



AMERICAN UNIVERSITY
W A S H I N G T O N , D C

Department of Economics
Working Paper Series

Macroeconomic and Structural Constraints
on Export-Led Growth in Mexico

by

Robert A. Blecker

No. 2006-05
March 2006

**[http://www.american.edu/academic.depts/cas/econ/
workingpapers/workpap.htm](http://www.american.edu/academic.depts/cas/econ/workingpapers/workpap.htm)**

Copyright © 2006 by Robert A. Blecker. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Macroeconomic and Structural Constraints on Export-Led Growth in Mexico

By

Robert A. Blecker

Professor
Department of Economics
and
Fellow
Center for North American Studies
American University
Washington, DC 20016-8029
blecker@american.edu

This paper was prepared for the Latin American Studies Association (LASA) Congress in San Juan, Puerto Rico, March 15-18, 2006.

1. Introduction

After a half century of pursuing an inward-oriented, state-led economic development strategy, Mexico shifted to a more outward-oriented, market-focused approach in the aftermath of the debt crisis of the 1980s. As part of a broader policy of privatization, deregulation, and liberalization, Mexico joined the General Agreement on Tariffs and Trade (GATT), the predecessor to the World Trade Organization (WTO), in 1986, and the North American Free Trade Agreement (NAFTA), a preferential trading bloc with Canada and the United States, in 1994. Both of these moves were intended to propel Mexico out of its post-debt crisis “lost decade” by attracting foreign direct investment (FDI) and stimulating export-led growth (see Lustig, 1998).

In roughly the same period, Mexico was struggling to escape from the series of repeated economic and financial crises that plagued the country from the mid-1970s through the mid-1990s, mostly following the six-year presidential election cycle from the end of Luís Echeverría’s term in 1976 to the beginning of Ernesto Zedillo’s term in 1994 (though most observers blame the last crisis on his predecessor, Carlos Salinas). Understandably, the two most recent presidents (Zedillo and Vicente Fox) have focused their macroeconomic and monetary policies on preventing the recurrence of a financial crisis, so far successfully. Thus, the economic policies of Mexico in the past two decades can be characterized as the simultaneous pursuit of export-led growth and macroeconomic stabilization.¹

These policies have had some limited successes, particularly in the areas most directly targeted by the policies. International trade and investment flows between Mexico and its North American neighbors grew rapidly in the late 1990s, although their growth has slowed down

considerably in the early 2000s. Many North American industries have rationalized their operations on a continental basis, resulting in a regionally integrated industrial structure at least in some sectors (for example, automobiles).² Efficiency and productivity have increased in Mexico's export sectors, although it is not clear whether overall productivity has been growing faster. Inflation has been reduced to the lowest rate in many decades, while the peso has stabilized and there is no balance of payments crisis looming on the immediate horizon. In the absence of a new external shock (such as a major U.S. recession), Fox is likely to follow Zedillo later this year as only the second Mexican president since the 1960s to leave office without bequeathing a major economic crisis to his successor.

But from a broader perspective, what really matters—the long-run growth and development of the Mexican economy—have not received an adequate stimulus from this set of policies, and in fact average growth has actually slowed down. The growth rate of Mexico's real gross domestic product (GDP) has averaged only about 3% per year since the country joined GATT and NAFTA. This growth performance is far below the rate achieved during the decades of the much-maligned import-substitution approach to development, when the growth rate averaged over 6% annually from the 1950s through the 1970s (see the next section for more details). Mexico's current growth rate is also far less than what the most successful export-oriented countries of our time (such as China and India today, and the East Asian "Four Tigers" in past decades) have achieved. Most economists agree that sustained growth rates of at least 6% per year or higher would be necessary to simulate more adequate job creation and to boost real wages and living standards in Mexico.³

Most importantly, the disappointing growth performance of the Mexican economy has prevented the country from achieving its major social and economic development goals,

especially in regard to providing adequate productive employment and rising living standards for its people. Although Salinas promised that NAFTA would enable Mexico to “export goods not people,” the Mexican economy has failed to provide enough jobs at decent wages to prevent the emigration of millions of workers to the United States since the 1990s.⁴ Real wages have stagnated in Mexico since 1994, while inequality has widened.⁵ Ironically, most of the net employment creation in Mexico since it joined NAFTA in 1994 has been in the non-traded services sectors—including “informal” employment, which usually provides low pay, poor working conditions, and no social benefits—not in the traded goods sectors (manufacturing and agriculture), which if anything have seen an overall diminution in employment as gains in export production have been offset by losses in domestic (or import-competing) production (see Polaski 2003; Salas and Zepeda, 2003).

In spite of Mexico’s hope to achieve convergence with its richer neighbors to the north through its liberalization and integration policies, in reality the “development gap” between Mexico and the United States has persisted at about the same level or even increased over the past decade. As table 1 shows, Mexico’s total GDP and real hourly wage (manufacturing compensation) fell behind those of the United States between 1993 and 2003, while three different measures of per capita income show either no convergence or actual divergence.⁶ Moreover, liberalization and integration have posed new challenges for Mexico, and imposed new constraints on growth-promoting policies. The Mexican manufacturing sector has become so integrated into regional and global production chains that the “backward linkages” of export industries to domestic supplier industries are weak to non-existent, resulting in small employment gains from apparently large volumes of exports. Thus, although export-oriented regions and sectors have done relatively well, the gains have not spilled over much into the rest

of the economy, while domestic producers in various activities have been hurt by competition from imports. New forces in the global economy, including the emergence of China as a major global economic power as well as other trade agreements beyond NAFTA, have limited the gains Mexico receives from its preferential trade relationship with the United States.

Perhaps most seriously, the macroeconomic stabilization policies that Mexico has felt obligated to adopt in order to reduce inflation and prevent financial crises have stymied both export performance (via a once-again overvalued currency) and overall growth (through high interest rates and fiscal restraint). Mexico's growth has been constrained in recent years by four key (and related) aspects of its current macro policies: (1) fiscal and monetary policies have been kept restrictive in order to reduce inflation and prevent financial crises; (2) capital market liberalization requires relatively high interest rates to attract foreign funds in the presence of country and exchange risk; (3) high interest rates and strong financial inflows keep the peso overvalued and thus reduce Mexico's external competitiveness; and (4) openness to imports combined with a high value of the peso foster a tendency for import growth to exceed export growth—which in turn requires yet more restrictive macro policies to slow import growth and avert balance-of-payments problems.

Thus, on the one hand, the present policy of high real interest rates and a high real exchange rate (i.e., value of the peso)—however useful for controlling inflation and preventing financial crises—is restraining growth, while at the same time the openness to free trade and capital flows has made the country more vulnerable to global market conditions and international competitive forces. From this point of view, the current Mexican policy regime is essentially a less extreme version of the failed policy regime under Salinas in 1988-94, when an overvalued currency undermined the effort to attract FDI and promote export-led growth. Although the

present policy regime is much better managed and does not presently appear destined to end in an abrupt crisis, it is nevertheless perpetuating a situation of chronically slow growth that fails to meet the country's social needs and to close the development gap.

The rest of this paper will attempt to make the case for this view by analyzing the causes of Mexico's disappointing growth performance in recent years. The analysis will proceed in the following steps. Section 2 reviews the main "drivers" or determinants of Mexican growth, which can potentially account for both the long-run growth slowdown and the pronounced cyclical volatility of the Mexican economy since the 1970s. Section 3 discusses three new challenges and opportunities in Mexico's trade relations—the increasing regional and global integration of manufacturing production, the rise of Chinese competition, and increased oil prices—and how these have affected Mexico's balance of payments and growth in the early 2000s. Section 4 then presents an econometric model using time-series data for 1970-2005, which shows that Mexico's growth is positively affected by U.S. growth and world oil prices, and negatively affected by the real value of the peso; the model also shows that the sensitivity of Mexico's growth rate to the U.S. growth rate has increased significantly since NAFTA went into effect. Section 5 concludes by discussing the policy implications for how to boost Mexico's growth in the future.

2. Macroeconomic Swings: From Recurrent Crises to Chronically Slow Growth

The enormous volatility of Mexican real GDP growth since the 1970s is illustrated by the solid line in figure 1. A government-spending-led boom under Echeverría in the early 1970s ended up causing high inflation, large fiscal deficits, and a balance-of-payments crisis, leading to a major currency devaluation and a sharp growth slowdown in 1976-77 (see Reynolds, 1978).

Mexico then enjoyed a brief boom in 1978-81, as the country became a significant oil exporter at the time of the second “oil shock” in 1978-79 (see figure 2 for an index of world oil prices). But this oil boom was cut short by the high world interest rates and falling global oil prices that—along with Mexico’s own overborrowing under then-President José López Portillo—sparked the debt crisis of 1982-83. Growth had barely turned positive in 1984-85 when oil prices dropped further and Mexico suffered another major recession in 1986. The moderately decent growth (about 4% per year) in the early post-liberalization years (late 1980s-early 1990s) was cut short by the peso (“tequila”) crisis in 1994-95, which resulted in a severe recession when GDP fell by 6.2% in 1995. This was followed by a rapid recovery and a brief boom in 1996-2000, which were then followed in turn by a recession in 2001 and slower growth during most of the last few years (the growth rate rose to 4.4% in 2004 but is projected to be only about 3% for 2005).⁷

What may be less apparent in figure 1 is the fact that the average growth for the past two decades has been unusually sluggish by Mexico’s own historical standards. To put the recent growth rates in context, it should be recalled that Mexico’s growth *averaged* 6.4% per year during the three decades from 1951 to 1980 (Urquidi, 2003, p. 562). Of course, the high growth rates of the 1970s proved to be unsustainable because they were based on excessive fiscal deficits and foreign debt, but Urquidi’s data show that the average growth rate was almost as high (6.3% per year) during the “stabilizing development” years of 1951-70 as it was over the whole period 1951-80. From the debt crisis of 1982 through 2005, a period of 24 years, Mexico has achieved growth rates over 6% in only *two single years* (1997 and 2000—see figure 1). Even if we ignore the years of virtually zero average growth in the mid-1980s, and focus on the period since Mexico joined GATT and opened its economy in 1987, its growth rate averaged only 3.0% per year from 1987-2005. If we start with the year when NAFTA went into effect in

1994, the average annual growth rate for 1994-2005 is a mere 2.9%, or 3.7% if we consider only 1996-2005 following the recovery from the peso/tequila crisis.

What are the main factors that accounted for the extreme boom-bust cycles in the Mexican economy from about 1970 to 1995, and what are the main constraints that have held Mexican growth so far below its historical average rate—and so far below what it needs to meet its development and employment needs—for the last two decades? Certainly, oil prices (see figure 2) were a major driver of Mexican growth and cyclical swings in the Mexican economy during the 1970s and 1980s, and have acquired a renewed importance since they started rising again in the early 2000s. The impact of the recent increase in energy prices on the Mexican economy will be discussed in more depth in the following section.

Another important factor, which is illustrated by the dashed line in figure 1, is the growth rate of Mexico's leading export market, the United States—where nearly 90% of all Mexican exports are sold. As this figure shows, some (but not all) of the downturns in the Mexican economy have followed recessions in the United States, including the 1975-76 slowdown, the debt crisis of 1982-83, and most recently the recession of 2001. Since the recovery from the peso crisis in 1996, Mexican growth has followed U.S. growth rather closely, with a boom in 1996-2000 followed by a recession in 2001 and a slow recovery thereafter. The correlation of the two countries' growth rates in figure 1 appears (from visual inspection) to have increased since Mexico joined NAFTA in 1994 (except for the tequila crisis of 1995), a hypothesis that will be tested using multivariate regression analysis in section 4 below.

A third factor affecting Mexican growth has been macroeconomic stabilization policies. Since the high inflation years of the 1980s, Mexican fiscal and monetary policies have been mainly (though not exclusively, or consistently) focused on reducing inflation. As figure 3

shows, these policies have been remarkably successful, except for a few years in the mid-1990s following the 1994-95 devaluation of the peso (and the inflation of those years pales by comparison with the much higher rates of the 1980s). Mexico's inflation is now at its lowest level in many decades, at a rate of 5% or lower every year from 2002-05. Although this is stunning success on the inflation front, it has come at a severe cost in terms of contractionary macro policies that have inhibited both the short-term growth and the long-term development of the country.⁸ High interest rates, low fiscal deficits (or surpluses), and inadequate spending on social needs (such as infrastructure, sanitation, public health, and education) have contributed to the lower growth rates observed during the last two decades and to the persistence of the nation's development gap relative to both the industrialized countries and other emerging market nations (especially those of east Asia).

A fourth factor that is closely related to the boom-bust cycle in the Mexican growth process is the wild swings in the country's real (inflation-adjusted) exchange rate, for which two alternative indices are shown in figure 4. The multilateral index and the bilateral index with the U.S. dollar diverge in periods when the latter currency had a pronounced rising or falling tendency vis-à-vis other currencies (such as the fall of the dollar in the early 1970s and its rise in the late 1990s), but overall the two indices show similar patterns most of the time. By either measure, the peso has generally had a tendency to appreciate in real terms (thus making Mexican products less internationally competitive) at times of high inflation and/or booming growth. Comparing figure 4 with figure 1, we can see that each period of real appreciation (up to 1994) was followed by a more or less rapid real depreciation that usually coincided with an overall economic crisis and growth downturn or recession. In 1976, 1982, 1986, and 1994-95, there were large devaluations that occurred when the government was forced to abandon a fixed or

pegged exchange rate by a large balance-of-payments deficit and drain of the country's foreign exchange reserves—and each of these devaluations sparked one of the growth crises shown in figure 1.

The peso or “tequila” crisis of 1994-95 requires some special comment at this point.⁹ As in previous episodes, the peso had been appreciating in real terms during the preceding years because domestic inflation was higher than foreign inflation, while the peso's nominal value was pegged. However, during the Salinas administration in 1988-94, the exchange rate policy was more complex than under previous governments. Rather than using a simple fixed rate, the government adopted a “crawling peg” in which the nominal parity of the peso was gradually depreciated—but at a rate much lower than the domestic inflation rate—and held within very limited bands. This was a deliberate policy tool that was used to reduce the country's high inflation by keeping import prices low, with considerable success as can be seen in figure 3.

In addition, it was hoped that a stable nominal value of the peso would attract foreign financial capital into Mexico and create enough confidence in the Mexican economy to ensure passage of the still-controversial NAFTA agreement. Portfolio capital (so-called “hot money”) did flow into Mexico in large amounts in the early 1990s, but FDI inflows and export growth remained disappointing and the trade deficit continued to grow (see the data in table 2; see also Pastor and Wise, 2003; Blecker, 2005). Although many economists believed that a devaluation or float of the peso was necessary by 1993 or 1994 because of rising trade deficits,¹⁰ the Salinas government resisted for a combination of economic and political reasons. On the economic side, the government feared that a devaluation would spark a renewal of high inflation and would engender a loss of confidence in financial markets. On the political side, a devaluation could have jeopardized passage of NAFTA in the United States in 1993, the election of the ruling party

candidate (Zedillo) in 1994, and Salinas' own ambition to become the first head of the WTO after Zedillo succeeded him.

In retrospect, the Salinas administration did many things that ended up making the eventual devaluation of the peso more massive and painful than it had to be. The first mistake was simply the delay in devaluing. When the Zapatista uprising in Chiapas and several political assassinations sparked a loss of investors' confidence in 1994, the government allowed the country's foreign exchange reserves to collapse by \$18.7 billion (from \$24.9 billion to \$6.1 billion) in a single year (see table 2), in an ultimately unsuccessful effort to prevent an inevitable devaluation. At the same time, the government was rapidly increasing public spending and pumping up the money supply in an effort to win (or, perhaps, buy) the election of 1994 for ruling party candidate Zedillo, who had replaced the assassinated original candidate, Luis Donaldo Colosio.¹¹ These fiscal and monetary stimuli were contrary to the government's stated policy of fiscal and monetary restraint, and helped to undermine the pegged exchange rate.

In addition, the government issued bonds called "tesebonos" that indexed the peso returns to the peso-dollar exchange rate, so that foreign investors were effectively guaranteed a return in dollar terms. Although the issuance of these bonds was intended to ensure the confidence of foreign investors, in reality it did the opposite. In 1994, investors grew nervous about the impending necessity of a devaluation, the country's dwindling foreign exchange reserves, and hence the obvious risk that it might be impossible for foreign bondholders to take their tesebono returns out of the country in dollars (in which case they could be stuck with devalued and inconvertible pesos). The perception of this risk then fueled the self-fulfilling panic that broke out in financial markets after the initial devaluation of December 1994 (under Zedillo), which led both the peso and the Mexican economy to plunge further in 1995.

The situation then stabilized relatively quickly, as loans from the U.S. Treasury, the International Monetary Fund (IMF), and other international sources helped to replenish Mexico's foreign exchange reserves and to restore investors' confidence. The Zedillo administration adopted painful austerity measures (restrictive fiscal and monetary policies) that helped depress the domestic economy in 1995, but also reassured foreign investors. Then, a favorable combination of three circumstances led to a rapid, export-led recovery in 1996-2000: (1) NAFTA had opened up the U.S. market more to Mexican products and guaranteed foreign investors' property rights in Mexico;¹² (2) the (temporarily) depreciated peso made Mexican exports more competitive and attracted increased FDI; and (3) the U.S. economy was going through its Clinton-era "new economy boom" with its fastest growth since the 1960s.

However, starting in 1996, the peso also began to appreciate once again in real terms, eventually reaching a peak in 2002 before retreating somewhat from 2002 through 2005 (see figure 4). This most recent rise and (partial) fall of the peso in the late 1990s and early 2000s is different from the earlier appreciations and depreciations for several reasons. First, starting in 1995, the Mexican government adopted a managed floating exchange rate policy, which allowed the peso to rise and fall more gradually and without the kind of abrupt devaluations observed earlier when the rate was officially fixed or pegged. Second, the real appreciation of the peso during this period was not caused mainly by high inflation at home, as it was in past episodes; Mexican inflation was falling from 1997-2002 (see figure 3), while the peso continued to appreciate rapidly in real terms during those years (see figure 4). Although Mexican inflation did remain somewhat higher than foreign (industrialized country) inflation during those years, the peso was also held up in nominal value by the renewed investors' confidence and high interest rates that attracted a post-crisis revival of capital inflows (see Ramírez de la O, 2004).

Rising inflows of foreign direct investment and increasing worker remittances (see table 2) also contributed to a strong peso in the late 1990s and early 2000s.

As shown in table 2, Mexico actually had an overall balance of payments (i.e., combined current and financial accounts) surplus in every year from 2000-04, allowing the country to build up its foreign exchange reserves from \$35.1 billion at the end of 2000 to \$62.8 billion by the end of 2004 (and after finishing off its repayments to the IMF in 2000). These purchases of foreign exchange reserves by the Banco de México actually indicate (mild) intervention to keep the peso from rising further, but as figure 4 shows, the peso was still quite high during this period by previous historical standards. In fact, Mexican policy makers encouraged a high peso in the late 1990s and early 2000s as a means of bringing the country's inflation under control. This was similar to the earlier policy under Salinas, but without a crawling peg for the nominal exchange rate, and without the other policy mistakes that led to such a disastrous outcome in 1994-95.

Yet another new aspect is the fact that the value of the peso increased much more on a multilateral basis than bilaterally with the U.S. dollar in the late 1990s and early 2000s, because of the dollar's appreciation versus most other currencies between 1995 and 2002 (see figure 4 and Blecker, 2003b). Similarly, the dollar's partial decline since 2002 has helped to ease down the multilateral value of the peso, with the peso falling somewhat less on a bilateral basis with the dollar than on a multilateral basis. The high value of the peso by the early 2000s clearly contributed to the country's recession in 2001 and slow recovery in 2002-03, while the post-2002 depreciation (although limited) eventually aided the country's subsequent recovery in 2004. The timing of this behavior suggests that the effects of the exchange rate on growth operate with a lag of about a year, as will be confirmed by the econometric analysis in section 4 below. Also, the peso has stayed at a high value for a much longer period of time since the late 1990s than in most

earlier periods of appreciation. This persistence of a high peso suggests that it has contributed to the chronically slow growth of the past several years, unlike in earlier periods when the overvaluation of the peso was more episodic (and usually ended in a sharp devaluation).

In spite of the recession in 2001 and mostly slow growth since then, Mexico has not experienced another severe balance-of-payments crisis or massive currency depreciation as it has after previous episodes of real appreciation. In part, this is because the managed float exchange rate policy allowed the peso to ease down somewhat in 2000-04, but that cannot be the whole explanation because the peso was nearly as high in real terms in 2005 as it was on the eve of the tequila crisis in 1993-94 (by either index shown in figure 4). Instead, the data suggest that there has been a dramatic change in recent years in the relationship between Mexico's real exchange rate and its balance of payments position. Figure 5 shows the Mexican current account balance as a percentage of GDP for the years since 1980 (comparable earlier data were not available from the same source). The two episodes of large current account deficits in the early 1980s and early 1990s both followed periods of sharp appreciation of the peso. However, the most recent (and more sustained) real appreciation of the peso in the late 1990s and early 2000s did not lead to a worsening of the current account deficit, and in fact the current account balance has generally been improving (as a percentage of GDP) since the late 1990s (see figure 5).

There are several factors that can explain this surprising disconnect between the real exchange rate and the current account balance since the recovery from the tequila crisis. Table 2 shows that the underlying trade deficit for goods has remained moderate in the early 2000s, in spite of the high value of the peso—far smaller than the trade deficits observed just before the peso crisis of 1994. For example, the \$8.8 billion goods trade deficit of 2004 is less than half of the \$18.5 billion deficit registered in 1994 (in current dollars, i.e., nominal terms), even though

the (real) value of the peso was similar in both years (see figure 4). One possible reason is that Mexican industries producing traded goods have become so highly integrated into regional (North American) and global production chains that they may be less influenced by conventionally measured real exchange rates—especially indices such as the ones shown in figure 4, which are consumer-price adjusted.¹³ Also, given the high import content of most Mexican manufactured exports (see next section), a high real exchange rate may not be as much of a competitive disadvantage as it might otherwise appear (since it makes imported inputs cheaper). Moreover, many Mexican export products are produced by multinational corporations that price them in dollars, and hence sales of those exports may not depend so much on the value of the peso.

A second factor is that the huge increase in Mexican migration to the United States and the increasing permanence of the migrant communities there (partly due, paradoxically, to tightened U.S. immigration restrictions) has contributed to rapidly growing remittances from Mexican workers abroad, which count as inflows of transfers in the current account and thus help to offset the trade deficit for goods. In 2004, remittance inflows of \$16.6 billion were nearly double the goods trade deficit of \$8.8 billion, but were partly offset by deficits on services and net income flows, resulting in a modest current account deficit of \$7.4 billion (see table 2). A third factor that has helped in the last few years has been the recovery of international oil prices in 2004-05 (see figure 2), which has boosted Mexico's oil export earnings in a significant way for the first time since the ill-fated oil boom of the late 1970s (see next section).

A fourth and very important reason why the current account balance has not worsened, in spite of the high value of the peso, is explained by the theory of “balance-of-payments-constrained growth.”¹⁴ In its simplest form, this theory postulates that a country will have a

tendency to run ever-increasing trade deficits if the income elasticity of its imports is high relative to the growth rate of its exports, as appears to be the case in Mexico (and increasingly so since the country liberalized its trade and joined NAFTA).¹⁵ To prevent such chronically increasing deficits from occurring, governments are forced to use contractionary macro policies to restrain economic growth and thereby curb the demand for imports. In Mexico, the tight fiscal and monetary policies that have been used to restore investor confidence and reduce the inflation rate, and which also have contributed to the high value of the peso, have paradoxically also helped to relieve the potentially negative impact of the high peso on the current account, because by holding down the country's growth rate these policies have the effect of reducing its demand for imports.

Under the neoliberal policy regime of the late 1990s and early 2000s, the government cannot (or is not willing to) restrain imports by using trade protection or a depreciated currency, and hence the only means of limiting imports is by constraining the growth of GDP and national income. Thus, while the high value of the peso does restrain exports and makes imports artificially cheap, import demand is contained by holding down overall economic growth—to the benefit of the balance of payments, but to the detriment of the nation's development. To put it another way, the main reason why Mexico's trade and current account deficits have remained small in recent years is not because exports have grown rapidly, but rather because import demand has been kept slow enough to more or less match the slow growth of exports through contractionary demand-side policies. This essentially implies a more subtle mechanism through which a high real value of the peso impedes growth—not only through its direct effects on trade (discouraging exports and stimulating imports), but also through its indirect effect on other

macroeconomic policies (forcing governments to restrain aggregate demand in order to offset the upward pressure on imports).

Within the theory of balance-of-payments-constrained growth, there are certain factors that can relieve the constraint and allow faster growth without risking a balance-of-payments crisis. One of these is net capital inflows, although they have to be sustainable and not of the volatile “hot money” variety that flooded the country in the early 1990s and then fled during the 1994-95 crisis. Another, of course, is to increase the growth rate of exports and/or to lower the country’s income elasticity of demand for imports. Several studies have found evidence that Mexico’s unilateral trade liberalization in the late 1980s and entry into NAFTA in 1994 increased the income elasticity of demand for imports, thus tightening the constraint.¹⁶ In the next section, we consider how more recent changes in Mexico’s trade relations and global economic conditions have either tightened or loosened the nation’s balance-of-payments constraint in the decade since the late 1990s recovery from the tequila crisis.

3. Changes on the Trade Side: Global Integration, the China Factor, and Oil Prices

Aside from the effects of joining NAFTA and the peso crisis, which are the subjects of extensive literatures that were cited above, there are three major new trends that stand out in Mexico’s trade relations over the past several years. These new trends are: (1) the increasing degree of vertical integration of Mexican manufacturing export production into regional and global production chains; (2) the growing competition of Chinese and other Asian imports both in the U.S. market and in Mexico itself; and (3) the rising prices of oil and natural gas in global energy markets. The first two of these trends have been mostly unfavorable, while the third one

has been more favorable, from the standpoint of relieving the balance-of-payments constraint on Mexico's growth.

Although Mexican exports of manufactures boomed in the late 1990s after the adoption of NAFTA and the depreciation of the peso in 1994-95, the high import content of these exports has greatly reduced the spillover or multiplier benefits of these exports for the growth of the Mexican domestic economy. The most dramatic case of this is the maquiladoras, which are assembly plants that transform imported parts and components into finished or semi-finished products for export. Since approximately three-quarters of the gross value of maquiladora exports is offset by maquiladora imports, the net benefit to the domestic economy is minimal.¹⁷ Thus, subtracting maquiladora imports from total reported exports results in a significantly reduced amount of true Mexican exports (i.e., the Mexican value added contained in its exports), even if we do not correct for the import content of non-maquiladora exports (see figure 6). However, other manufacturing industries, although less extreme than the maquiladoras, also have relatively high import coefficients,¹⁸ so the "true exports" shown in figure 6 are still an exaggerated measure of the true net contribution of Mexican exports to the country's economy.

Essentially, what has happened is that Mexico's export industries have become more and more integrated into regional (North American) and global production chains, and more and more disintegrated from the domestic Mexican economy. Or, in the old terminology of development economics from the 1950s, the "forward and backward linkages" of the export sectors to the rest of the economy have greatly diminished. The result is that even if exports appear to be growing well, the net stimulus to the overall growth of the domestic economy and to domestic job creation is relatively small.¹⁹ Indeed, data cited in UNCTAD (2002, pp. 77-81) show that value added in the Mexican manufacturing sector has been stagnant, even though the

gross value of exports has grown considerably, unlike in many Asian countries (such as South Korea and China) where manufacturing value added and exports have grown more in tandem. As a result, the relief that Mexico obtains from the balance-of-payments constraint through its export growth has been minimal, because so much of the foreign exchange earnings from exports go right back out to pay for imported inputs.

At least in the late 1990s, Mexican exports were growing rapidly and gaining market share in the United States (see Blecker, 2003a, p. 290), as Mexico hoped would happen due to the trade preferences it received in NAFTA. But since 2000, Mexican exports to the U.S. have dramatically slowed down, not only because of the slowing of the U.S. economy, but also because of the rising challenge from China and other lower-wage Asian countries. Although in the North American context Mexico is the relatively low-wage country (see table 1), in a global context Mexico is really a lower-middle-wage country, because nations such as China, India, and Vietnam offer labor that can be just as productive as Mexican labor at a fraction of Mexican wages.²⁰ Furthermore, the multilateral tariff reductions achieved under the WTO, the accession of China to the WTO, and the negotiation of various other preferential trade agreements have diminished the effective degree of preferential treatment that Mexican products receive in the U.S. market (and these products are subject to potentially cumbersome rules of origin, while most non-NAFTA imports into the U.S. are not).

The impact of China on Mexican trade in the early 2000s is difficult to exaggerate. In the 1990s, Mexico proudly displaced Japan as the second-largest U.S. trading partner. But since 2003, at least on the import side, Mexico has now been displaced by China as the second largest supplier of U.S. imports (after Canada, which remains the largest U.S. trading partner on both the export and import sides). Moreover, Mexican exports to the United States have been virtually

flat since 2000, with only a slight recovery in 2004 (some of which may be attributed to higher oil prices rather than to increased trade volumes), while Chinese exports to the United States nearly doubled in value during those same three years (see figure 7). The value of U.S. imports from Mexico increased by only 15% from 2000-04, while the value of U.S. imports from China increased by 97% over the same period.

In this context, it is important to note that China has been massively intervening in foreign exchange markets in the past several years to keep its currency undervalued (see Blecker, 2003b), while as discussed earlier the Mexican government has allowed the peso to remain at a relatively high real value with only mild intervention to keep it from rising further (even if the peso is now down partially from its 2002 peak). Thus, the high real value of the peso acquires even more significance when contrasted with the exchange rate policy of Mexico's greatest competitor; China's currency policy is consistent with the export orientation of its economy, while Mexico's currency policy severely undermines the country's effort at export-led growth.²¹ On the employment side, Mexico is now losing manufacturing jobs to China and other lower-wage countries. For example, employment in the Mexican maquiladora sector peaked at 1.3 million in 2000, but then fell to 1.1 million in 2004, representing a loss of about 200,000 jobs.²²

On the U.S. side, both Presidents George H. W. Bush and Bill Clinton promised the American people that a prosperous Mexico would be a buoyant market for U.S. exports when they promoted NAFTA in the early 1990s.²³ In fact, U.S. exports to Mexico have grown more slowly than U.S. imports from Mexico since the adoption of NAFTA in 1994, resulting in rising U.S. bilateral trade deficits with Mexico (in spite of Mexico's overall trade deficit, which results from its deficit with other countries being greater than its surplus with the United States). Nevertheless, the U.S. trade deficit has grown with all countries in the last decade, and U.S. trade

with Mexico remains much more of a two-way street than trade with most other countries—especially China. As of 2004, the ratio of U.S. imports to exports was only 1.4 to 1 with Mexico, compared with 5.7 to 1 with China.²⁴ U.S. imports from Mexico are more likely to be products assembled with relatively large amounts of U.S.-produced parts and components, as well as using U.S.-produced capital goods, while imports from China are more likely to be produced using inputs (parts, components, and capital equipment) either produced in China or imported from other Asian nations.

Thus, the effect of Chinese and other Asian competition in recent years has been not only to reduce Mexico's export gains in the U.S. market, but more importantly to undermine the entire North American industrial complex that NAFTA was intended to create. As the whole U.S. manufacturing sector has been decimated in recent years (with about 3 million manufacturing jobs lost since 1998), the U.S. industries that both supply inputs to Mexico for assembly and purchase Mexican semi-finished products (for example, auto parts) are rapidly shrinking. As a result, just as Mexico's gains in the U.S. market have been eroding, so too have U.S. gains in the Mexican market. After NAFTA went into effect, the U.S. share of Mexican imports averaged about 75% during the late 1990s, but that share plummeted to only 56% by 2004—a loss that is primarily accounted for by a corresponding rise in the Asian share, which in turn is mostly due to imports from China.²⁵

Thus, China is not only crowding Mexico out of U.S. markets for consumer goods and inhibiting the growth of Mexican manufactured exports, but also displacing the United States as a source of Mexican imports. Of course, many U.S. service firms are happily (and profitably) investing in Mexico, but some—such as the ever more present Wal-Mart—are surely stocking most of their Mexican shelves with Chinese imports rather than any nationality of North

American products. The result is that more and more manufacturing jobs are being created in China and other parts of Asia, not in either Mexico or the United States. In addition, the increasing Chinese and other Asian competition is tightening the balance-of-payments constraint on Mexican growth, because it results in both slower export growth and an increased propensity to import (especially consumer goods).

In this otherwise bleak picture, one bright spot for Mexico has been the renewed importance of oil export revenue as a result of increased global oil prices since 2000 (see figure 2). Oil exports had ceased to be a major positive factor in Mexican growth during the period of low real oil prices from about 1987 through 1999. Even with its limited existing capacity to export oil and other energy products, Mexico has been benefiting from the higher prices of its oil exports for the last few years, especially since prices skyrocketed in 2004-05. Although 2005 data are not yet available, the value of Mexico's exports of crude oil rose by 27.3% between 2003 and 2004 (PEMEX, 2005, p. 5). Almost all of this increase was due to a 25.2% increase in the average price of the country's crude oil exports in 2003-04; the volume of such exports rose by only 1.4% over that period (PEMEX, 2005, p. 5).²⁶

Unfortunately, Mexican energy policies since the short-lived oil boom of the late 1970s have failed to create an efficient energy sector that could maximize the benefits of high energy prices. Much of the revenue from the state-owned oil company (Petróleos Mexicanos, or PEMEX) has been siphoned off into other uses, including debt service, corruption, and general government revenues—rather than reinvested in modernization of the energy sector itself (or in other infrastructure needs). The country's capacity to produce natural gas has never been fully exploited. Northern Mexico now imports natural gas from Texas at high prices (partly offsetting

the benefits of high prices for oil exports), in spite of the fact that Mexico has substantial natural gas reserves in the southern and Gulf regions and possibly in the north as well.²⁷

Nevertheless, Mexico remains a large net exporter of energy products. Mexico's trade surplus in all hydrocarbon and derivative products reached \$17.8 billion in 2004, which was up 23.4% (from \$14.4 billion) in 2003, and nearly three times the surplus of \$6.1 billion registered a decade earlier in 1994 (PEMEX, 2005, p. 46). To the extent that Mexico increases its revenue from net exports of energy, this relaxes the balance-of-payments constraint on overall growth, and (holding other factors constant) permits the country to grow faster without risking a rising trade deficit. And, as long as PEMEX revenue continues to flow into the government's general coffers, high oil prices also relax the fiscal constraint and allow more government spending without risking larger budget deficits. But rising oil revenue also poses the problem of Mexico falling victim to the "Dutch disease," in which increased inflows of foreign exchange lead to currency appreciation that makes other exports less competitive.

4. An Econometric Model of Mexican Growth

The preceding sections have identified three main variables that can be considered as exogenous "drivers" or determinants of the fluctuations in Mexico's growth rate. These variables are: the U.S. growth rate (representing the growth of Mexico's main export market), the real price of oil (which affects the revenue from a major export product), and (with a time lag) the real exchange rate (inflation-adjusted value of the peso). Some of the other variables that were analyzed above, such as the inflation rate and the current account balance, would have to be considered "endogenous variables" in a model of Mexican growth, and hence cannot be

considered as exogenous causal factors (and constructing a model that could explain these variables would be beyond the scope of this paper). It would be desirable to have measures of underlying macro policies, such as the degree of fiscal or monetary expansion (or contraction), but obtaining meaningful measures of such policies would also be beyond the scope of this paper.²⁸ For present purposes, a simple model using the U.S. growth rate, the real oil price, and the (one-year lagged) real exchange rate, along with certain statistical adjustments discussed below, provides a remarkably powerful explanation of changes in the Mexican growth rate since the early 1970s.

The dependent variable in our econometric model is the annual growth rate of real GDP in Mexico, calculated from data in the IMF's *International Financial Statistics* database through 2004, and updated to 2005 from the IMF's most recent *World Economic Outlook* (this variable is the solid line in figure 1).²⁹ The data set consists of annual data for 1970-2005, representing the longest time period for which all the necessary variables could be obtained (and without going too far back into the import substitution era, when the same model might not apply). The sample period for the regressions starts in 1972, however, as two years are lost due to lags and differencing, for reasons explained below. The three main independent variables are:

- *The growth rate of real U.S. GDP.* This is primarily determined by U.S. domestic demand-side factors, such as monetary and fiscal policies as well as cycles in domestic consumer and investment spending, and also possibly by supply-side factors such as the growth rates of the labor force and labor productivity.³⁰ Although international trade is increasingly important for the United States, U.S. bilateral trade with Mexico is so small in relation to U.S. GDP that it is unlikely to have an appreciable impact on overall U.S. growth.³¹ Nevertheless, since the Mexican economy is highly export dependent and nearly 90% of Mexico's exports are sold

in the U.S. market, the U.S. growth rate is likely to be an important variable for determining Mexico's growth rate. This variable is the dashed line in figure 1.

- *The world real price of oil.* As discussed earlier, many of the fluctuations in the Mexican economy since the 1970s have been associated with the rise and fall of oil prices (relative to the prices of industrial country products). Although oil exports are now relatively less important for Mexico than they were 20 years ago, Mexico has gained from the spike in oil prices over the past few years. To make sure that we use a measure of global oil prices that is exogenous to the Mexican economy, we use the IMF's index of three internationally quoted spot oil prices (Dubai, U.K. Brent, and Texas), and since oil is priced in U.S. dollars, we measure the *real* price of oil by dividing this nominal oil price index by the U.S. producer price index (PPI) for industrial commodities (the resulting ratio is converted to an index based at 100 in 2000). This is the variable shown in figure 2.
- *The (lagged) real value of the peso.* We use the two alternative indices of the real value of the peso shown in figure 4 (with the monthly indices converted to annual averages).³² The multilateral real peso index (solid line in figure 4) is calculated by taking the reciprocal of the Banco de México's index of the real, consumer-price adjusted, multilateral exchange rate (the reciprocal is used so that a higher number indicates a real appreciation of the peso) and expressing the result as an index based on 100 in 1990.³³ The bilateral real peso-dollar index (i.e., real value of the peso relative to the U.S. dollar, which is the dotted line in figure 4) is calculated by taking the ratio $CPI_{Mex}/(E * CPI_{US})$, where CPI_i is the consumer price index of country i and E is the nominal exchange rate in pesos/dollar, and again converting to an index based on 100 in 1990.³⁴

In all the econometric models, we use a one-year lag of either real peso index for two reasons. First, the current-year exchange rate can be affected by Mexico’s growth (for example, because strong growth generally attracts capital inflows). In contrast, the previous year’s exchange rate can be considered pre-determined or exogenous since it cannot have been influenced by the current year’s actual growth.³⁵ Second, the exchange rate affects growth primarily through its effects on international trade, and such trade effects typically occur with a lag due to the time it takes to order, produce, and ship goods across national borders in response to exchange rate changes.³⁶ Also, we saw visual evidence of growth effects lagging behind exchange rate changes in comparing figures 1 and 4 (as discussed in section 2, above). Thus, lagging the exchange rate by one year makes sense on substantive grounds as well as for econometric reasons; additional lags were not statistically significant when included, and were therefore omitted in all the results presented below.

Therefore, our basic econometric model can be specified as follows:

$$(1) \quad \text{MexGrowth}_t = \beta_0 + \beta_1 \text{USGrowth}_t + \beta_2 \text{RealOilPrice}_t + \beta_3 \text{RealPeso}_{t-1} + u_t$$

where the subscript t indexes the year, MexGrowth is the growth rate of Mexican real GDP, USGrowth is the growth rate of U.S. real GDP, RealOilPrice is the index of the real price of oil, RealPeso is an index of the real value of the peso (either the multilateral or bilateral index, and lagged one year),³⁷ and u_t is the error term. Our hypotheses are that $\beta_1 > 0$, $\beta_2 > 0$, and $\beta_3 < 0$.

Because equation (1) is a time-series model, certain tests and adjustments have to be performed in order to obtain statistically valid results. Especially, a time-series regression yields valid estimated coefficients and hypothesis tests only if: (a) the variables are all “stationary” (i.e., they must not have “unit roots”); and (b) the residuals (estimated u_t ’s) are random (with zero means, constant variances, and no autocorrelation or other econometric maladies).³⁸ Standard

augmented Dickey-Fuller (ADF) tests show that the Mexican and U.S. growth rates are both stationary or I(0), i.e., integrated of order zero, but the real oil price index and the two real peso indices are nonstationary in levels and stationary in first differences, which means they are I(1), i.e., integrated of order one.³⁹ It is not statistically valid, therefore, to estimate equation (1) as specified above, since two of the right-hand side variables are nonstationary in levels.

A simple way of solving this problem is to express all the variables in first differences, because the I(1) variables are stationary when differenced and the I(0) variables remain stationary when differenced. This approach works well with this model, especially given the limited size of the sample period, i.e., annual data for 34 years from 1972-2005, which makes it difficult to use more complicated procedures.⁴⁰ Thus, the equation we actually use as the basis for our estimates is:

$$(2) \quad \Delta \text{MexGrowth}_t = \beta_0 + \beta_1 \Delta \text{USGrowth}_t + \beta_2 \Delta \text{RealOilPrice}_t + \beta_3 \Delta \text{RealPeso}_{t-1} + v_t$$

where Δ is the difference operator and v_t is the error term. Technically speaking, the constant term β_0 vanishes when equation (1) is differenced, but it is retained in equation (2) so as not to constrain the constant to be zero when estimating the slope coefficients. Also, including a constant in a model specified in first differences allows us to test for a time trend in the Mexican growth rate, since if a linear time trend were included in equation (1), it would become a constant term in (2). The results for all the other variables are very similar with or without the constant included, so none of our conclusions depend on whether it is included or not.

There is one cost of estimating the model in first differences, as in equation (2). By differencing the variables, we lose the information about their levels and retain only the information about their changes. Thus, the β coefficients in equation (2) essentially capture the *short-term* effects of the independent variables on the dependent variable (the Mexican growth

rate), or, in other words, the equation explains the *cyclical fluctuations* in Mexican growth rather than the average level. However, given the enormous cyclical volatility in Mexican growth (see figure 1), an equation that explains the short-term fluctuations will contribute greatly to our understanding of changes in Mexico's growth over time.

Although all the variables in equation (2) are stationary, it remains to be seen whether the residuals v_t are random, as is also required to obtain valid estimates. The results of estimating equation (2) using the index of the multilateral real value of the peso are shown in the corresponding column of table 3, and the results using the bilateral real peso-dollar index are shown in the corresponding column of table 4. Except for the constant (time trend), which is insignificant, all the other coefficients in both equations have the hypothesized signs and appear to be statistically significant at the 5% level (except in table 4, the real peso-dollar index has the right sign but appears insignificant). However, the diagnostic tests indicate that all these statistical inferences are invalid for equation (2) in both tables 3 and 4. There is clear evidence of autocorrelated residuals in the high Durbin-Watson statistics and the significant Breusch-Godfrey Lagrange Multiplier (LM) tests, and the low p-values (probabilities or significance levels) for the other diagnostic tests indicate a variety of other problems including autoregressive conditional heteroscedasticity (ARCH), non-normally distributed residuals (Jarque-Bera), and likely misspecification or omitted variables (RESET) in both estimates.⁴¹

Plots of the residuals from both of the estimated equations (2), which are not shown for reasons of space, show extremely large negative residuals in the years 1983 and 1995, corresponding to Mexico's two worst economic downturns during our sample period (the years immediately following the debt crisis of August 1982 and the peso collapse or tequila crisis of December 1994).⁴² Since these large residuals are the likely culprits for the non-random

residuals and equation misspecification, standard econometric practice suggests adding “outlier dummies” to control for the unusual events that took place in those years, which cannot be explained by the included variables. This yields the following equation:

$$(3) \quad \Delta \text{MexGrowth}_t = \beta_0 + \beta_1 \Delta \text{USGrowth}_t + \beta_2 \Delta \text{RealOilPrice}_t + \beta_3 \Delta \text{RealPeso}_{t-1} \\ + \beta_4 \text{D1983}_t + \beta_5 \text{D1995}_t + \varepsilon_t$$

in which D1983 and D1995 are the dummy variables for the years of the debt crisis and tequila crisis (each set to 1 for the indicated year and 0 in all other years), and ε_t is the error term.

Estimates of equation (3) are presented in column (3) in each of tables 3 and 4, again using the two alternative real peso indices. In these estimates, the Durbin-Watson statistics are both close to 2.0, and all the other diagnostic tests indicate no significant problems at the 5% or 10% level for both specifications, implying that the estimated coefficients and hypothesis tests are likely to be statistically valid.⁴³

The estimated coefficients for equation (3) are very similar in the two alternative specifications (i.e., using the two real peso indices). Because the estimated equation (3) using the bilateral real peso-dollar index shown in table 4 has a slightly better fit,⁴⁴ we will focus our discussion here on those results while discussing any differences in the results using the multilateral index in endnotes. Except for the constant (time trend), which is insignificant, all the variables in column (3) of table 4 are significant at the 1% level (using Newey-West adjusted standard errors).⁴⁵ The R^2 of 0.689 implies that the included variables explain more than two-thirds of the variation in the dependent variable, i.e., the annual change in the Mexican growth rate. Mexican growth is highly dependent on U.S. growth, with a coefficient of 0.696 indicating that a one percentage point change in the U.S. growth rate causes roughly an 0.7 percentage point change in the Mexican growth rate in the same direction.

The real oil price also has a positive effect, although the coefficient appears relatively small: a rise of one point in the real oil price index causes the Mexican growth rate to increase by 0.046 percentage points. Nevertheless, the large swings in oil prices observed during our sample period (see figure 2) can still have a sizeable impact on Mexican growth. For example, this estimated coefficient implies that the 37-point increase in the real oil price index from 2004 to 2005 raised the Mexican growth rate in the latter year by about 1.7 percentage points over what it would have been otherwise. The dummy variables for the crisis years have large, negative coefficients, indicating that the Mexican growth rate was 14.2 percentage points lower in 1983 and 11.0 percentage points lower in 1995 than would otherwise have been expected, given the values of the other variables in those years.⁴⁶

The lagged real peso-dollar index has a significant, negative effect on the Mexican growth rate, with a coefficient of -0.158 .⁴⁷ This means that, for a ten point increase in the real peso-dollar index, the next year's growth rate would decrease by about 1.6 percentage points. Given that the real peso-dollar index has often had swings of 50 or more points during the last three decades (see the dotted line in figure 4), this coefficient implies very large exchange rate effects on Mexican growth. For example, if the real peso-dollar index were to fall back to its 1996 level (i.e., not the trough during the tequila crisis of 1995, but its level one year later at the beginning of the recovery), which would require a decrease of about 25 points from its 2005 level, Mexican growth would be about 4 percentage points higher this year (2006) than it would be otherwise, holding all other factors constant.

Finally, we use this regression model to test for whether there were structural changes in the determinants of Mexico's growth after the country liberalized its economy in the late 1980s and joined NAFTA in 1994. All tests for a structural break in the late 1980s (using a dummy

variable which equals 1 in 1988-2005 and 0 otherwise) yielded statistically insignificant results (both for intercept and slope dummies), and are not discussed further here. The tests for a structural break in 1994 are based on the following model with interactive (slope) dummies for NAFTA and the differences in the U.S. growth rate and real peso index:⁴⁸

$$(4) \quad \Delta \text{MexGrowth}_t = \beta_0 + \beta_1 \Delta \text{USGrowth}_t + \beta_2 \Delta \text{RealOilPrice}_t + \beta_3 \Delta \text{RealPeso}_{t-1} \\ + \beta_4 D1983_t + \beta_5 D1995_t + \beta_6 \text{DNAFTA}_t * \Delta \text{USGrowth}_t \\ + \beta_7 \text{DNAFTA}_t * \Delta \text{RealPeso}_{t-1} + \upsilon_t$$

where DNAFTA equals 1 in 1994-2005 and 0 in all other years, and υ_t is the error term. Note that the coefficients β_6 and β_7 represent the *changes* in the corresponding coefficients β_1 and β_3 after 1994, and hence the *total* effects of each variable ($\Delta \text{USGrowth}_t$ and $\Delta \text{RealPeso}_{t-1}$) between 1994 and 2005 are estimated by the *sums* ($\beta_1 + \beta_6$) and ($\beta_3 + \beta_7$), respectively, while β_1 and β_3 represent the effects *before* 1994 only.

The results of estimating equation (4) are shown in the corresponding columns of tables 3 and 4. Again, the results are very similar using the two alternative real peso indices, but the statistical fit is slightly better using the bilateral peso-dollar index so we will focus our discussion on column (4) of table 4. Most of the coefficients on the other variables included in both equations (3) and (4) do not change much (although the changes in the U.S. growth rate and the real oil price index are now significant at the 5% level but not at 1%),⁴⁹ and the diagnostic tests shown in table 4 indicate no significant problems.⁵⁰

The large, positive coefficient on the NAFTA dummy interacted with the U.S. growth rate (0.95) indicates an enormous increase in the sensitivity of Mexican growth to U.S. growth, and this structural change is significant at the 5% level. Adding the estimated coefficients on the U.S. growth rate (with and without the NAFTA dummy) together, we find that U.S. growth has

had a *magnified* effect on Mexican growth since NAFTA went into effect, with a total coefficient of $0.59 + 0.95 = 1.54$. This is good news for Mexico if the U.S. economy grows faster, but not if the U.S. economy slows down. In contrast, the coefficient on the NAFTA dummy interacted with the change in either real peso index is very small and not significantly different from zero.

Thus, NAFTA appears to have created a much stronger dependency of the Mexican economy on U.S. growth, but not a greater sensitivity to the real exchange rate. Although we do not find any increase in the sensitivity of the growth rate to the exchange rate, this does not mean that there has been no change in the role of the exchange rate in the Mexican growth process. As noted earlier, the peso has been more persistently overvalued in recent years, in contrast with earlier decades in which it was more volatile but was periodically devalued; also, the currently high peso is more a consequence of financial liberalization and tight monetary policies rather than an unintended consequence of high inflation as in the past. Indeed, Figure 4 suggests that the peso had a falling trend from 1970-86 followed by a rising trend in 1987-2005, which suggests that the high peso may be a significant cause of the recent trend toward slower growth.

5. Conclusions and Policy Implications

The fact that Mexico has now gone ten years with only one minor recession and no major economic crisis represents a notable improvement in the country's macroeconomic performance compared with the previous two decades, which were marked by extreme boom-bust cycles. The successes of the Mexican government in stabilizing the macroeconomic situation, keeping the balance of payments in equilibrium, and bringing inflation under control are not small accomplishments. Nevertheless, the manner in which this has been done, in combination with

the opening of the country to liberalized foreign trade and capital flows, has tightened rather than relaxed the constraints on the nation's long-term growth and development.

In particular, the policy of maintaining a high real value for the peso as a lever to suppress inflation (and a magnet to attract foreign portfolio capital) has prevented Mexico from achieving the rapid export-led growth that it hoped to accomplish through its trade liberalization policies. The chronically slow growth that has characterized the Mexican economy in recent years confirms what this author argued in a working paper written ten years ago:

Lacking an internal stimulus to growth [since the 1980s], Mexico has tried to rely on foreign investment and export promotion. But foreign investment and trade cannot serve as "engines of growth" when either exchange-rate policies or domestic macro policies are operating at cross-purposes.... (Blecker, 1996a, p. 14.)

The econometric estimates in this paper suggest that Mexican growth is tightly bound by certain key constraints, but they also imply that action to relax those constraints could have significant benefits. Mexico cannot control the growth of the U.S. economy or the trends in world energy prices, but it can try to position itself to be less dependent on U.S. growth and to respond more flexibly to energy price changes. And Mexico can certainly try to find a new macro policy regime that could control inflation without requiring a perpetually overvalued peso.

While it would be beyond the scope of this paper to suggest fixes for all of these problems, we may at least identify a few key areas in which new policy directions are essential:

- Mexico cannot move away from its border with the United States, but it can try to diversify its exports away from the U.S. market. Mexico has tried to achieve this through a series of free trade agreements with numerous other countries, which so far have had disappointing effects on the diversification of export markets. Nevertheless, given the likelihood that the United States will have slower growth over the next several years as a result of its mammoth

fiscal and trade deficits, it is all the more important for Mexico to redouble its efforts at export diversification (perhaps more through marketing efforts rather than trade agreements).

- Mexico needs to be cautious about some of the current proposals for deeper integration in North America, such as proposals for a continental customs union or monetary union. A customs union could have some advantages in regard to eliminating burdensome rules of origin for business and possibly exempting Mexico from U.S. administered protection (anti-dumping and countervailing duties), but it could also conflict with Mexico's objective of diversifying its export markets and might help to destroy certain North American industries that are favored by NAFTA's rules of origin (especially the textile-apparel and automotive complexes). A monetary union could be advantageous for eliminating the exchange risk premium built into Mexican interest rates, but it could also potentially freeze Mexico's exchange rate with the U.S. dollar at a level that would leave Mexican goods and services uncompetitive, with no possibility of a currency depreciation to rectify the situation; it would also leave Mexico completely at the mercy of U.S. monetary policy since the United States would be likely to dominate any politically feasible monetary arrangement.⁵¹
- Since the world appears to be headed into a new era of high energy prices, it makes sense for Mexico to try to take advantage of this situation, while avoiding the mistakes of the past. Oil revenues should be re-invested in the development of the energy sector or invested in other vital infrastructure needs; they should not be diverted to pay for general government expenditures or other uses. Oil revenue should not be used to leverage large international debts, as it was in the late 1970s. Furthermore, Mexico is being pressured by American interests to open up its energy sector to foreign investment, possibly though not necessarily including privatization of PEMEX. But it would be a huge mistake for Mexico to return to

the situation prior to the nationalization of the oil industry by President Lázaro Cárdenas in 1938, when most of the benefits of oil production flowed out of the country into the coffers of foreign oil companies. Mexico will need to negotiate carefully to obtain what it needs in terms of foreign technology and capital for developing the energy sector, without giving up the benefits that properly belong to the Mexican people. Mexico also needs to be careful to avoid the “Dutch disease” of rising oil revenue leading to a currency appreciation that makes non-energy industries uncompetitive—a phenomenon that seems to be occurring already.

- Most fundamentally, the inconsistency between the macro and trade policies has to be addressed. The country cannot achieve export-led growth with the peso as overvalued as it has been for the past several years. Since Mexico’s commitments under the WTO and NAFTA preclude the use of trade protection, a real depreciation of the peso is the only means for lessening import demand without suppressing domestic demand, and would also make Mexico a more competitive location for FDI and exports. A depreciation of the peso, however, would require a new set of innovative policies to prevent a resurgence of inflation, especially in a country that is wide open to imports. Alternatively, Mexico could be forced to reconsider whether its radical liberalization policies of the past two decades have really served its long-term interest in promoting rapid growth and sustainable development.
- Structural policies (e.g., infrastructure, education, and environmental) can have dual benefits on both the supply and demand sides of the Mexican economy. On the one hand, these types of policies can help to upgrade the skills of the labor force and improve the attractiveness of Mexico as a location for global corporate investment. Such policies should also aim to facilitate the inevitable shift of the Mexican economy into more services production, given the move of manufacturing to Asia and the high productivity of many modern manufacturing

activities that leads them to create relatively few jobs. On the other hand, the government expenditures that would be required to pay for such structural improvements would impart a significant fiscal stimulus to the economy, which need not be inflationary if paid for with taxes on high-income earners or out of oil revenue. A North American Investment Fund, partly funded by U.S. and Canadian contributions, as proposed by Pastor (2004, 2005), would be helpful for financing infrastructure and education expenses, but the political prospects for such a fund are uncertain, and Mexico needs to spend more on these needs whether or not it receives international assistance. If the expenditures are tax financed, there is still a positive “balanced budget multiplier,” and debt problems are avoided.

- Finally, it is vital that Mexican economic policy should focus more on the stimulation of domestic demand—i.e., growth of the “internal market”—rather than relying so much on exports (which, given Mexico’s geographical location, are likely to flow mostly to the United States no matter what trade policies Mexico adopts). Overall, Mexico needs a better balance between exports and domestic production, and to upgrade its industrial structure so that it can afford to pay the higher wages that will support a vibrant internal market and lessen migration pressures. Instead of trying to compete with China and other Asian countries by offering lower wages—a game that Mexico cannot win at—Mexico needs to recreate an internal growth dynamic based on rising real wages and living standards, as existed in the “miracle” growth years of the import substitution regime from the 1940s through the 1960s. If this is not possible with wide-open markets for goods and capital, then the country’s commitment to free trade and financial liberalization may have to be reconsidered.

Thus, the challenge for critics of the current Mexican policy regime is obvious: how is it possible to impart a greater fiscal and monetary stimulus to the domestic economy, let the peso

depreciate, and spend more on infrastructure and social needs, without engendering another episode of high inflation ending in another financial crisis? But the challenge for defenders of the status quo or advocates of more neoliberal policies is equally clear: how can the country ever achieve its growth potential if macroeconomic policies have to be kept perpetually too restrictive in order to stabilize the economy in the presence of liberalized trade and capital flows? The challenge for all concerned with Mexico's future is how to balance both structural reforms and macroeconomic stimulus policies, or "supply-side" and "demand-side" approaches, in such a way as to boost growth in an equitable and sustainable fashion, under the constraints imposed by both global and regional integration—or else how to relax or escape from those constraints.

Acknowledgments

The author would like to thank Rex Ballinger and Isidro Morales for providing useful data, and the Center for North American Studies (CNAS) at American University for financial support.

Endnotes

¹ For evaluations of the economic effects of these policies from a variety of perspectives see Audley et al. (2003), Blecker (2005), Huerta González (2004), Hufbauer and Schott (2005), Lederman et al. (2005), Máttar et al. (2003), Moreno-Brid and Ros (2004), Moreno-Brid et al. (2005a, 2005b), Pacheco-López and Thirlwall (2004), Pastor and Wise (2003), Scott et al. (2001), and Weintraub, ed. (2004).

² On the transformations in Mexico's trade and industrial structure that have resulted from the liberalization policies of the past two decades, see (among others) Gereffi (2003) and Vega and de la Mora (2003).

³ See, for example, Hufbauer and Schott (2005, p. 62), Moreno-Brid et al. (2005a, p. 1113), and Pastor et al. (2005).

⁴ See Martin (2003), Papademetriou (2003), and Ruiz Durán (2005) for estimates and analyses of migration flows.

⁵ See Salas and Zepeda (2003) and Blecker (2005) on real wages, and Boltvinik (2003) and Hanson (2004) on inequality.

⁶ See also Blecker (2005) and Pastor (2005).

⁷ The estimate for 2005 is from International Monetary Fund, *World Economic Outlook*, September 2005 (on-line database, www.imf.org/external/pubs/ft/weo/2005/02/data/index.htm).

⁸ See, for example, Huerta González (2004) on the stagnation of the Mexican economy, and Ramírez de la O (2004) on the high interest rate policy and its effects in causing the peso to appreciate and investment to decline.

⁹ For more detailed analyses of the peso/tequila crisis, see Blecker (1996a), Dornbusch et al. (1995), López et al. (2004), Lustig (1998), Sachs et al. (1996), and Williamson (1997).

¹⁰ See, for example, Dornbusch and Werner (1994) for a prescient warning at the time.

¹¹ The ruling Institutional Revolutionary Party (PRI) wanted to have a clean vote count in 1994, after Salinas' election in 1988 had been tainted (many would argue stolen) by massive fraud in the vote-counting (see Preston and Dillon, 2004). This is why the government felt compelled to use economic means to ensure a PRI victory in 1994. Ironically, Mexico had one of the most honest and cleanest elections in history in 2000, when opposition candidate Fox of the National Action Party (PAN) won a historic victory over the PRI, in the same year when George W. Bush "won" the U.S. presidency with a minority of the popular votes, and through a disputed vote count in the state of Florida that was upheld by a Supreme Court divided on partisan lines (including justices appointed by his father!).

¹² Some authors, such as Lustig (2001), attribute the rapid recovery only to this first cause, i.e., NAFTA. However, our econometric analysis below shows that the second and third factors were also very important.

¹³ Pacheco-López (2005) finds that the elasticity of Mexico's exports with respect to the real exchange rate is relatively low (about 0.4), and only slightly higher for imports (about -0.7), with the real exchange rate defined as the relative price of foreign goods (i.e., the reciprocal of the real value of the peso); she does not specify which price index she used. See section 4 below for an explanation of why consumer price-adjusted indices were used.

¹⁴ The original model by A.P Thirlwall (1979) and numerous subsequent developments of the theory and empirics of this model can be found in McCombie and Thirlwall, eds. (2004).

¹⁵ For applications of this model to the Mexican economy, see Moreno-Brid (1998, 1999) and Pacheco-López (2005). The last of these finds that NAFTA significantly increased Mexico's imports without significantly increasing its exports (after controlling for other factors)—although she also finds, somewhat surprisingly, that the 1986 unilateral liberalization significantly increased both imports and exports.

¹⁶ See the references in the preceding note.

¹⁷ See the Banco de México data cited in Blecker (2005, p. 10), and figure 6 below. See also Cypher (2004) on the economics of the "maquilization model" and Kopinak, ed. (2004) on the social costs of the maquiladora system.

¹⁸ See Moreno-Brid et al. (2005a, p. 1110) and the references cited there.

¹⁹ Paradoxically, as shown by Ruiz-Nápoles (2004), the employment-creating effect of the export sector in Mexico is now lower than the employment-creating effect of domestic production, taking into account both direct and indirect (upstream) jobs created—in spite of the supposedly "labor-intensive" character of Mexican manufactured exports. In addition, the new export products are demanding relatively more skilled or educated labor, and thus fail to provide significant numbers of jobs for less-skilled workers (see Verhoogen, 2004).

²⁰ According to data cited by Leamer (1998, p. 143), Mexican wages are just below the level that would obtain if all wages were equalized globally, while Indian and Chinese wages are far below this level.

²¹ See Blecker and Razmi (2005) and Razmi and Blecker (2006) on how the "fallacy of composition" in the export-led growth strategy results in greater export and growth gains for the developing countries that keep their real exchange rates (relative export prices) low relative to their competitors'.

²² Data from Banco de México, www.banxico.gob.mx.

²³ See Blecker (1996b) for a critical discussion of the *ex ante* predictions of what NAFTA was likely to do, and Stanford (2005) for an *ex post* evaluation of the *ex ante* forecasts.

²⁴ Data from U.S. Department of Commerce, Bureau of Economic Analysis, www.bea.gov. See Blecker (2005) for comparisons of U.S. trade deficits with more countries using earlier data (for 2003).

²⁵ Data from Banco de México, www.banxico.gob.mx.

²⁶ Parenthetically, we may note that strong Chinese demand has been one of the factors pushing up global oil prices, along with political turmoil in the Middle East and strong demand from the U.S. and other industrialized countries. In this one respect, China's growth is benefiting resource-exporting developing countries such as Mexico—but at the cost of pushing these countries to rely more on primary exports and less on manufactures.

²⁷ According to PEMEX (2005, p. 12), most of the hydrocarbon reserves in the north are “probable” or “possible” rather than “proven,” but they are claimed to be potentially as large as those currently proven in other regions of the country, and possibly larger for natural gas.

²⁸ Easily available data, such as government budget balances, interest rates, and rates of monetary growth, may not be good indicators of exogenous policy stances because these variables can be endogenous functions of other variables in the economy (such as the growth rate and the inflation rate). In the Mexican case, one special problem is that government expenditures since the late 1970s appear to have been partly an endogenous function of oil revenue, which would make it hard to distinguish the effects of energy prices versus fiscal policy.

²⁹ See note 7 above.

³⁰ The conventional (neoclassical) view holds that the demand-side factors operate only in the “short run,” while the supply-side factors operate in the “long run,” but no such temporal distinction is made here (and no such distinction is necessary for the econometric analysis that follows).

³¹ As of 2004, U.S. exports of goods and services to Mexico represented 1.1% of U.S. GDP, while U.S. imports of goods and services from Mexico accounted for 1.5% of U.S. GDP (calculated from data obtained from U.S. Department of Commerce, Bureau of Economic Analysis, International Transactions Accounts, www.bea.gov).

³² Note that the lack of data for the multilateral index for the last two months of 2005 is not a problem, because this variable is lagged by one year in the econometric model and hence 2004 is the last year used in the regressions.

³³ The Banco de México (www.banxico.gob.mx) reports a series called the “Índice de tipo de cambio real (ITCR) con precios consumidor y con respecto a 111 países,” based at 100 in 1990, which represents the relative price of foreign goods compared to Mexican goods. By taking the reciprocal of this index, we measure the relative price of Mexican goods compared to foreign goods, which is the same thing as the real (price-adjusted) value of the peso (expressed as an index based at 100 in 1990). The Banco de México reports these data on a monthly basis (as shown in figure 4) and we computed annual averages to use in the regression analysis.

³⁴ The bilateral peso-dollar real exchange rate index calculated by the author was constructed using consumer price indices for comparability with the multilateral real exchange rate index from the Banco de México, which is only available with consumer price adjustments (see preceding note). New pesos (worth 1,000 old pesos) were used consistently in these calculations.

³⁵ Theoretically, according to the economic model of “rational expectations,” one year's exchange rate could be influenced by the following year's growth if economic agents (currency traders) have full information about the probabilities of the next year's growth and form an unbiased expectation of the future (one year ahead) growth rate. This seems far-fetched for an economy like that of Mexico, in which there is a long history of enormous volatility and unpredictability, and in which the exchange rate has either been fixed or had a managed float during most of the sample period.

³⁶ The lagged effect of exchange rate changes on the trade balance is often referred to as the “J-curve” effect, and it stems from the fact that trade volumes respond more slowly than international prices. The trade effects of an exchange rate change is also likely to be lagged if, as is often the case in Mexico, adjustments in FDI (inflows or outflows) are required for firms to change their production of traded (exported or import-competing) goods.

³⁷ In technical terms, $RealPeso_t$ would be an endogenous variable, and including it in equation (1) would create a simultaneity bias.

³⁸ See, for example, Enders (2004) on time-series econometric methods.

³⁹ The ADF tests were performed assuming an intercept and no trend, and using various lag lengths as a sensitivity test. Results for the real oil price and the multilateral real value of the peso were not sensitive to lag length. The

bilateral real peso-dollar index has a unit root using any lag length other than 1 (including 0 lags), and was therefore considered to be nonstationary. Further details of these tests are available from the author on request.

⁴⁰ Some tests with error-correction types of models that can potentially handle data with unit roots did not yield good results. The most likely reason is that the relationships involved are all short-term, and therefore the use of first differences is appropriate.

⁴¹ The p-values represent the significance levels at which the null hypothesis of each test can be rejected, and hence the low p-values for the diagnostic statistics for equation (2) (in either table 3 or 4) indicate that all of these null hypotheses can be rejected at the 10% level and many can be rejected at the 5% level. The null hypothesis for the Breusch-Godfrey Lagrange Multiplier (LM) test is the absence of autocorrelation of the residuals for the indicated number of lags. The null for the autoregressive conditional heteroscedasticity (ARCH) test is the absence of ARCH in the residuals. The null for the Jarque-Bera test is that the residuals are normally distributed. The null for Ramsey's RESET test is that the squared fitted values have no effect, which would indicate the absence of a specification error or missing variable. Thus, rejection of the null hypotheses for all of these tests for equation (2), in both tables 3 and 4, indicates that the residuals are autocorrelated, exhibit ARCH, and are not normally distributed, and also that the models are misspecified.

⁴² The third-worst crisis, which occurred in 1986, does not generate an unusually large residual, because that downturn is explained by the variables included in the model (mostly by the large fall in oil prices in that year).

⁴³ Although the Jarque-Bera statistic shows that we cannot reject the null hypothesis that the residuals are normally distributed in equation (3), more detailed statistics show evidence of kurtosis in the residuals. Also, a RESET test with cubic fitted values has a p-value of 0.001, implying possible misspecification or another missing variable (which this author has been unable to identify). These are relatively minor problems, however, as the main diagnostic statistics for this equation shown in tables 3 and 4 allow acceptance of the respective null hypotheses.

⁴⁴ By "better fit" we refer to the conventional criteria of the higher R^2 and adjusted R^2 statistics and the lower standard error of the regression (SE) and sum of squared residuals (SSR) for equation (3) in table 4 compared with table 3. These comparisons are appropriate since the dependent variables and sample periods are identical in the two alternative models.

⁴⁵ In the results using the multilateral real peso index in table 3 (column 3), the change in the real oil price index is significant only at the 10% level. However, a redundant variable likelihood ratio (LR) test shows that the real oil price index should not be omitted from this model at the 5% level, since the LR statistic has a p-value of 0.049.

⁴⁶ The crisis dummies are somewhat smaller, but still large, in the results for equation (3) in table 3.

⁴⁷ The corresponding coefficient on the real multilateral peso index in column (3) of table 3 is somewhat smaller (-0.106), but the multilateral index has a higher variance than the bilateral index as can be seen in figure 4.

⁴⁸ The NAFTA dummy variable is not interacted with the real oil price because NAFTA had little impact on the Mexican energy sector. The NAFTA dummy by itself, used as an intercept dummy, was insignificant (in results not reported here for reasons of space). This indicates that there was no significant change in the underlying trend in the Mexican growth rate after the adoption of NAFTA in 1994.

⁴⁹ In equation (4) in table 3, the change in the real oil price index is not significant at the 10% level using a conventional t-test. However, a redundant variable likelihood ratio (LR) test shows that this variable should not be omitted from equation (4) in table 3 at the 10% level, since the LR statistic has a p-value of 0.073.

⁵⁰ As in equation (3), there is some kurtosis of the residuals (not shown in the table), and the RESET specification test with cubic fitted values is significant at the 1% level. These are relatively minor problems, however, given that all the other tests allow acceptance of the null hypotheses and the Durbin-Watson statistic is still close to 2.0.

⁵¹ See Ramírez de la O (2004) for further arguments against Mexico joining a North American Monetary Union.

References

- Audley, J. J., et al. 2003. *NAFTA's Promise and Reality: Lessons from Mexico for the Hemisphere*. Washington: Carnegie Endowment for International Peace.
- Blecker, R. A. 1996a. "NAFTA, the Peso Crisis, and the Contradictions of the Mexican Economic Growth Strategy," Bernard Schwartz Center for Economic Policy Analysis, Working Paper No. 1996-04, The New School, www.newschool.edu/cepa/publications/workingpapers/archive/cepa0103.pdf.
- Blecker, R. A. 1996b. "The Political Economy of the North American Free Trade Agreement," in R. A. Blecker, ed., *U.S. Trade Policy and Global Growth: New Directions in the International Economy*. Armonk, NY: M.E. Sharpe, Inc., Economic Policy Institute Series.
- Blecker, R. A. 2003a. "The Diminishing Returns to Export-Led Growth," in W. R. Mead and S. R. Schweninger, eds., *The Bridge to a Global Middle Class: Development, Trade and International Finance*. Boston, MA: Kluwer Academic Publishers for the Milken Institute.
- Blecker, R. A. 2003b. "Why the Dollar Needs to Fall Further." *Challenge*, vol. 46, no. 5 (September/October), 15-36.
- Blecker, R. A. 2005. "The North American Economies after NAFTA: A Critical Appraisal," *International Journal of Political Economy*, vol. 33, no. 3 (Fall 2003 issue; published 2005), 5-27.
- Blecker, R. A., and A. Razmi. 2005. "Relative Prices and the Fallacy of Composition in Manufacturing-Based, Export-Led Growth: An Empirical Investigation," unpublished manuscript, American University and University of Massachusetts, November.
- Boltvinik, J. 2003. "Welfare, Inequality, and Poverty in Mexico, 1970-2000," in K. J. Middlebrook and E. Zepeda, eds., *Confronting Development: Assessing Mexico's Economic and Social Policy Challenges*. Stanford, CA: Stanford University Press.
- Cypher, J. M. 2004. "Development Diverted: Socioeconomic Characteristics and Impacts of Mature Maquilization," in K. Kopinak, ed., *The Social Costs of Industrial Growth in Northern Mexico*. La Jolla: Center for U.S.-Mexican Studies, University of California, San Diego.
- Dornbusch, R., I. Goldfajn, and R. O. Valdés. 1995. "Currency Crises and Collapses," *Brookings Papers on Economic Activity*, 2:1995, 219-93.
- Dornbusch, R., and A. Werner. 1994. "Mexico: Stabilization, Reform, and No Growth," *Brookings Papers on Economic Activity*, 1:1994, 253-315.
- Enders, W. 2004. *Applied Econometric Time Series*, 2nd ed. Hoboken: J. Wiley.

Gereffi, G. 2003. "Mexico's Industrial Development: Climbing Ahead or Falling Behind in the Global Economy?" in K. J. Middlebrook and E. Zepeda, eds., *Confronting Development: Assessing Mexico's Economic and Social Policy Challenges*. Stanford, CA: Stanford University Press.

Hanson, G. H. 2004. "What Has Happened to Wages in Mexico Since NAFTA? Implications for Hemispheric Free Trade," in A. Estevadeordal, et al., eds., *Integrating the Americas: FTAA and Beyond*. Cambridge, MA: Harvard University Press.

Huerta González, A. 2004. *La Economía Política del Estancamiento*. Mexico City: Editorial Diana.

Hufbauer, G. C., and J. J. Schott. 2005. *NAFTA Revisited: Achievements and Challenges*. Washington: Institute for International Economics.

Kopinak, K., ed. 2004. *The Social Costs of Industrial Growth in Northern Mexico*. La Jolla: Center for U.S.-Mexican Studies, University of California, San Diego.

Leamer, E. E. 1998. "In Search of Stolper-Samuelson Linkages between International Trade and Lower Wages," in S. M. Collins, ed., *Imports, Exports, and the American Worker*. Washington: Brookings Institution.

Lederman, D., Mahoney, W. F., and L. Servén. 2005. *Lessons from NAFTA for Latin America and the Caribbean*. Washington: World Bank and Stanford University Press.

López, J., J. C. Moreno-Brid, and M. Puchet. 2004. "Financial Fragility and Financial Crisis in Mexico," paper presented at Allied Social Sciences Associations meetings, San Diego, CA (January).

Lustig, N. 1998. *Mexico: The Remaking of an Economy*, 2nd edition. Washington: Brookings Institution.

Lustig, N. 2001. "Life Is Not Easy: Mexico's Quest for Stability and Growth." *Journal of Economic Perspectives*, vol. 15, no. 1 (Winter), 85-106.

Martin, P. 2003. "Mexico-US Migration," unpublished working paper, Institute for International Economics, Washington.

Máttar, J., J. C. Moreno-Brid, and W. Peres. 2003. "Foreign Investment in Mexico after Economic Reform," in K. J. Middlebrook and E. Zepeda, eds., *Confronting Development: Assessing Mexico's Economic and Social Policy Challenges*. Stanford, CA: Stanford University Press.

McCombie, J. S. L., and A. P. Thirlwall, eds. 2004. *Essays on Balance of Payments Constrained Growth: Theory and Evidence*. London: Routledge.

- Moreno-Brid, J. C. 1998. "Balance-of-Payments Constrained Economic Growth: The Case of Mexico," *Banca Nazionale del Lavoro Quarterly Review*, no. 207 (December), 413-33.
- Moreno-Brid, J. C. 1999. "Mexico's Economic Growth and the Balance of Payments Constraint: A Cointegration Analysis," *International Review of Applied Economics*, vol. 13, no. 2, 149-59.
- Moreno-Brid, J. C., and J. Ros. 2004. "Mexico's Market Reforms in Historical Perspective," revised version of paper presented at the LACEA meeting in Cholula, Puebla, Mexico (January).
- Moreno-Brid, J. C., J. Santamaría, and J. C. Rivas Valdivia. 2005a. "Industrialization and Economic Growth in Mexico after NAFTA: The Road Travelled," *Development and Change*, vol. 36, no. 6 (November), 1095-1119.
- Moreno-Brid, J. C., P. Ruiz-Nápoles, and J. C. Rivas Valdivia. 2005b. "NAFTA and the Mexican Economy: A Look Back on a Ten-year Relationship," *North Carolina Journal of International Law and Commercial Regulation*, vol. 30, no. 4, 997-1024.
- Pacheco-López, P. 2005. "The Impact of Trade Liberalization on Exports, Imports, the Balance of Trade, and Growth: The Case of Mexico," *Journal of Post Keynesian Economics*, vol. 27, no. 4 (Summer), 595-619.
- Pacheco-López, P., and A. P. Thirlwall. 2004. "Trade Liberalisation in Mexico: Rhetoric and Reality," *Banca Nazionale del Lavoro Quarterly Review*, no. 229 (June): 141-67.
- Papademetriou, D. G. 2003. "The Shifting Expectations of Free Trade and Migration," in J. J. Audley, et al., *NAFTA's Promise and Reality: Lessons from Mexico for the Hemisphere*. Washington, DC: Carnegie Endowment for International Peace.
- Pastor, M., and C. Wise. 2003. "A Long View of Mexico's Political Economy: What's Changed? What Are the Challenges?" in J. S. Tulchin and A. D. Sele, eds., *Mexico's Politics and Society in Transition*. Boulder: Lynne Rienner.
- Pastor, R. A. 2004. "North America's Second Decade," *Foreign Affairs*, vol. 83, no. 1 (January-February), 124-35.
- Pastor, R. A. 2005. "North America's Paramount Challenge: Narrowing the Income Gap with Mexico," unpublished manuscript, Center for North American Studies (CNAS), American University, December.
- Pastor, R.A., S. Robinson, S. Morley, and C. Díaz-Bonilla. 2005. "The Paramount Challenge for North America: Closing the Development Gap," unpublished manuscript, Center for North American Studies (CNAS), American University, March.
- Petróleos Mexicanos (PEMEX). 2005. *Anuario Estadístico 2005*, www.pemex.com/files/content/Anuario_Estadistico.pdf

- Polaski, S. 2003. "Jobs, Wages, and Household Income," in J. J. Audley, et al., *NAFTA's Promise and Reality: Lessons from Mexico for the Hemisphere*. Washington: Carnegie Endowment for International Peace.
- Preston, J., and S. Dillon. 2004. *Opening Mexico: The Making of a Democracy*. New York: Farrar, Straus and Giroux.
- Ramírez de la O, R. 2004. "Prospects for North American Monetary Cooperation in the Next Decade," in S. Weintraub, ed., *NAFTA's Impact on North America: The First Decade*. Washington, CSIS Press.
- Razmi, A., and R. A. Blecker. 2006. "Moving Up the Ladder to Escape the Adding Up Constraint? New Evidence on the Fallacy of Composition," unpublished manuscript, University of Massachusetts and American University, January.
- Reynolds, C. W. 1978. "Why Mexico's 'Stabilizing Development' Was Actually Destabilizing (With Some Implications for the Future)," *World Development*, vol. 6, 1005-18.
- Ruiz Durán, C. 2005. "NAFTA: Lessons from an Uneven Integration," *International Journal of Political Economy*, vol. 33, no. 3 (Fall 2003 issue; published 2005), 50-71.
- Ruiz-Nápoles, P. 2004. Exports, Growth, and Employment in Mexico, 1978-2000, *Journal of Post Keynesian Economics*, vol. 27, no. 1, 105-24.
- Sachs, J. D., A. Tornell, and A. Velasco. 1996. "The Mexican Peso Crisis: Sudden Death or Crisis Foretold?" *Journal of International Economics*, vol. 41, nos. 3/4 (November), 265-83.
- Salas, C., and E. Zepeda. 2003. "Employment and Wages: Enduring the Costs of Liberalization and Economic Reform," in K. J. Middlebrook and E. Zepeda, eds., *Confronting Development: Assessing Mexico's Economic and Social Policy Challenges*. Stanford: Stanford University Press.
- Scott, R. E., C. Salas, and B. Campbell. 2001. *NAFTA at Seven: Its Impact on Workers in All Three Nations*. Washington: Economic Policy Institute.
- Stanford, J. 2005. "Economic Models and Economic Reality: North American Free Trade and the Predictions of Economists," *International Journal of Political Economy*, vol. 33, no. 3 (Fall 2003 issue; published 2005), 28-49.
- Thirlwall, A. P. 1979. "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences," *Banca Nazionale del Lavoro Quarterly Review*, no. 128 (March), 45-53.
- United Nations Conference on Trade and Development (UNCTAD). 2002. *Trade and Development Report, 2002*. Geneva: United Nations.

Urquidi, V. 2003. "Mexico's Development Challenge," in K. J. Middlebrook and E. Zepeda, eds., *Confronting Development: Assessing Mexico's Economic and Social Policy Challenges*. Stanford: Stanford University Press.

Vega, G., and L. M. de la Mora. 2003. "Mexico's Trade Policy: Financial Crisis and Economic Recovery," in K. J. Middlebrook and E. Zepeda, eds., *Confronting Development: Assessing Mexico's Economic and Social Policy Challenges*. Stanford: Stanford University Press.

Verhoogen, E. 2004. "Trade, Quality Upgrading and Wage Inequality in the Mexican Manufacturing Sector: Theory and Evidence from an Exchange Rate Shock," unpublished manuscript, Columbia University, January.

Weintraub, S., ed. 2004. *NAFTA's Impact on North America: The First Decade*. Washington: CSIS Press.

Williamson, J. 1997. "Mexican Policy Toward Foreign Borrowing," in B. Bosworth, et al., eds., *Coming Together? Mexico-U.S. Relations*. Washington: Brookings Institution.

Table 1 Persistent Income Gaps Between Mexico and the United States, 2003 versus 1993

Levels of Variables:	Mexico		United States	
	1993	2003	1993	2003
GDP (current US\$billions)	403.2	626.1	6,582.9	10,881.6
GDP per capita (constant 1995 US\$)	3,327	3,717	26,592	32,514
GNI per capita, Atlas method (current US\$)	4,230	6,230	25,800	37,610
GNI per capita, PPP (current international \$)	6,680	8,950	25,570	37,500
Hourly compensation of mfrg. workers, in US\$	\$2.40	\$2.48	\$16.28	\$21.97
Percentages of U.S. Levels:	Mexico		United States	
	1993	2003	1993	2003
GDP (current US\$billions)	6.1%	5.8%	100.0%	100.0%
GDP per capita (constant 1995 US\$)	12.5%	11.4%	100.0%	100.0%
GNI per capita, Atlas method (current US\$)	16.4%	16.6%	100.0%	100.0%
GNI per capita, PPP (current international \$)	26.1%	23.9%	100.0%	100.0%
Hourly compensation of mfrg. workers, in US\$	14.7%	11.3%	100.0%	100.0%

Sources: World Bank, *World Development Indicators*; and U.S. Department of Labor, Bureau of Labor Statistics, "International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, 2003" and "Supplementary Tables, 1975-2003," www.bls.gov/fls/home.htm.

Table 2 Mexican Balance of Payments Data, Selected Years, 1993-2004

In millions of U.S. dollars

	Pre- and Post-Tequila Crisis					Recent Years				
	1993	1994	1995	1996	1997	2000	2001	2002	2003	2004
Balance of Payments:										
Goods: Exports f.o.b.	51,885	60,882	79,542	96,000	110,431	166,121	158,780	161,046	164,766	187,999
Goods: Imports f.o.b.	-65,366	-79,346	-72,453	-89,469	-109,808	-174,458	-168,397	-168,679	-170,546	-196,810
Trade Balance on goods	-13,481	-18,464	7,089	6,531	623	-8,337	-9,617	-7,633	-5,780	-8,811
Balance on Goods & Services	-16,010	-21,185	7,153	6,436	-807	-11,942	-14,110	-12,553	-11,304	-14,586
Balance on Goods, Services and Income	-27,040	-33,444	-5,536	-7,039	-12,913	-25,592	-26,980	-23,767	-22,462	-24,398
Remittances	3,333	3,475	3,673	4,224	4,865	6,573	8,895	9,814	13,396	16,613
Current Account Balance	-23,400	-29,662	-1,576	-2,537	-7,695	-18,622	-17,666	-13,515	-8,620	-7,370
Direct Foreign Investment (inflow)	4,389	10,973	9,526	9,186	12,830	17,077	27,687	15,477	12,279	17,377
Portfolio Investment Liabilities (net increase)	28,919	8,182	-9,715	12,585	4,704	-1,134	3,882	-632	3,864	6,126
Financial Account Balance (total net inflows)*	33,760	15,787	-10,487	13,298	24,445	23,149	26,200	23,114	18,657	13,085
Overall Balance	7,232	-17,199	-16,312	10,997	19,162	7,126	7,314	7,359	9,817	4,104
Official Reserves and Related Transactions:										
Total net increase (-) or decrease (+)	-7,232	17,199	16,312	-10,997	-19,162	-7,126	-7,314	-7,359	-9,817	-4,104
Reserve Assets	-6,057	18,398	-9,648	-1,805	-10,512	-2,862	-7,338	-7,376	-9,833	-4,120
Use of IMF Credit and Loans	-1,175	-1,199	11,950	-2,057	-3,485	-4,288	0	0	0	0
IMF Exceptional Financing	0	0	14,010	-7,135	-5,165	24	24	16	16	16
Memorandum:										
Foreign Exchange Reserves (end of period)	24,886	6,101	15,250	19,176	28,136	35,142	44,384	49,895	57,740	62,778

Source: International Monetary Fund, *International Financial Statistics* (except remittances are from Banco de Mexico).

Note: Balances may include some items not shown separately. Some lines are renamed from official IMF terminology for purposes of clarity.

*This is what has traditionally been known as the "capital account" balance, but not what is presently called the "capital account" in the *IFS* tables.

**Table 3 Regression Results for Mexican Growth Model
Using the Multilateral Real Value of the Peso**

Dependent variable: Δ Mexican growth rate (in percentage points)

Sample period: 1972-2005 (34 annual observations)

Variable:	Estimated Equation (Column):		
	(2)	(3)	(4)
Constant ^a	-0.234 (0.575)	0.419 (0.355)	0.330 (0.428)
Δ U.S. growth rate (t)	0.518 (0.040)	0.668 (0.010)	0.537 (0.055)
Δ Real oil price index (t)	0.042 (0.028)	0.035 (0.065)	0.030 (0.135)
Δ Multilateral real peso index (t-1)	-0.071 (0.039)	-0.106 (0.001)	-0.098 (0.006)
D1983 (t)		-11.48 (0.000)	-10.30 (0.000)
D1995 (t)		-10.60 (0.000)	-8.918 (0.000)
DNAFTA (t) * Δ U.S. growth rate (t)			1.180 (0.022)
DNAFTA (t) * Δ Multilateral real peso index (t-1)			-0.005 (0.931)
R-squared	0.319	0.665	0.702
Adjusted R-squared	0.251	0.606	0.622
SE	3.644	2.644	2.587
SSR	398.4	195.7	174.0
<u>Diagnostic tests:^b</u>			
Durbin-Watson	2.568	1.926	1.858
Breusch-Godfrey LM tests:			
1 lag	0.031	0.927	0.846
2 lags	0.030	0.878	0.548
3 lags	0.069	0.841	0.504
ARCH (1 lag of squared residuals)	0.032	0.137	0.116
Jarque-Bera Normality	0.059	0.579	0.593
RESET (squared fitted values)	0.096	0.990	0.797

Notes: Numbers below the coefficients are p-values (significance levels) using Newey-West adjusted standard errors. Equations were estimated using ordinary least squares with all variables (except dummies) measured in first differences. All year dummies are 1 in the year indicated and 0 in all other years; the NAFTA dummy is 1 in 1994-2005 and 0 in all other years.

^aThe constant term represents a linear time trend since the variables are first differenced.

^bSee endnote 41 for an explanation of the diagnostic tests; the numbers shown here are p-values, except for the Durbin-Watson statistics.

**Table 4 Regression Results for Mexican Growth Model
Using the Bilateral Real Value of the Peso Versus the U.S. Dollar**

Dependent variable: Δ Mexican growth rate (in percentage points)

Sample period: 1972-2005 (34 annual observations)

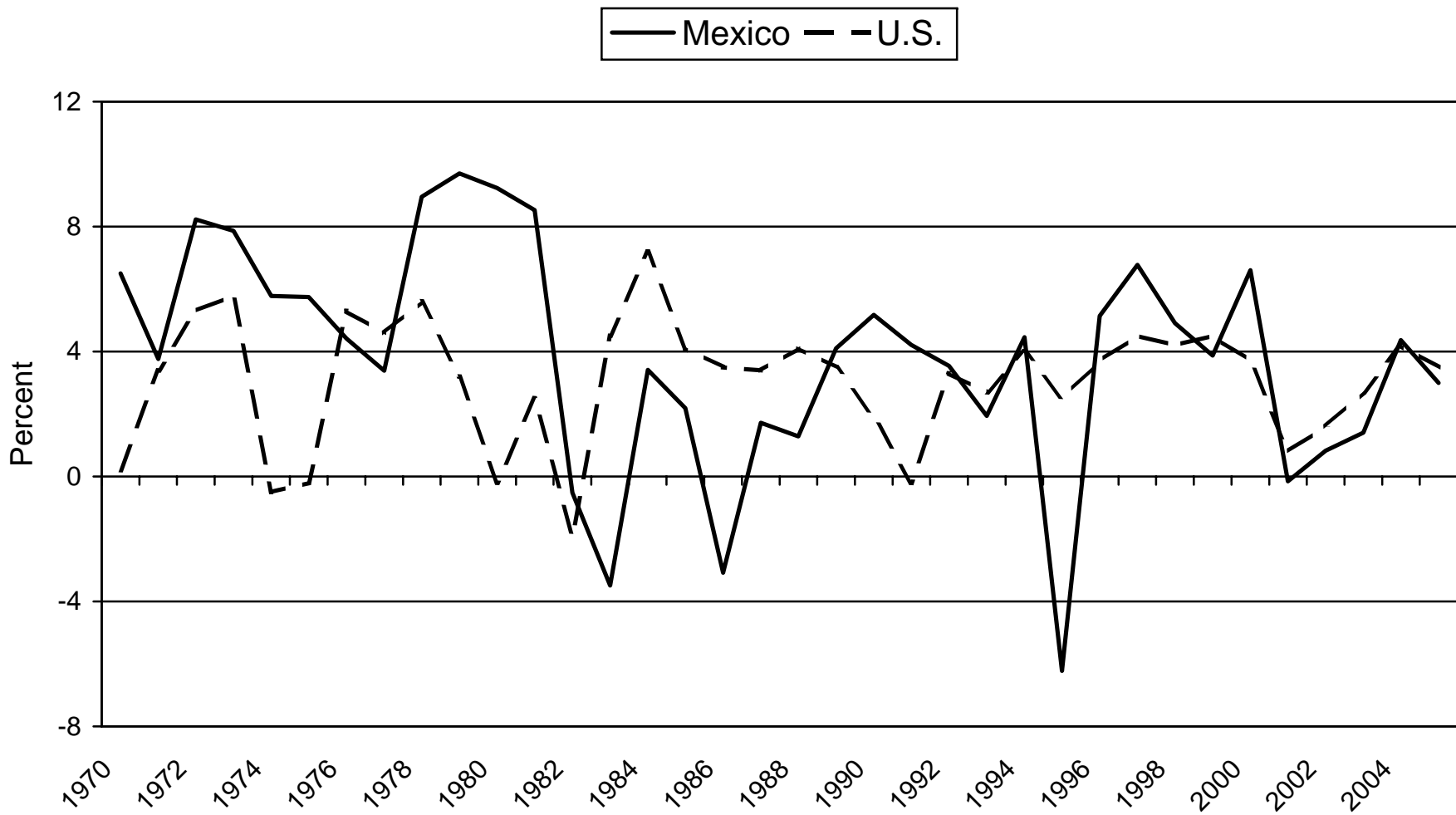
Variable:	Estimated Equation (Column):		
	(2)	(3)	(4)
Constant ^a	-0.213 (0.658)	0.564 (0.207)	0.462 (0.230)
Δ U.S. growth rate (t)	0.571 (0.015)	0.696 (0.006)	0.592 (0.039)
Δ Real oil price index (t)	0.052 (0.006)	0.046 (0.006)	0.041 (0.025)
Δ Real peso-dollar index (t-1)	-0.070 (0.271)	-0.158 (0.000)	-0.138 (0.002)
D1983 (t)		-14.23 (0.000)	-12.68 (0.000)
D1995 (t)		-11.01 (0.000)	-9.644 (0.000)
DNAFTA (t) * Δ U.S. growth rate (t)			0.953 (0.022)
DNAFTA (t) * Δ Real peso-dollar index (t-1)			-0.024 (0.705)
R-squared	0.285	0.689	0.716
Adjusted R-squared	0.213	0.633	0.640
SE	3.734	2.550	2.526
SSR	418.2	182.0	165.9
<u>Diagnostic tests:^b</u>			
Durbin-Watson	2.516	1.965	1.955
Breusch-Godfrey LM tests:			
1 lag	0.039	0.784	0.844
2 lags	0.042	0.948	0.737
3 lags	0.095	0.913	0.788
ARCH (1 lag of squared residuals)	0.042	0.225	0.263
Jarque-Bera Normality	0.058	0.692	0.822
RESET (squared fitted values)	0.011	0.352	0.500

Notes: Numbers below the coefficients are p-values (significance levels) using Newey-West adjusted standard errors. Equations were estimated using ordinary least squares with all variables (except dummies) measured in first differences. All year dummies are 1 in the year indicated and 0 in all other years; the NAFTA dummy is 1 in 1994-2005 and 0 in all other years.

^aThe constant term represents a linear time trend since the variables are first differenced.

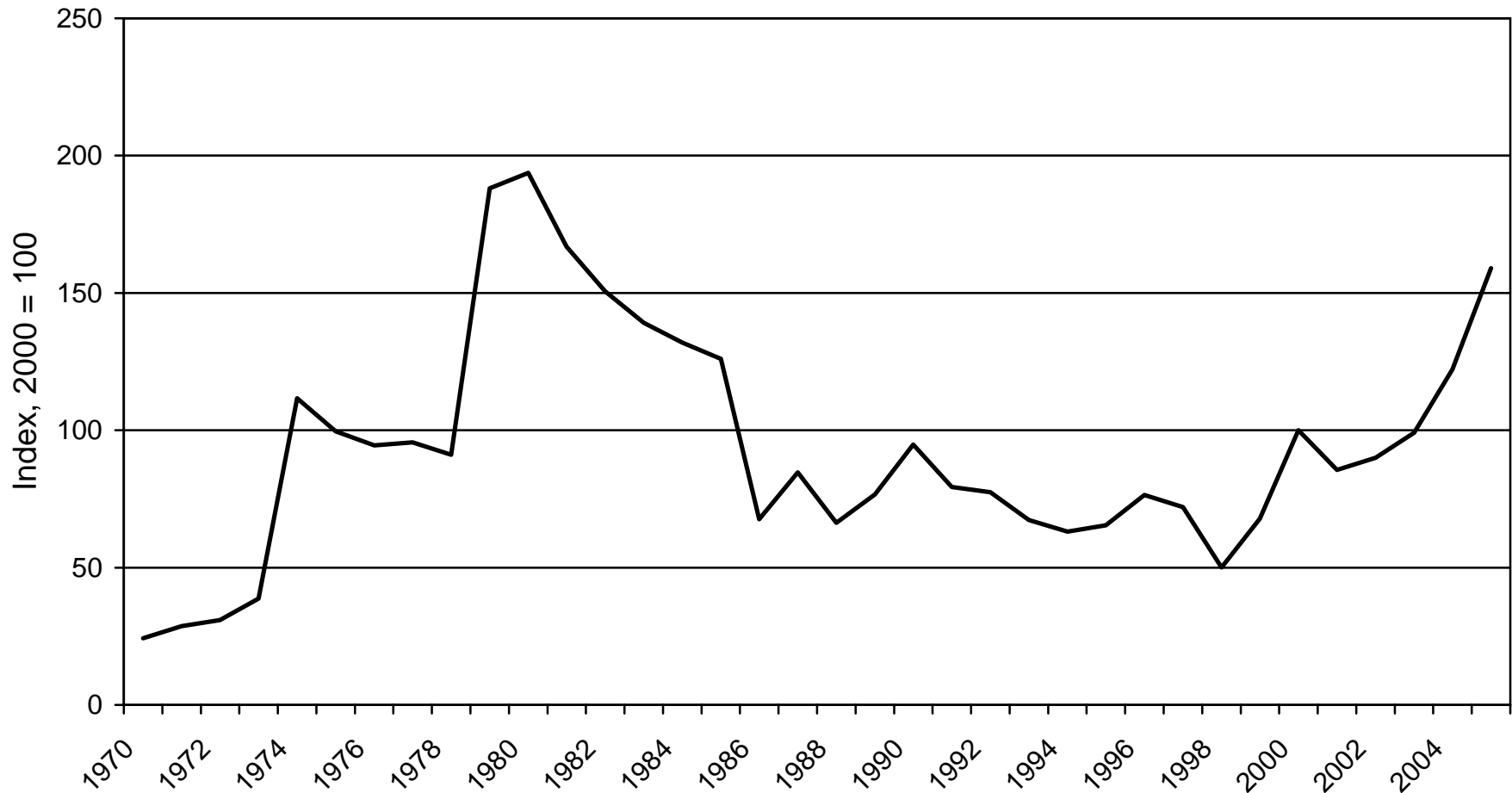
^bSee endnote 41 for an explanation of the diagnostic tests; the numbers shown here are p-values, except for the Durbin-Watson statistics.

Figure 1
Mexican and U.S. growth rates of real GDP, annually, 1970-2005



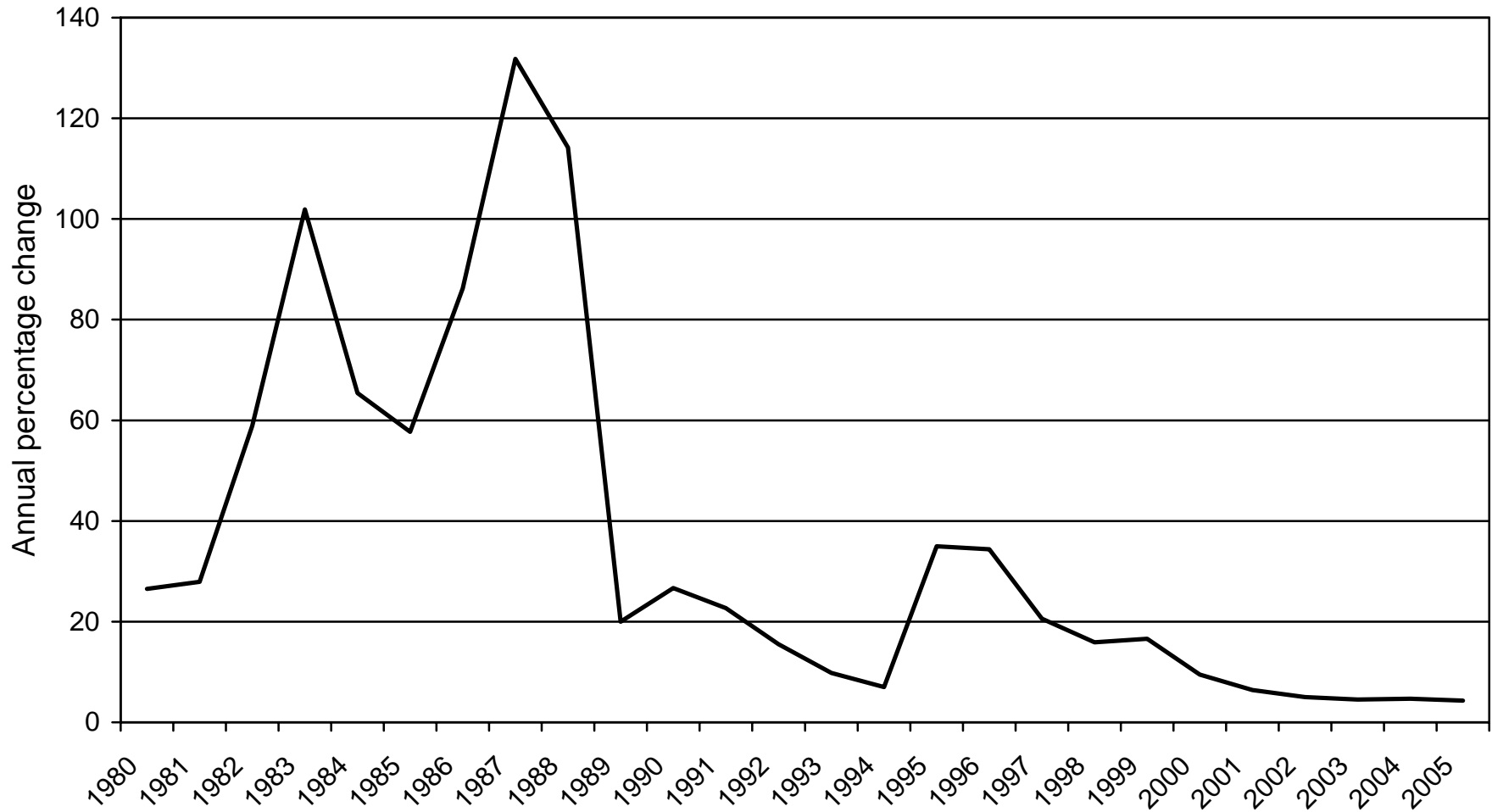
Sources: IMF, *International Financial Statistics* and *World Economic Outlook*, Sept. 2005, for Mexico; U.S. Department of Commerce, Bureau of Economic Analysis, for the U.S.

Figure 2
Real oil price index: IMF index of three spot oil prices relative to the
U.S. PPI for industrial commodities, annually, 1970-2005



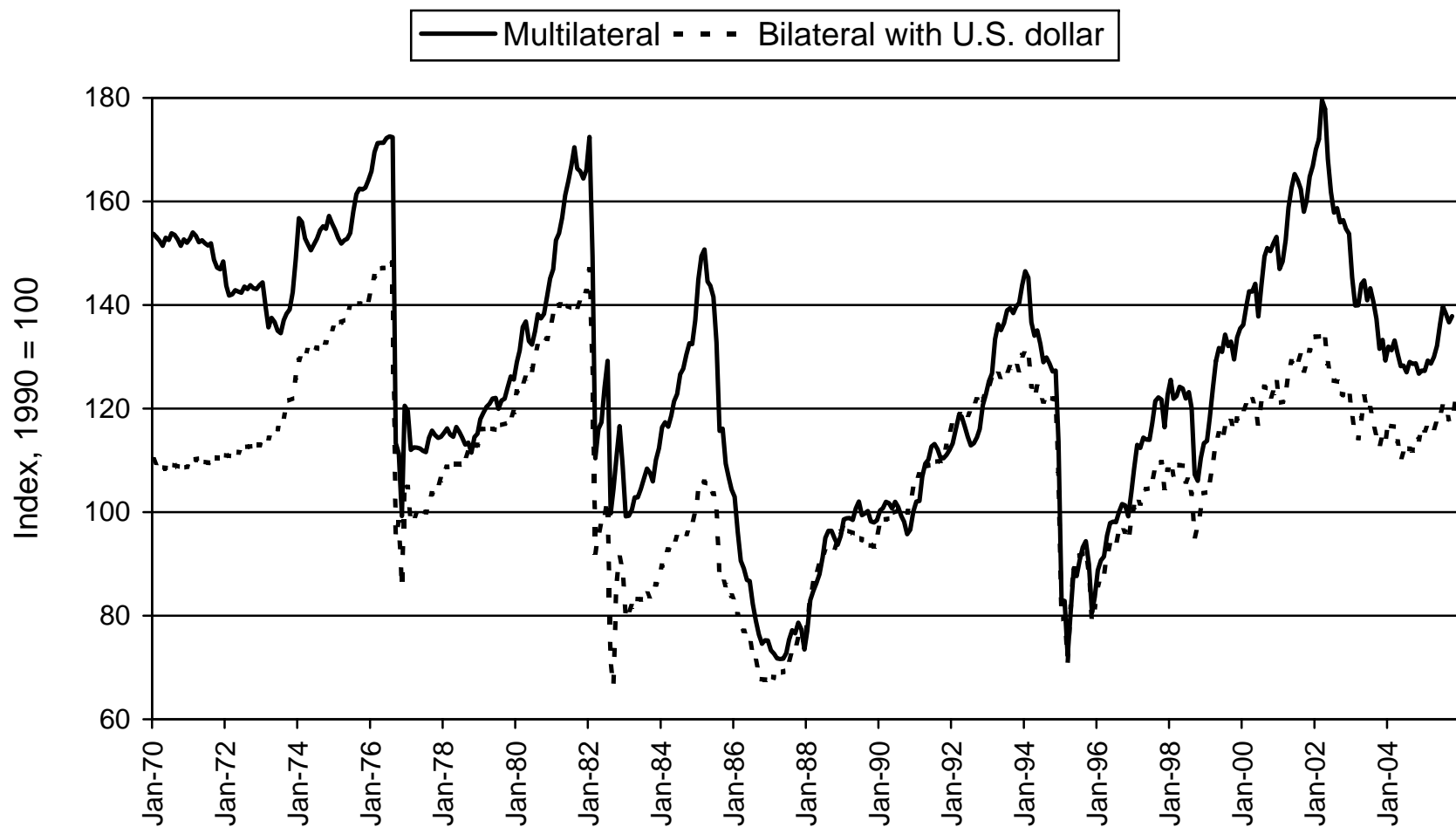
Sources: International Monetary Fund, *International Financial Statistics*; U.S. Department of Labor, Bureau of Labor Statistics; and author's calculations. The 3 spot prices are for Dubai, U.K. Brent, and Texas.

Figure 3
Mexican inflation rate, annually, 1980-2005



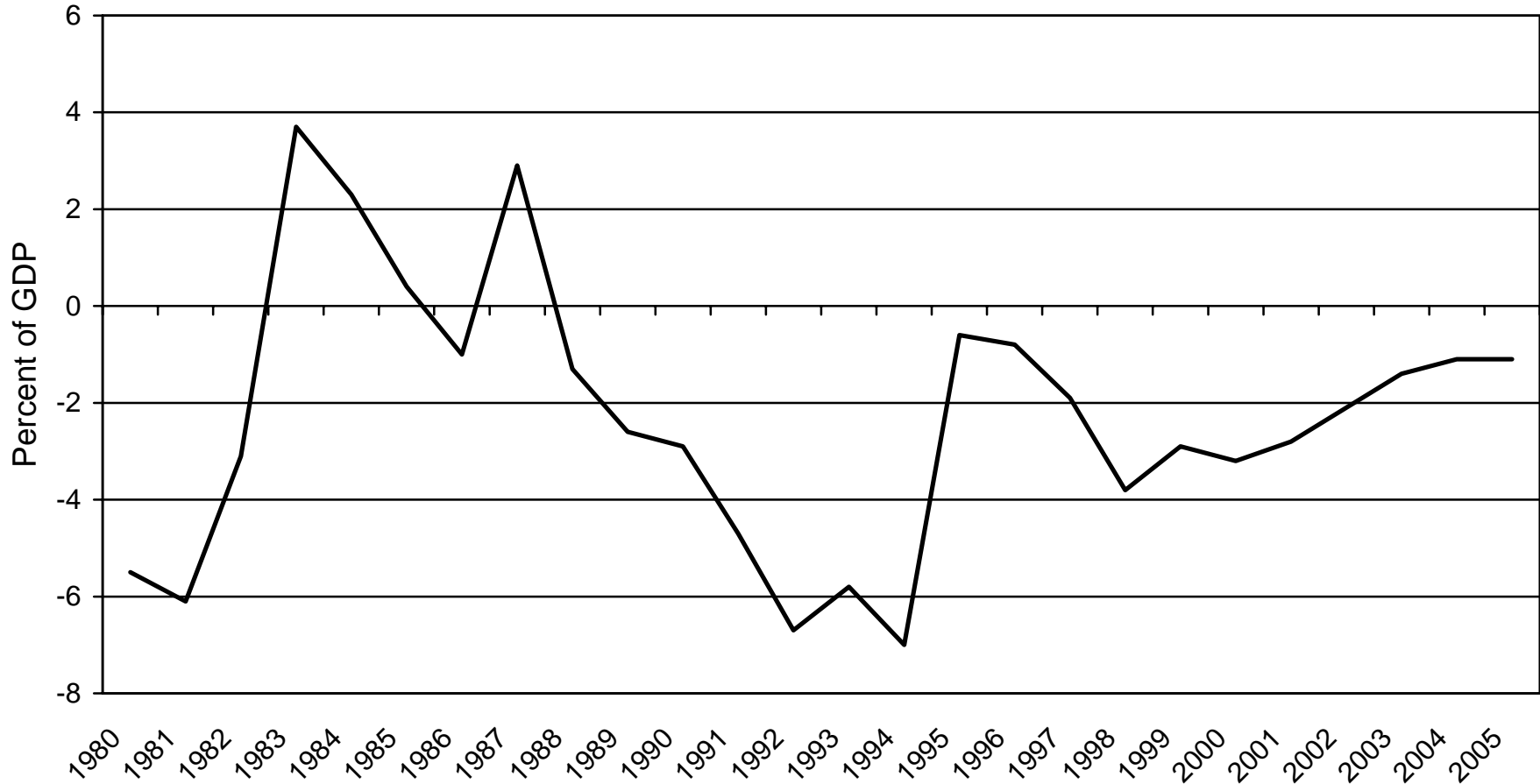
Source: International Monetary Fund, *World Economic Outlook*, September 2005 (data for 2005 are estimated).

Figure 4
Real value of the Mexican peso, consumer price adjusted,
alternative indexes, monthly, January 1970 - December 2005



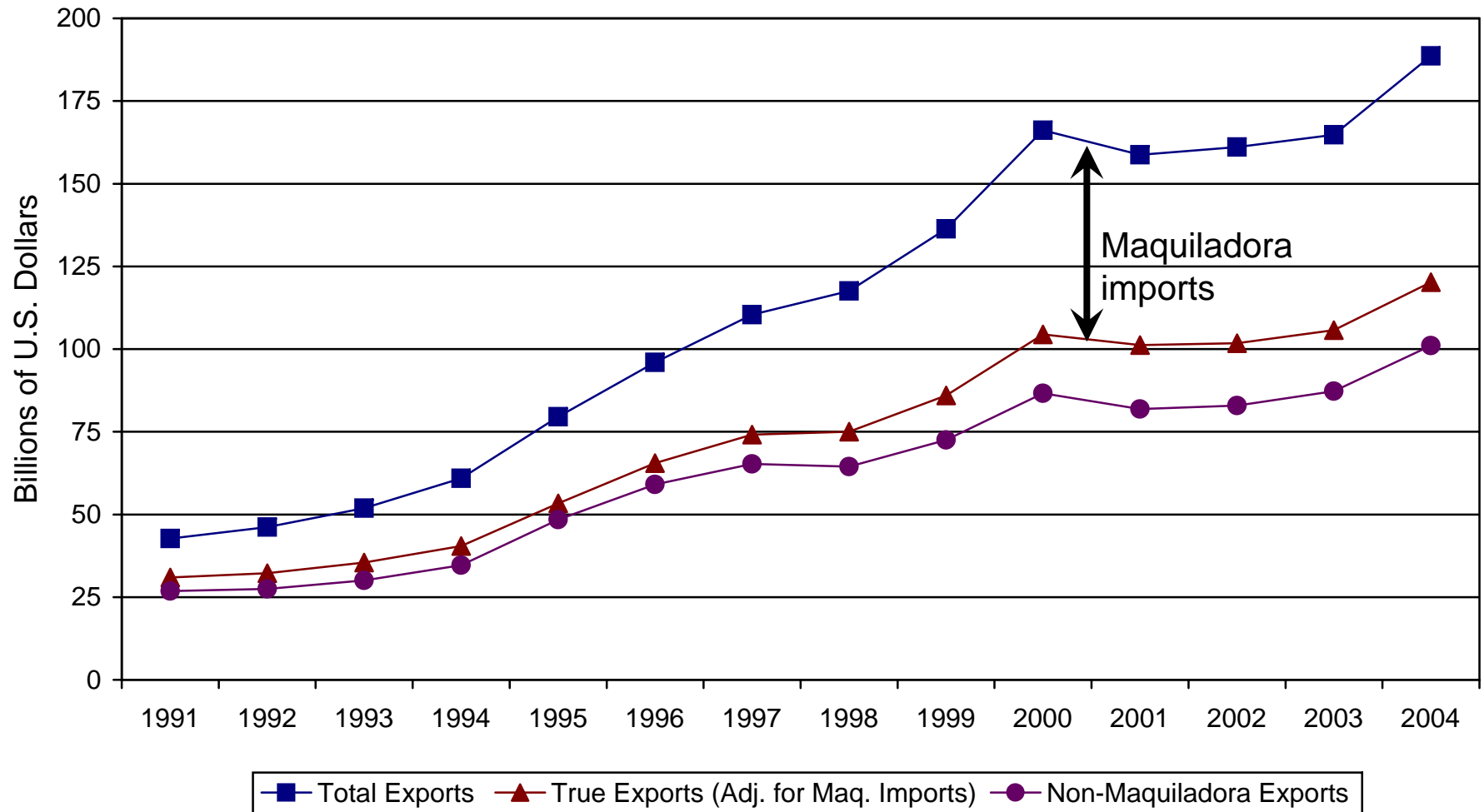
Sources: Banco de Mexico, International Monetary Fund, and author's calculations (see text for details).
Note: The multilateral series ends in October 2005.

Figure 5
Mexico's current account balance as a percentage of GDP,
annually, 1980-2005



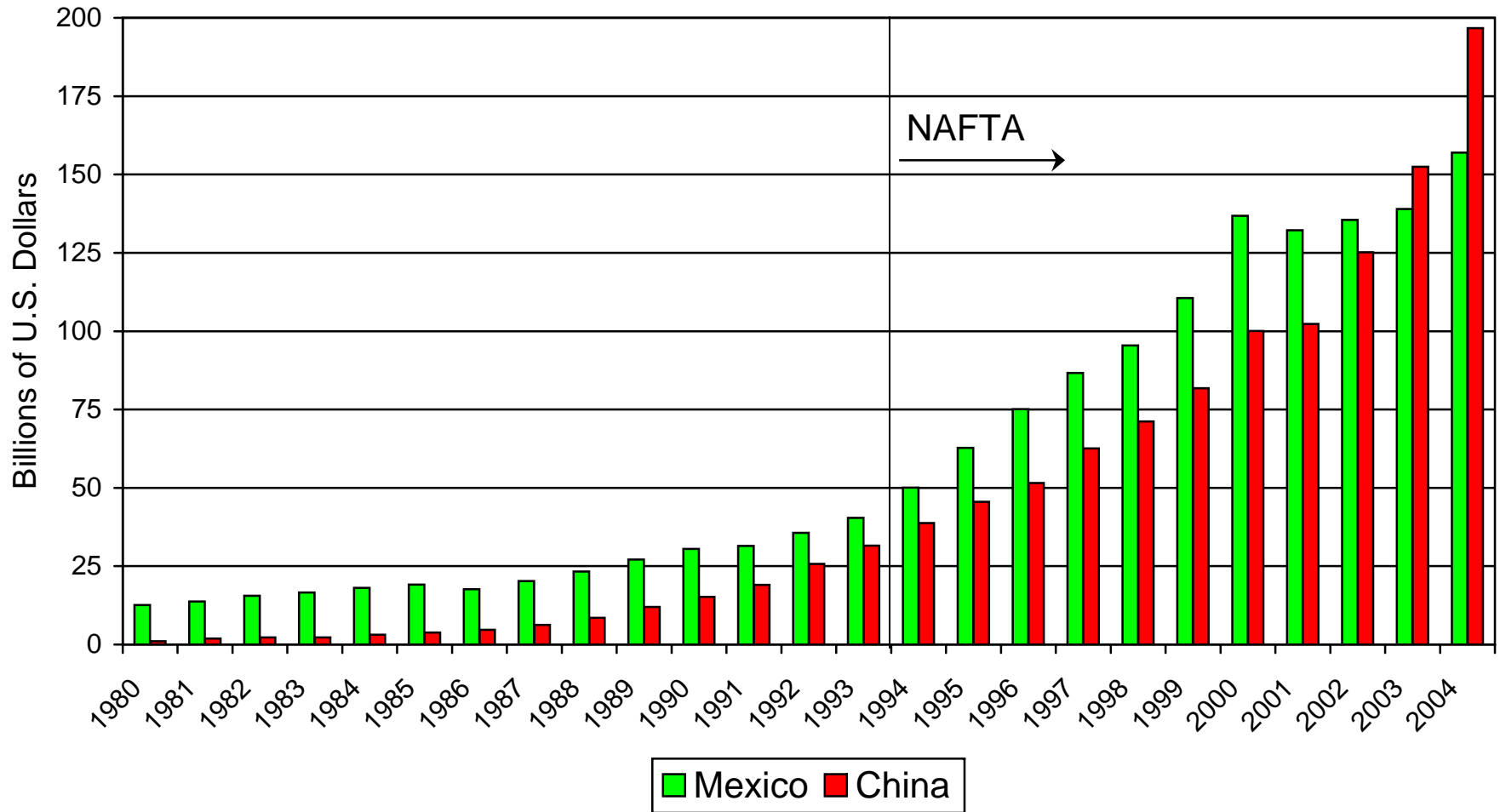
Source: International Monetary Fund, *World Economic Outlook*, September 2005 (data for 2005 are estimated).

Figure 6
 Mexican exports of goods corrected for maquiladora imports,
 annually, 1991-2004



Source: Banco de Mexico, www.banxico.gob.mx, and author's calculations.

Figure 7
 U.S. imports of goods from Mexico and China,
 annually, 1980-2004



Source: U.S. International Transactions data, release of March 16, 2005, www.bea.gov. Data for 2004 are preliminary.