repeated economic crises.

<sup>28</sup> Keynes (1925) attacked Winston Churchill’s policy of returning Britain to the gold standard in 1925 and argued against the deflationary consequences of the British pound’s return to its pre-war parity. One could also argue that Germany joined the EMU at an overvalued exchange rate for the deutschemark in the 1990s, following German reunification, with adverse consequences for the German economy (we are indebted to Ellen Meade for suggesting this point).

<sup>29</sup> For a discussion of the problems faced by policy makers when trying to implement a “one shoe fits all” monetary policy in a non-optimal currency area, see Palley (2003).

<sup>30</sup> This positive correlation has existed between Canada and the US for several decades, but is a relatively recent phenomenon for Mexico and the US, and may be diminishing for Canada and the US. Although Canada’s business cycles have been strongly synchronized with those of the US in the past, this has changed over the last two decades. For example, Canada suffered a more severe “Made in Canada” recession in 1990-91 with only a milder counterpart in the US, while the latter went through a recession in 2001 when Canada experienced only slower growth but not an actual fall in output. To the extent that the US and Canada are now experiencing different shocks, of course, they represent less of a potential OCA than before. For Mexico, the correlation is strong and significant only since the formation of NAFTA and the end of the peso crisis (i.e., since the late 1990s). See Chiquiar and Ramos-Francia (2004), Blecker (2005, 2008), Lederman (2005), and Mejía Reyes, et al. (2006). Since both Canada and Mexico sell upwards of 80 percent of their exports in the US market, however, any stabilization of the US economy is bound to help at least the export-oriented sectors of those two countries.

<sup>31</sup> See D’Arista (1999, 2004) for suggestions along these lines.

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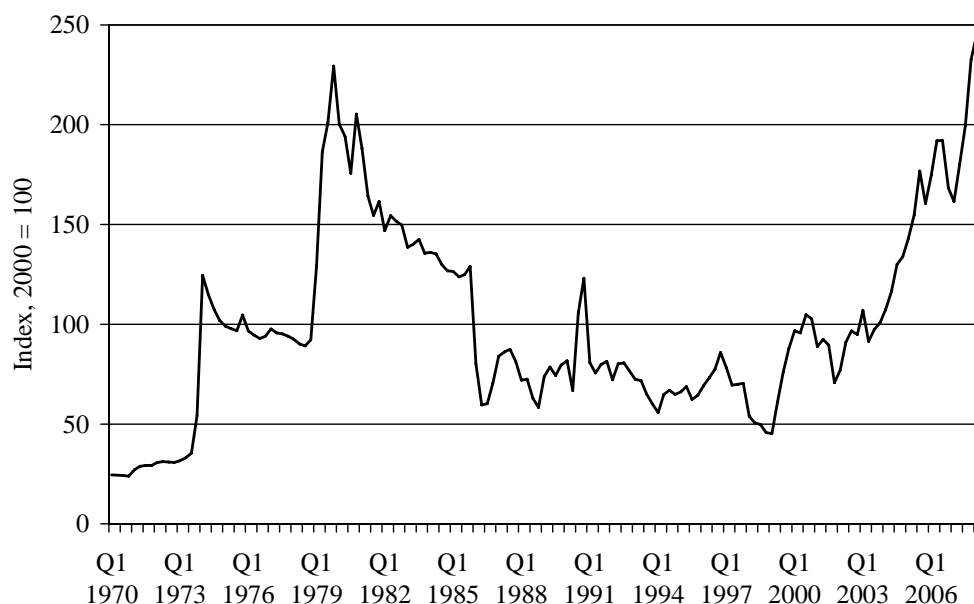
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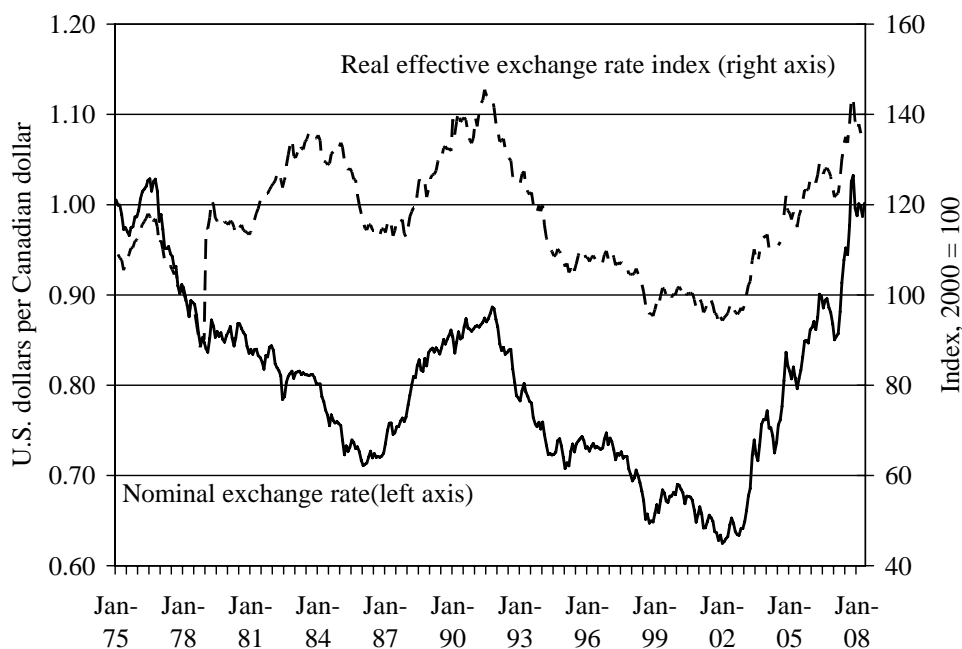
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*Note:* This index of real oil prices was constructed by taking the ratio of the IMF's index of three spot oil prices to the US producer price index for industrial commodities.

*Source:* International Monetary Fund (IMF), *International Financial Statistics*, and author's calculations.

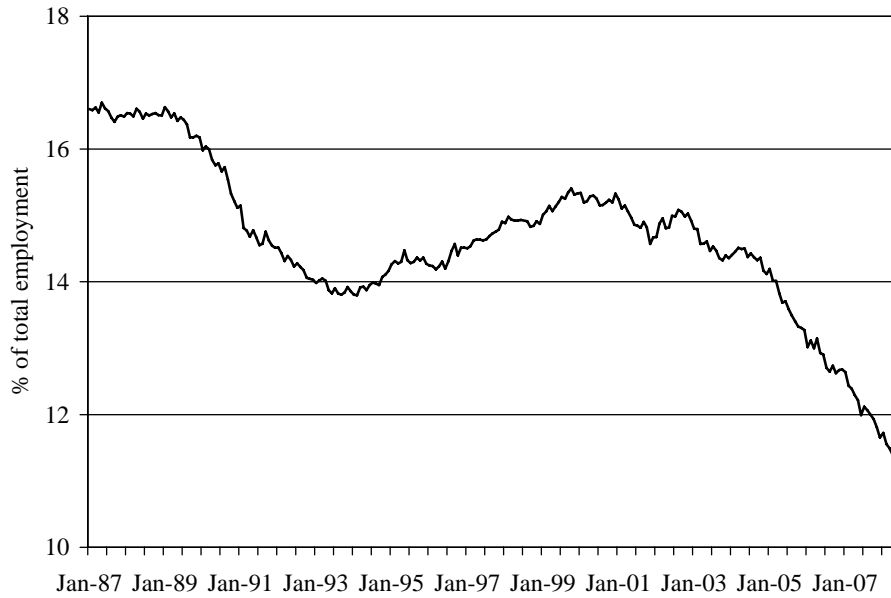
*Figure 1 Real oil price index, quarterly, Q1 1970 to Q1 2008*



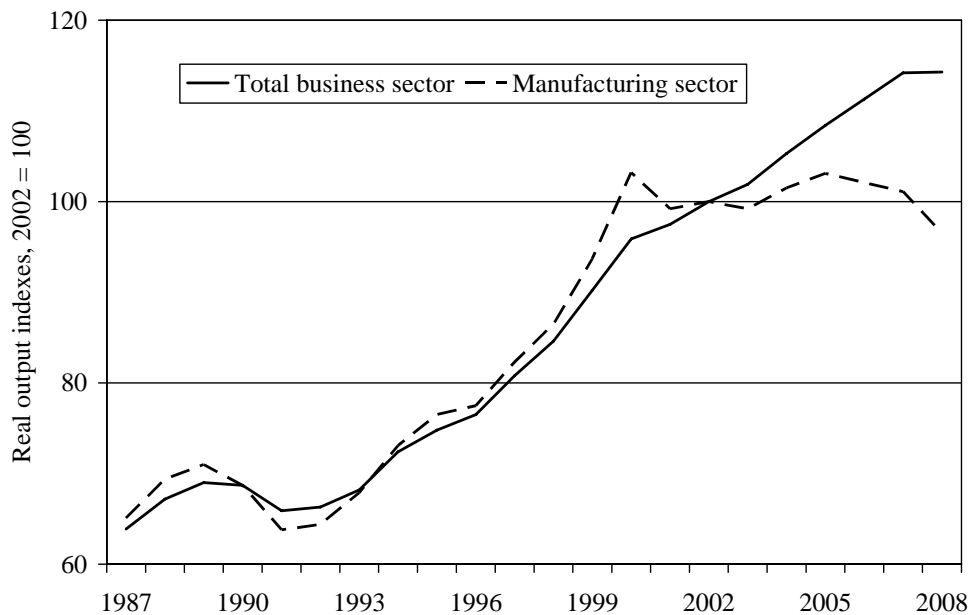
*Note:* The real effective exchange rate index is based on relative consumer prices and has missing values for certain months in 1975, 2003-4, and 2008.

*Source:* IMF, *International Financial Statistics*.

*Figure 2 Canada's nominal and real exchange rates, monthly, January 1975 to May 2008*

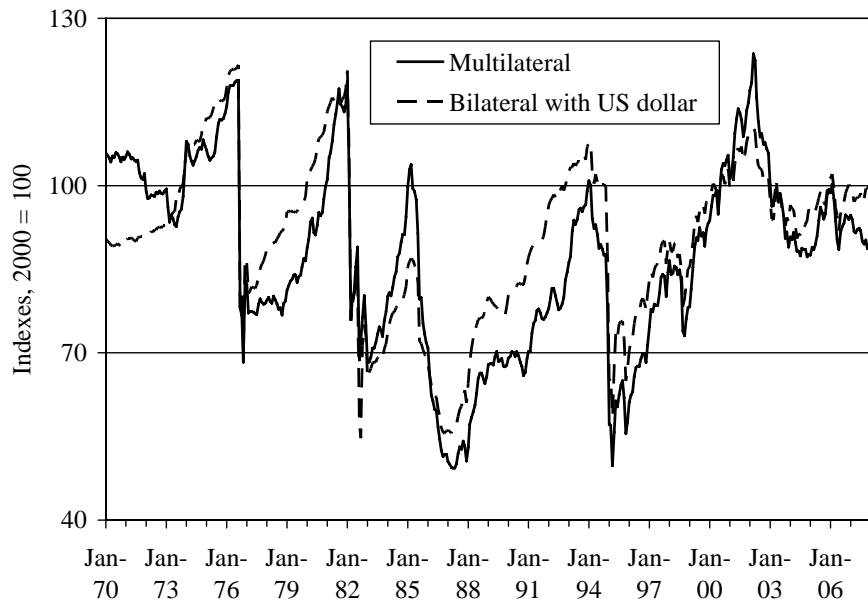


Source: Statistics Canada, CANSIM II Series V13682073 and V13682079, and authors' calculations.  
 Figure 3 Manufacturing employment as a percentage of total employment in Canada, monthly, January 1987 to June 2008



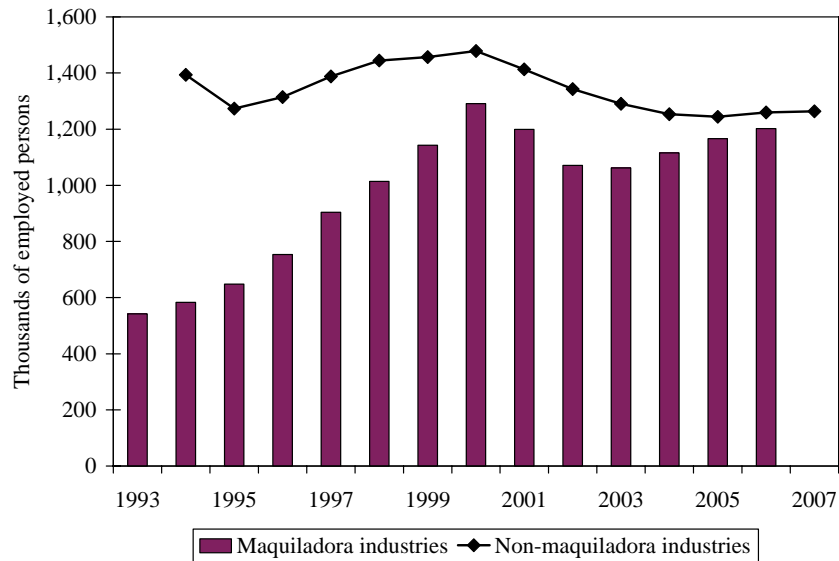
Note: Data for 2008 are for the first quarter.  
 Source: Statistics Canada, CANSIM II Series V41707535 and V41712932.  
 Figure 4 Real gross domestic product of total business and manufacturing sectors, Canada, annually, 1987-2008 (indexes, 2002 = 100)





Sources: Banco de México, [www.banxico.gob.mx](http://www.banxico.gob.mx); IMF, *International Financial Statistics*; and authors' calculations.

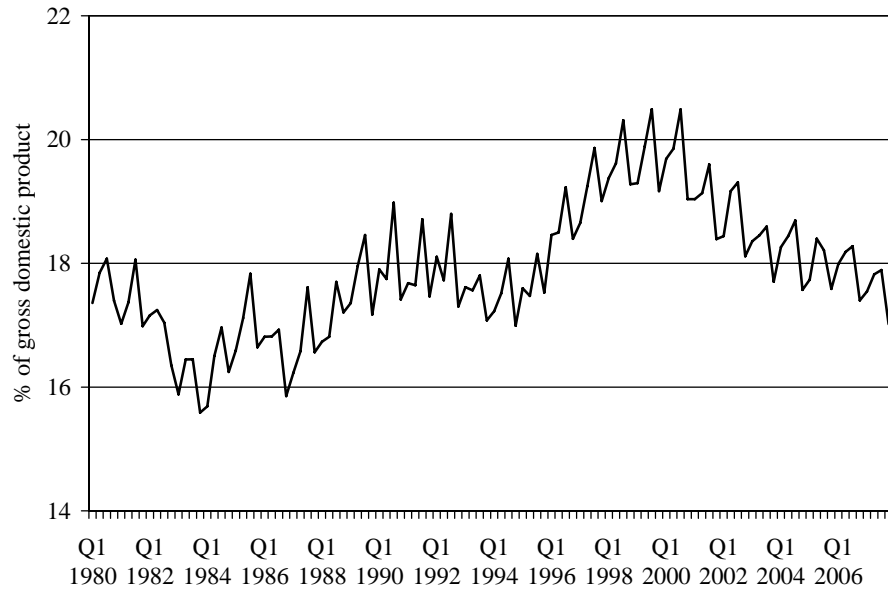
Figure 5 Real value of the Mexican peso, bilateral and multilateral indexes, monthly, January 1970 to May 2008



Notes: Data for the maquiladora sector were not reported after 2006. The monthly survey of non-maquiladora industries used here began in 1994; earlier surveys are not consistent.

Source: Instituto Nacional de Economía, Geografía e Informática (INEGI) <[www.inegi.gob.mx](http://www.inegi.gob.mx)>, and authors' calculations.

Figure 6 Employment in Mexican manufacturing, maquiladora and non-maquiladora industries, annual averages of monthly survey data, 1993-2007



*Note:* Based on real output data with a 1993 base year.

*Source:* INEGI, Sistema de Cuentas Nacionales de México, <[www.inegi.gob.mx](http://www.inegi.gob.mx)>, and authors' calculations.

*Figure 7* Manufacturing output as a percentage of gross domestic product in Mexico, quarterly, Q1 1980 to Q4 2007