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Mexico: Pushing for Economic Growth



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An Intelligence Assessment

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Mexico: Pushing for Economic Growth

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An Intelligence Assessment

This paper was prepared by [Redacted]
[Redacted] Office of African and Latin
American Analysis. It was coordinated with the
Directorate of Operations. Comments and queries are
welcome and may be directed to the Chief, Middle
America Caribbean Division, ALA, [Redacted]
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**Mexico:
Pushing for
Economic Growth**

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Scope Note

This Assessment is part of a continuing effort within the Directorate of Intelligence to analyze the Mexican economy and its impact on the United States. It examines President de la Madrid's economic growth plan, assesses its prospects for success, and presents alternative outcomes for Mexico should the economy prove unresponsive to the government's stimulative measures or should oil prices change significantly. We have limited the scope of our Assessment to the period shortly after de la Madrid's successor takes office.

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Conclusions of the paper were supported by the Agency's econometric model of Mexico.

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Key Judgments

Information available as of 15 April 1987 was used in this report.

The next 18 months, in our view, will be crucial for both Mexico's economic and political well-being. The approach of a presidential election in 1988, at a time of lagging public support for the ruling Institutional Revolutionary Party (PRI), is certain to make the incumbent administration even more sensitive to the impact of economic policy on its immediate political prospects, as well as on the legacy it leaves to its successor. Indeed, President de la Madrid already appears convinced of the need to abandon austerity and embark upon a new and risky economic growth program.

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We believe such expansionist fiscal and monetary policies are likely to combine with Mexico's new \$13.7 billion financial relief package to generate a moderate economic recovery this year—with 2 to 2.5 percent growth—and somewhat better performance in 1988. Nevertheless, this upturn will come with some painful tradeoffs, particularly in terms of higher inflation. In addition, the deep-seated problems that prevent sustained growth are unlikely to be addressed. As a result, we expect the President to turn over to his successor in late 1988 an economy in some ways worse off than the one de la Madrid inherited in 1982.

[Redacted]

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As it so far has unfolded, the government's growth program relies largely on massive increases in both public and private sector investment. A new tax policy is central to achieving both of these goals. De la Madrid hopes more lenient depreciation schedules, writeoffs, and lower tax rates will expand the tax base to generate the resources sufficient to finance greater government investment spending. Mexico City also believes a more aggressive tax collection strategy will boost federal income. Despite the administration's efforts, we expect investment to run below optimistic government expectations over the next two years. Our calculations suggest that budgetary constraints will help limit increases in public investment, and we anticipate a sluggish response from the private sector to de la Madrid's newfound supply-side economics.

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Should the economy fail to respond with moderate growth in 1987, we are convinced the de la Madrid administration would resort to further fiscal stimulus in 1988. With the presidential campaign in full swing, increases in

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government spending probably would be financed through money creation and deficit financing, since these measures are more politically acceptable than tax hikes. Although these moves probably would produce growth by election time, they also would generate dramatically higher inflation and a sizable increase in the public-sector deficit. [redacted]

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When de la Madrid leaves office in September 1988, none of the problems identified at the beginning of his term—such as high levels of inflation, unemployment, and budget deficits—will have been alleviated, despite deep sacrifice by the Mexican people. Indeed, unless oil prices rebound markedly, the economic problems faced by the new president will be substantial and the pressures to find lasting solutions to Mexico's problems will be even greater than those faced by de la Madrid. Most likely, he will be forced to respond to the challenges with fewer resources than his predecessor had. [redacted]

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Mexico City's inability to raise living standards and create sufficient jobs to satisfy its growing labor force will create a wide range of problems for the United States. As Mexican interest groups increasingly vie for slices of a shrinking pie, we expect unemployment and social discontent to grow. This could prompt even higher rates of illegal emigration to the United States, although new US immigration laws almost certainly will have a mitigating effect. We also anticipate a surge in Mexican drug cultivation and narcotics trafficking as more Mexicans turn to illicit activities to supplement their incomes. On the financial side, Mexico almost certainly will continue to look to the United States to arrange future financial rescue packages, and a new deal may be needed as early as mid-1988. If Mexico were unable to service its debt, US moneycenter banks would stand to lose the most should debt be written down or payments suspended. These banks have shouldered most of Mexico's financing burden, and will continue to do so, in our view. [redacted]

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**Mexico:
Pushing for
Economic Growth**

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Introduction

Mexican President Miguel de la Madrid's actions in recent months have made it clear that he is dramatically shifting policy gears to achieve economic growth over the next two years. His decision to avoid tough austerity measures in favor of growth reflects, in our view, the President's perspective on political reality: the economy must improve to prop up lagging support for the ruling Institutional Revolutionary Party (PRI) before the presidential election in 1988. De la Madrid appears convinced his Program for Growth and Adjustment, or PAC, by its Spanish acronym, will guarantee such results. [Redacted]

Judging from recent financial agreements, de la Madrid also appears to have convinced the IMF and commercial banks that economic growth is critical to Mexico's well-being (see inset). The program signed with the IMF in September 1986 broke new ground, setting only lenient performance targets and even going so far as to provide contingencies to compensate for falling oil prices and lagging economic recovery. While the IMF accord set precedents, the agreement with commercial creditors was largely a return to the stopgap solution adopted in 1984: massive new lending and rescheduling of existing debt. [Redacted]

Having achieved a temporary respite from external obligations, de la Madrid now is faced with the challenge of delivering on his promises of growth without sparking an inflationary spiral. We believe the next 18 months will be crucial; the PRI dearly hopes to use this time to restore popular confidence in the government's ability to manage the economy and allot economic resources—roles central to the dominance of the party. Equally important, the way de la Madrid pursues a growth policy today will shape the problems the next Mexican President faces. [Redacted]

This paper examines the prospects for economic growth over the next two years. It assesses the course chosen by the de la Madrid administration and outlines the tradeoffs involved. Alternative scenarios

are explored, involving both internal obstacles to growth and changes in oil prices. Finally, the paper assesses the longer-term outlook for Mexico and the implications for the United States. [Redacted]

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Shifting the Emphasis to Growth

The President's change in strategy comes against a backdrop marked by early success and, more recently, by economic problems. After achieving remarkable economic results by painful austerity early in his term, the de la Madrid administration reverted to a heavy dose of stimulation before the midterm election in July 1985. Plummeting oil prices compounded fiscal and monetary excesses, leaving the economy in a near shambles by mid-1986. [Redacted] as early as November 1985, key Mexican leaders decided that the economy must be put on a growth path in order to prepare the ground for that national election in 1988. Indeed, by February 1986 de la Madrid had pledged in a major public speech that renewed growth would be an imperative during the last two years of his administration. [Redacted]

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While [Redacted] at the time indicated support for more expansionary economic policies, agreement was not universal. For example, to gain a consensus on a new growth policy, de la Madrid asked Finance Minister Silva Herzog, the primary proponent of continued austerity, to step down in June 1986. It is generally acknowledged that Silva Herzog lost an economic battle with Programming and Budget Minister Salinas, who has eyes on the presidency.¹ Salinas is a strong advocate of economic expansion, and his

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¹ The Finance Ministry and the Programming and Budget Ministry are two distinct government agencies in Mexico. Historically, their respective missions often have put them at odds, since the former is charged with generating the revenues that the latter spends [Redacted]

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Mexico's IMF and Commercial Bank Agreements

Mexico's agreement with the IMF in July 1986 represented a departure from traditional Fund strategy. Instead of pushing for tough domestic austerity measures, the Fund agreed to an approach recognizing the Mexican economy's need to grow if the country were to meet its external obligations. Specifically, the agreement called for massive amounts of foreign credits, an explicit commitment to economic growth, and a contingency provision to adjust financing to changes in oil prices. Mexico City promised little in return. The only targets Mexico committed itself to for the length of the agreement deal were with maximum levels of foreign borrowing and the country's level of foreign exchange reserves. All other targets were to be set on a quarterly basis through the first quarter of 1988. As a result of the first two quarterly consultations, Mexico has eased through the program with relatively lenient performance criteria for the budget deficit and foreign exchange reserve targets. [redacted]

Mexico also gained repayment concessions from the creditor banks, although far short of the interest payment relief that de la Madrid originally sought. The banks agreed to stretch out the maturity on \$43.7 billion in public-sector debt borrowed before 1983 and grant a seven-year grace period. The commercial lenders also pushed back the maturity on 1983 and 1984 loans from Mexico's last bailout package and gave the country a three-year grace period. In a compromise, Mexico will pay 13/16th of a percent above the London Interbank Offer Rate on past and future loans. Finally, the de la Madrid

administration has engaged creditors in negotiations for the rescheduling of Mexican private-sector debt. Mexico hopes these will be concluded by this summer. [redacted]

In terms of financing, international creditors initially put together a \$1.6 billion bridging loan to tide Mexico over until the bailout package was signed and delivered. Another \$1 billion was loaned to Mexico from the IMF and the World Bank. Additional bank lending was delayed, however, as the country's Bank Advisory Committee struggled to get a 100-percent commitment to the \$7.7 billion commercial bank contribution. The final \$300 million of the package came only grudgingly, as European and small US banks proved the most difficult to bring on board. Announcements in late January 1987 that Mexico actually built its currency reserves by \$500 million caused some banks already committed to question the country's true need, but Brazil's payment suspension in February helped to convince reluctant creditors, and the agreement was finalized on 20 March.

In essence, the banks' \$7.7-billion contribution to the package buys them an uninterrupted flow of interest payments until at least mid-1988. From the Mexican perspective, the agreement allows President de la Madrid to leave the country's debt problem to his successor. We believe international lenders share the President's short-term perspective, preferring this approach to the possible interest payment suspension that a tougher stance risked. [redacted]

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subsequent ascendancy over economic matters after Silva Herzog's dismissal virtually assured that foreign debt or other problems would not hinder efforts to stimulate the economy. Once consensus was achieved, action followed quickly. One week after Silva Herzog's departure, newly appointed Finance Minister Petricioli unveiled the PAC plan. The announcement was designed to deflect mounting public criticism from labor and other elements within the PRI that de la Madrid had placed the needs of foreign creditors before those of the Mexican people. [redacted]

The Path to Expansion

Mexican officials have said publicly that they are aiming for modest growth. By adopting policies designed to stimulate only a gradual expansion of economic activity, they also hope to reduce inflation. This strategy, combined with the nine-month delay in commercial bank lending, has already prompted government forecasters to scale back initial promises of

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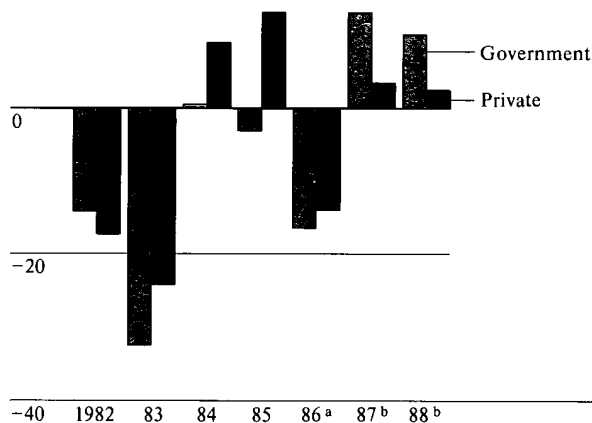
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Figure 1
Mexico: Government and Private
Investment, 1982-88

Real percent change

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^a Estimated.

^b Projected.

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4 percent growth in 1987 to the 2- to 3-percent range. This slower rate of growth also will qualify the country for \$500 million in additional contingency financing from its foreign creditors. Mexico City does not yet appear to have a firm set of plans for 1988, although we believe de la Madrid wants to pursue policies directed at inching growth up toward the 3- to 4-percent range by the September 1988 elections.

According to government announcements, the de la Madrid administration is counting heavily on increased investment to revitalize the economy. Current plans call for a 15-percent real boost in public-sector investment this year, and policymakers similarly hope to spur an 8- to 9-percent real increase in private investment. In our opinion, both are much-needed moves: according to government statistics public investment has fallen 45 percent in real terms since 1982, and the private sector's lack of credit and confidence sharply cut its investments in 1986 (see figure 1).

Although de la Madrid is emphasizing investment as an expedient to achieve his short-term growth targets, we believe higher levels of investment are also critical ingredients for Mexico's longer term economic health. In addition to creating jobs and fueling the demand for goods and services, higher levels of investment are needed to modernize the deteriorating industrial base so that it can sustain economic growth.

plants and infrastructures—especially in the petroleum, steel, electricity, and transportation sectors—have become rundown, inefficient, and obsolete. We judge that, unless these conditions are reversed, the economy could become unresponsive to even heavy government stimulus. From a purely political perspective, an unresponsive economy also could take away one of the PRI's election tools.

The de la Madrid administration plans to free resources for investment by altering its traditional spending mix. According to government announcements, increases in current federal expenditures² will be limited to less than 1 percent, while capital outlays are scheduled to rise 15 percent. The shift to an emphasis on investment represents a reversal of traditional spending patterns. In the past, the government has redirected funds earmarked for public investment into current consumption, both because the economy is more responsive to such spending and because it is more politically popular. Recognizing that this bias has been costly over the longer term, the de la Madrid administration now appears committed to avoiding some of its past mistakes by directing funds to capital outlays in such sensitive areas as petroleum exploration and development and infrastructure, which lagged while current spending surged (see figure 2).

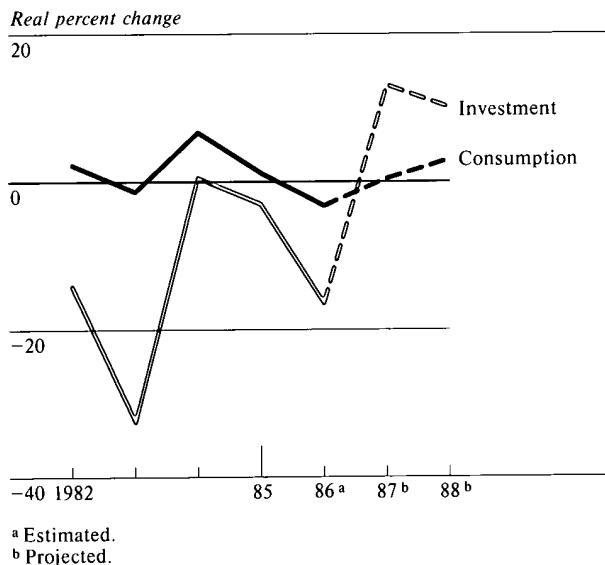
Mexico City plans to generate a major portion of the funding for its ambitious investment objectives from the proceeds of new tax laws based on supply-side incentives (see inset). To finance government investment, Mexican officials have announced plans to

² Current outlays are those expenditures used for existing projects and operations, including salaries, the cost of goods and services consumed by the government, and subsidies on various goods. Investment spending, on the other hand, is associated with the creation of new projects and facilities.

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Figure 2
Mexico: Government Consumption
and Investment, 1982-88



housing projects, export stimulation, and labor-inten-
sive public works programs.

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Meanwhile, in addition to the
new money, rescheduling of the country's public-
sector debt (see figure 3) will free additional resources
over the next several years that could be used for more
productive purposes.

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In addition to higher levels of investment, Mexico
plans to pursue a looser monetary policy and a slower
devaluation of the peso in order to achieve more
growth. Such a policy would be a reversal of the
strategy that in 1986 allowed the country to meet its
external obligations while weathering an \$8.5 billion
loss in oil revenues.

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A 70-percent increase in
the money supply so far this year and a decrease in
the peso's slide relative to the dollar probably reflect
the Budget Minister's dominance over economic
policy.

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expand the tax base by lowering rates and enhancing
collection efforts. At the same time, the new law
contains incentives, such as accelerated depreciation
and increased deductions, to stimulate business invest-
ment. initial private-sector response has been mixed: many
businessmen believe the plan's gradual implementa-
tion reduces its effectiveness—because results will be
slow in coming and because they question the next
administration's resolve to follow through—while others
are confident they can find loopholes to use to
their advantage.

Prospects for the Growth Program

On the basis of our calculations,³ we conclude that
Mexico City will not realize the 4-percent level of
economic growth that its IMF program was designed
to achieve. Our analysis of the PAC—factoring the
government's own assumptions into our econometric
forecasts—suggests that Mexico can achieve the low-
er end of the 2- to 3-percent level Mexican policymak-
ers now are projecting. However, this lower level of
growth masks a number of key constraints that could

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³ Our analysis of the impact of government policies and external
shocks on the Mexican economy is based in part on the results of an
econometric model. Although we recognize that no model can
gauge with precision the exact effects policy changes will have, we,
nevertheless, are confident that the results provide a good measure
of the orders of magnitude involved. For a technical description of
the model, see the appendix.

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In addition to projected tax revenues, Mexico's finan-
cial rescue package from foreign creditors also will
provide needed funding for investment. Mexican officials reportedly will allocate \$2
billion in foreign loans to be disbursed this year for

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The New Comprehensive Tax Law

Mexican policymakers are counting heavily on new tax laws to finance expansionary fiscal policies, according to press reports and official announcements. Essentially, the government hopes to increase the tax base through incentives designed to boost private spending and investment, as well as efforts to enhance collection. For example:

- *Tax rates have been lowered in the hope that consumers and businesses will spend more, thereby increasing the tax base and boosting tax revenues.*
- *Incentives, such as more rapid depreciation allowances and increased deductions, are designed to encourage greater private-sector investment activity.*
- *Finally, Mexican officials have vowed to boost tax receipts by a more vigorous collection campaign and the enforcement of laws that require taxes to be paid more promptly.^a*

The supply-side measures officials are counting on often are effective in Western economies, but we are skeptical that they will work for Mexico. For one thing, the gradual implementation of the program— evenly spread out over four years—*will work to dampen the immediate economic benefits. Moreover, since so many Mexicans are at or below subsistence levels, and by some estimates would need to spend almost three-quarters of their income to purchase the Mexican minimum daily nutritional requirement, much of any increase in their disposable incomes resulting from lower income tax bills would go to increased purchases of food. In addition, since many food prices are subsidized by the government, and these subsidies are scheduled to be gradually phased out, the net impact could be quite small.*

^a *Taxpayers delaying their payments benefit at the government's expense because, with inflation accelerating so rapidly in Mexico, the pesos they eventually remit are worth much less.*

The private sector's lack of confidence in the economy could dull the effectiveness of tax incentives, as well. In many cases, uncertainty about the prospects for growth beyond the next two years is likely to take precedence over the attractiveness of an investment that would reduce a company's tax bill. This problem is exacerbated by the fact that the tax laws will not be fully implemented until Mexico has a new (currently unpredictable) president.

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We are similarly skeptical of the effectiveness of enhanced collection plans. Mexicans traditionally have been adept at avoiding taxes. Not surprisingly, the wealthiest have tended to be the most successful evaders. Taxes of many lower-class workers often are withheld by their employers, but most middle-class workers—who would be paying higher taxes—do not face such deductions from their earnings and find evasion easier. More efficient tax collection is certainly a worthwhile objective in Mexico, but we agree with the US Embassy's assessment that it is unlikely to be successful.

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At the same time, some provisions in the new tax code could induce a repatriation of Mexican capital. A continuation of the "reverse capital flight" seen during the first few months of this year could provide substantial benefit to Mexico, both in terms of reducing its dependence on foreign banks and giving confidence to foreign investors. Domestic interest-bearing investments now are more attractive because only the noninflationary component of interest income must be declared. Moreover, under the new provisions, it is far less attractive for private Mexican businesses to borrow to finance their investments since they can only deduct the noninflationary component of their interest payments.

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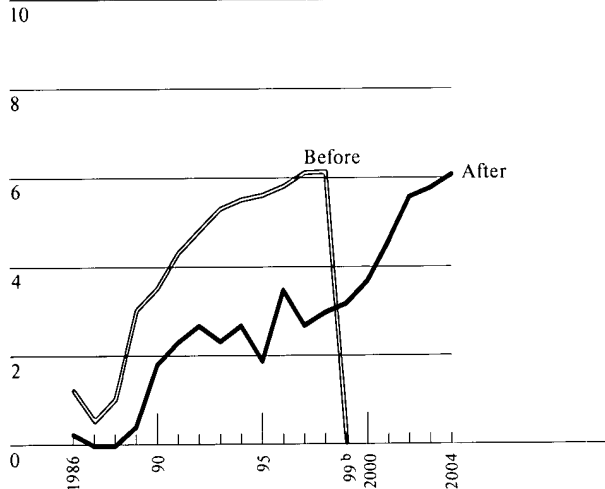
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Figure 3
Mexico: Scheduled Principal Payments^a
Before and After Rescheduling,
1986-2004
Billion US \$



^a Public-sector debt.

^b Under Mexico's previous rescheduling, payments would be completed in 1999.

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cause problems in 1988. Moreover, even the modest recovery we foresee will come only with costly trade-offs. Specifically:

- We forecast a real GDP growth of 2 to 2.5 percent this year and 3 to 4 percent in 1988. Our projections show modest increases in private-sector investment of 3.5 percent and 2.5 percent in 1987 and 1988, respectively.
- We do not foresee progress on controlling inflation. Our projections place the level at 130 percent by the end of 1987 and 140 percent by the end of 1988.

Our forecasts also indicate that real private consumption—after falling 4.4 percent in 1986—will rise 1.5 to slightly more than 2.0 percent annually over the next two years. The increased economic activity is likely to create roughly half a million new jobs over the next two years, but a rapidly expanding labor force will drive unemployment up 2 to 3 percentage points before de la Madrid's term is over.

Although the growth we project is far from spectacular, it is a clear improvement over the 3- to 4-percent contraction in 1986. (see figure 4). We believe it will be enough to satisfy de la Madrid's primary political objectives, which are to diffuse opposition criticism of the government's economic management and ensure a smooth victory for the PRI in 1988. Toward these ends, we believe government spending will be targeted to key PRI constituencies—especially labor—to create jobs, increase incomes, and generate political capital for the party. Consequently, we expect to see rapid growth in housing projects and public works programs. In addition, stronger domestic demand, both public and private, is likely to not only boost employment but also to help fuel the underground economy, which is estimated by scholars to be equivalent to 30 percent of Mexico's GDP and is vital to the livelihood of unemployed and underemployed Mexicans.

Major Constraints

A number of factors are likely to restrict growth to the 2- to 2.5-percent level we project, under the most likely circumstances. For example, our modeling results reveal a sluggish response to the new tax program, which will create a revenue problem for the Mexican Treasury. We are not confident that the supply-side tax incentives will increase the tax base significantly, and we are skeptical that an enhanced tax-collection program will work any better in Mexico than it does in other Third World countries.

We believe public investment is likely to fall short of government expectations because government income will be less than anticipated. Foreign loans and a more rapid growth in the money supply should offset these constraints somewhat, but the revenue shortfall will put added pressure on the federal budget. Moreover, Mexico City's commitment to avoid crowding-out—a situation where high levels of government spending result in a sharply reduced level of credit for the private sector—also will limit capital spending. Taken together, these factors will limit increases in federal investment to only 13 percent this year. Government plans for 1988 are unclear but, on the basis of the constraints we envision, we believe federal investment will increase 10 percent over the expected levels for 1987.

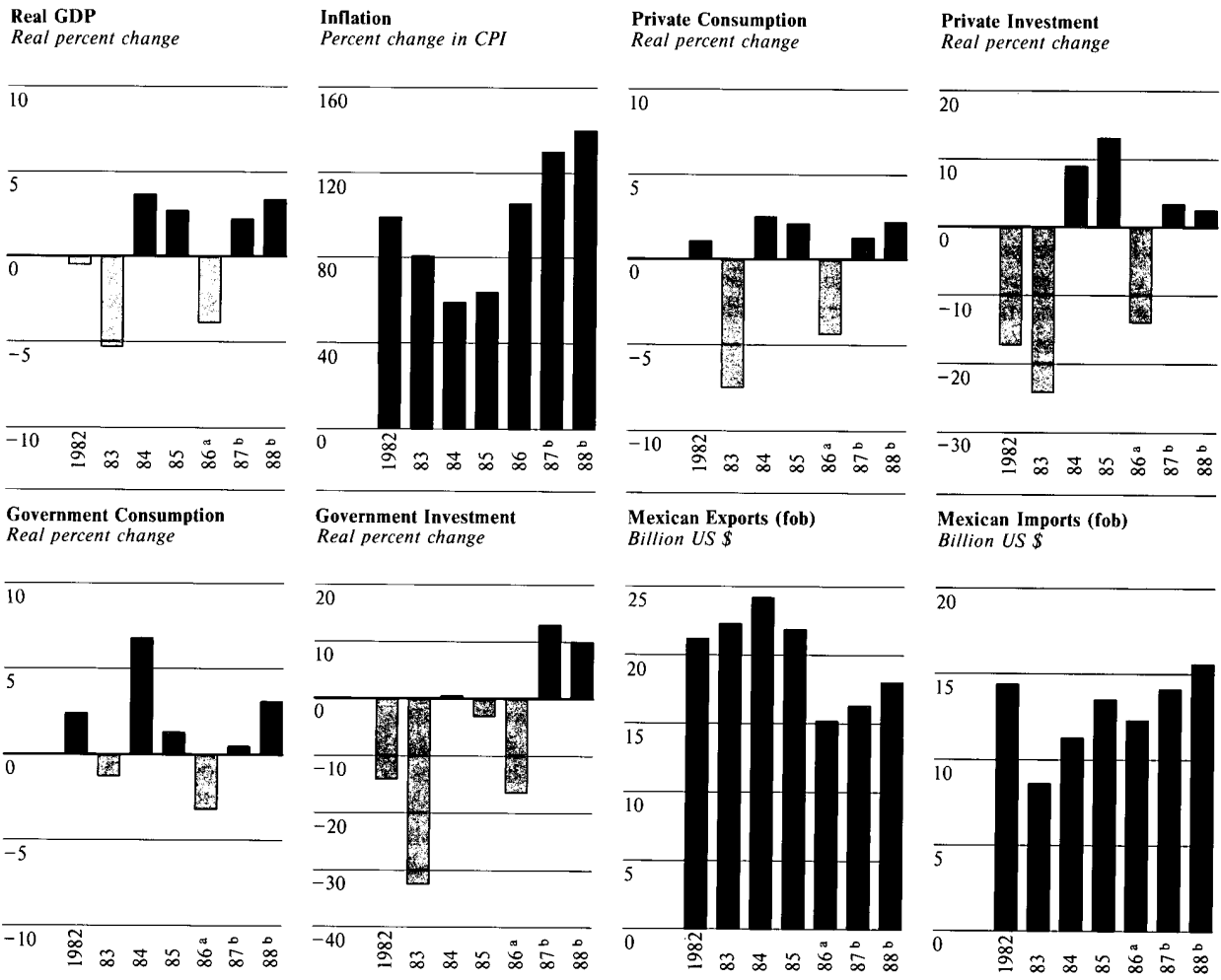
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Figure 4
Mexico: Selected Economic Indicators—Most Likely Case, 1982-88

Note scale change



^a Estimated.
^b Projected.



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We expect real private-sector investment to increase 3.5 percent this year and 2.5 percent in 1988, but a host of factors are likely to produce results well below government hopes of growth in the 8-percent range. Among those factors working to dampen private investment would be the effect inflation could have on the federal deficit. Inflation levels in excess of official projections of 70 to 80 percent would increase government expenses—especially its domestic interest bill—more than anticipated. This, in turn, would necessitate more domestic government borrowing and decrease the amount of credit left over for the private sector to use for investment. On the positive side, funds from foreign lenders are likely to help mitigate some of the factors restraining liquidity, allowing the government to make some more credit available for private business. [redacted]

Over the next two years Mexico will be struggling to overcome the dramatic drop in export revenues in 1986, further straining its ability to achieve growth. The severe constraint that lower oil income placed on growth in 1986 will be alleviated, in part, by the higher prices industry experts project, and we assume that Mexican export levels will hover around government targets of 1.35 million barrels per day. We project a 15-percent increase in oil revenues for 1987. Still, this year's figure will be nearly 50 percent below the levels for 1985 and will rise only another 15 percent in 1988. We believe that nonoil exports, the bright spot in Mexico's trade picture for 1986, will continue to perform well over the next two years, although they are likely to increase less than last year's impressive 34-percent rise, because of what we expect to be a slower depreciation of the peso and a somewhat higher domestic demand for goods. [redacted]

Despite an improving export picture, the current account deficit is likely to grow as greater import demand—fueled by the higher level of domestic growth—tends to offset gains on the export side. If our growth projection is on track, we calculate a 25-percent rise in Mexican imports between now and the end of 1988. This growth, combined with a public and private annual debt-servicing bill of about \$9.7 billion, translates into a current account deficit of about \$3 billion for 1987 and nearly \$4 billion in 1988. [redacted]

Looking at Mexico's overall foreign financial situation, the country appears to be in good shape, although current account pressures should begin to build in 1988. New lending and foreign-exchange reserves probably will be used to finance the current account gaps, and Mexico almost certainly will have sufficient resources left over to meet its IMF target for 1987 of a \$900 million increase in foreign currency reserves. Already we believe these holdings have increased from a low of about \$2 billion in August 1986 to a level of nearly \$8 billion by May 1987. By the end of 1988, however, we expect the increasingly larger current account deficit to begin to strain Mexican foreign-exchange reserves. On the basis of our projections, these reserves still would be sufficient to cover the gap, but to maintain what Mexican officials consider an adequate cushion—probably \$4-5 billion in gross terms—Mexico probably would return to the bank lending windows once again. [redacted]

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Costly Tradeoffs

Even the modest recovery that we think de la Madrid can achieve before the 1988 election will bring significant costs. Contrary to official Mexican Government estimates, we predict that inflation will accelerate well above the 1986 level of 106 percent to peak at about 130 percent by the end of 1987 (see inset). [redacted]

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[redacted] On the basis of policies now being followed, we estimate that in 1988 inflation probably will reach 140 percent. [redacted]

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Recent actions by Mexican officials suggest that Mexico City already has conceded the fight against inflation, despite public statements to the contrary. The inflationary spiral in Mexico is fueled by the government's lack of progress in cutting the federal budget deficit significantly. [redacted]

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[redacted] Moreover, the relatively lenient IMF targets to date lead us to conclude that the government is making little progress in cutting the

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The Human Side of Inflation

Despite emergency wage hikes and government promises to make adjustments quarterly in 1987, the minimum wage still has failed to help workers keep pace with inflation—since 1982, their buying power has decreased 43 percent, according to the US Embassy. In our judgment, this trend is likely to continue as inflation increases and the financially strapped government fails to match it with proportionate wage hikes. [redacted]

Rapidly rising inflation is forcing Mexicans to spend a larger portion of their salaries to purchase basic necessities, particularly food. According to Mexican press reports, the minimum wage is insufficient to pay for the minimum nutritional requirements for a family of five, and many families must choose between buying food and paying for other necessities such as clothing, utilities, and rent. More specifically:

- *According to the latest census, 21 percent of the work force earns the minimum wage while 61 percent earns even less.*
- *By November 1986, food costs in the Federal District—which encompasses Mexico City—consumed 73 percent of the minimum wage, leaving the remaining 27 percent to cover clothing, housing, transportation, and schooling.*

- *A National Minimum Wage Commission study concluded that 3,305 pesos per day were needed in 1986 to pay for minimal family needs, yet the minimum wage last year was only 2,060 pesos.^a* [redacted]

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Although government subsidies and food coupons help reduce food costs, press reports reveal that many vendors make sales of desired food conditional on the purchase of other foods, or they hoard goods in anticipation of price increases. As a result, families have been forced to substitute less expensive foods and even eliminate their intake of some essential goods:

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- *During 1986, while the minimum wage increased 94 percent, prices for tortillas, a key ingredient in nearly all Mexican diets, rose 306 percent, according to the Mexican press.*
- *At the same time, bread prices rose 380 percent; milk prices, 168 percent; and egg prices, 117 percent.* [redacted]

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^a *At the current controlled exchange rate, one US dollar is equivalent to 1,150 pesos.* [redacted]

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budget deficit. Consequently, we see the deficit as a share of GDP falling only 2 percentage points from the level for 1986 of nearly 17 percent, and we expect little improvement in 1988. [redacted]

In addition to the direct trade-off between government economic stimulation and inflation, government actions indirectly are tending to give rise to price increases. Widespread pessimism about the government's ability to control inflation raises inflationary expectations, leading workers to demand higher wages, retailers to charge higher prices, and credit to become more expensive. Ironically, rumors of an "Azteca Plan" (see inset on pages 10-11) to attack

inflation, similar to programs implemented in Brazil and Argentina, have created the same "fueling" effect. [redacted] some workers are demanding higher salaries in anticipation of wage freezes and that private businessmen have increased their prices before they, too, are fixed. [redacted]

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Although economic activity will increase in 1987, we do not believe Mexicans will see much improvement in their well-being, and their living standards certainly will remain far below historic levels. The de la Madrid administration appears ready to grant more

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An "Azteca" Plan for Mexico?

Rumors that Mexico will try to harness its accelerating inflation by adopting a program of wage, price, and currency controls similar to Brazil's Cruzado Plan and Argentina's Austral Plan have circulated for months. [redacted]

[redacted] Whether or not the plan exists, it has taken on a life of its own:

- [redacted] many groups inside Mexico once saw the Azteca Plan as a panacea. Although their confidence no doubt has been shaken by the failure of Brazil's program, many may judge that the risk of failure is better than unabated inflation, and perhaps believe that Mexican policymakers could learn from mistakes of their Brazilian counterparts. If inflation reaches into the 150-percent range, as we suspect it could, public clamor for relief could push de la Madrid into adopting such a plan, which generally produces a quick, albeit temporary, political payoff.
- According to [redacted] press accounts, retailers had been keeping their prices artificially high in anticipation of a price freeze.
- To placate labor and allay concerns of a wage freeze, Mexico City has hinted that workers' pay will be indexed to inflation. [redacted]

Although [redacted] de la Madrid believes Brazil's current economic crisis resulting from the failure of the Cruzado Plan vindicates his own cautious economic policies, we think it is useful to look at what an Azteca Plan would mean for Mexico. Mexican officials would try to implement the shock

program without revealing their intentions in advance, but there are a number of indicators that would presage such a plan. Among these measures are:

- Allowing prices to reach their equilibrium levels through the elimination of nearly all subsidies and freeing of prices controlled by the government.
- Permitting interest rates to become more market sensitive, with a premium given to short-term rates. This flexibility is essential so that rates immediately fall once inflation slows.
- Facilitating greater competitiveness in the exchange rate by making it more sensitive to the market.
- Allowing wages to rise with inflation for a period of time. Given the political importance of organized labor in Mexico, we would expect a series of wage hikes before implementing the plan in order to enable workers to fare better once prices were frozen. [redacted]

Once such a program was announced, Mexico City almost certainly would introduce a new currency—most likely valued at 1,000 pesos—and a mechanism for converting peso liabilities. In addition, we would expect the real growth in government spending to be cut in half. Finally, we would expect de la Madrid to appeal to the Mexicans' sense of patriotism to encourage retailers to adhere to price freezes and for consumers to report violations. The experience in Brazil and Argentina suggests that such an appeal, combined with strict laws to punish offenders, can be effective in the short run. [redacted]

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Would the plan work? Forecasts are mixed: Brazil's experience cautions against such a plan, but there is a wide body of opinion among economists that supports such a move and holds that the short-term benefits could be substantial for Mexico. These economists^a predict that:

- *Real GDP growth will be lower in 1987 than in our most likely case, but the 1988 increase would be 4 to 6 percent.*
- *Inflation will be slashed from 110 percent in 1986 to 60 to 70 percent in 1987. The projected range for 1988 would be about 40 percent.*
- *As a share of GDP, the budget deficit of GDP will fall impressively, from about 17 percent in 1986 to 9 percent in 1987 and only 5 percent in 1988.* []

This remarkable recovery would be led by a surge in domestic demand after a short lag, but soon problems could emerge if the infrastructure were unable to adjust or de la Madrid were unable to keep the reigns tight. For example, the higher level of real wages would allow private consumption to surge. The subsequent increase in jobs could be as high as 1.6 million by 1989, according to one forecast. Although Mexican firms currently are beset by overcapacity, the spending boom eventually would strain output. If private business were unable or unwilling to adjust, black markets and hoarding most likely will emerge, as was the case in Brazil and Argentina.

^a *The private economic forecasting firms that we surveyed were convinced an Azteca Plan would produce major economic benefits for Mexico. We have averaged their forecasting results, but caution that these projections give little weight to political factors and their influence on key economic variables. In short, they present the best possible outcomes on paper, devoid of political constraints.*

[]

Meanwhile, the demand for imports would soar while domestic demand sapped exports. Thus, Mexico could see a sharp deterioration in its trade balance, jeopardizing its ability to remain current on its foreign debt or borrow additional money to fund business expansion. []

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Many observers believe that the short-term gains of an Azteca Plan would eventually give way to even greater economic problems than those currently facing Mexico. These skeptics point to Brazil as an example, where President Sarney's popularity initially soared with the success of the plan, but political pressure from forthcoming elections forced him to sustain the Cruzado Plan longer than he should have. In addition, strong pressure from organized labor—also a key player in Mexico—prevented wage controls from being effective. Now, after abandoning "Cruzado II," Brazil's problems are worse: the country has rocked the international financial community by indefinitely suspending interest payments, and inflation is expected to surpass levels before the program went into effect. []

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We suspect that in Mexico these same forces could combine with other obstacles often cited—the porous northern border and the lack of export diversity, for example—to limit the effectiveness of an Azteca Plan. Consequently, de la Madrid may find it preferable to leave the problem of inflation and the Azteca option to his successor. []

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frequent wage increases, but rapidly rising inflation is likely to keep real earnings depressed and combine with high unemployment—especially during the first three quarters of 1987—to limit the growth in private consumption. What savings Mexicans may realize from lower tax bills could be offset further if the government proceeds with plans to lower subsidies on basic foods and essential services. As a result, the Mexican people will continue to sacrifice, and domestic manufacturers probably will not see much improvement in their sales. [redacted]

The de la Madrid administration's narrow focus on short-term growth could prove most costly by restricting the ability of the regime to generate sustained longer term growth. Even the Mexican Government has agreed that a number of structural reforms (see inset) are needed to achieve growth in the outyears, but these officials remain reluctant to ask for sacrifice now in order to realize benefits in the future. Although loans that Mexico City will receive over the next year could be used to soften the blow of these adjustments, the de la Madrid administration appears set on choosing the course that brings the quickest return. Consequently, we believe that the government and the PRI will continue to resist structural adjustments, since such politically risky measures are unpopular with many Mexicans and are opposed by labor and other powerful interests within the ruling party. [redacted]

In recognition of the longer term price that will be paid for even a modest recovery, some of the President's closest economic advisers [redacted] [redacted] have counseled de la Madrid to move slowly in loosening the money supply and opening federal coffers, [redacted] Because campaign politics take precedence, we believe their efforts to influence policy will be fruitless, and current pressures to expand will almost certainly intensify as the presidential election nears. [redacted] [redacted]

Economic Structural Adjustments

Most economists are convinced that Mexico must do the following to achieve lasting growth:

- *Sell, liquidate, or merge state-owned enterprises, especially the larger firms, in order to increase efficiency and reduce the heavy burden on the government.*
- *Allow foreign investment to increase and permit majority foreign ownership in order to further increase efficiency in domestic production.*
- *Reduce import quotas and restrictions while continuing to diversify the export base away from petroleum.*
- *Reverse the urbanization trend by providing economic incentives for migration to the country and training the rural labor force.* [redacted]

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Alternative Scenarios

An Unresponsive Economy

Although we are confident that the Mexican economy will rebound in 1987, we recognize that there is a chance it may not respond as quickly as Mexican officials hope or as our model calculates. Indeed, the impact of Mexico City's policies on the economy in recent years has been hard to gauge. The austerity measures de la Madrid implemented upon taking office, for example, produced a far deeper recession than was anticipated. In 1987, [redacted] [redacted] Mexican planners are trying to "fine-tune" the economy, believing they can moderate inflation by calibrating the rate of economic expansion—a difficult task even in developed, well-organized economies. [redacted]

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If an economic recovery fails to materialize in 1987, we believe de la Madrid will sharply increase fiscal and monetary expansion in order to ensure growth going into the presidential election. To achieve this, Mexico City is likely to aggressively increase government consumption to complement already planned increases in investment. Stimulating the economy by boosting government consumption in the past has proved more effective than merely increasing investment. With the presidential campaign in full swing by early in 1988, we assume that de la Madrid would most likely opt to finance the increased spending by printing more money and running up the public-sector deficit, rather than by increasing taxes. In our opinion, the government correctly assumes that the average Mexican is much more likely to protest tax increases than growth in the federal deficit or money supply. [redacted]

We believe it would take much larger doses of government spending to achieve a strong recovery. If, for example, de la Madrid were to increase real government consumption in 1988 by 10 percent—equivalent to former President Lopez Portillo's pre-election expansionary efforts—while proceeding with already planned investment outlays, we project he would:

- Fuel real GDP growth to 5 percent, as compared with 3 to 4 percent in our base forecast, and stimulate a 3.4-percent climb in real private investment.
- The increased activity would generate, according to our calculations, an increase in real disposable income 4 percentage points higher than we otherwise would expect, nearly doubling real growth in private consumption. In addition, we estimate that some 500,000 jobs could be created by the end of 1988. [redacted]

Such heavy government spending would carry substantial economic penalties, especially sharply rising deficits and inflation. The strain on the federal deficit would be intense: instead of the modest decline we projected in the most likely case, the deficit as a share

of GDP probably would rise 1 to 2 percentage points, exceeding the 17-percent level of 1986. The increase we predict in inflation is even more dramatic—from the expected level for 1987 of 130 percent to as much as 200 percent by the end of 1988. [redacted]

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Dramatic Impact if Oil Prices . . .

. . . *Tumble Again.* To some degree, Mexico is protected from a dramatic fall in oil prices, because its recently negotiated financial package provides contingency financing should Mexican oil prices fall below \$9 per barrel.⁴ Our analysis, however, concludes that the oil price set by the IMF probably is too low, because it is below the level needed to assure economic growth or an uninterrupted flow of interest payments to Mexico's creditors. In other words, if oil prices fall to just above \$9 per barrel—\$4.50 less than in our baseline scenario and the equivalent of a \$2 billion drop in exports—we estimate that:

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- Real GDP would contract 0.6 percent in 1987, and growth for 1988 would be only a modest—and probably politically unacceptable—1.4 percent.
- Inflation would rise to about 150 percent in 1987 and 180 percent in 1988 as Mexico City turned to deficit financing and faster money supply growth to mitigate the loss of oil revenues [redacted]

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Mexico would be hard pressed to weather the loss in oil revenues without external assistance. In terms of the current account, we estimate that Mexican oil at \$9 per barrel would translate into deficits of \$4 billion for 1987 and \$5.7 billion in 1988. Given the government's aversion to a substantial reduction in foreign-exchange reserves and our certainty that it would be unwilling to make needed internal adjustments before the 1988 election, we do not see Mexico meeting its foreign obligations without further concessions from the banks. Therefore, we would expect the country to demand that creditors reopen negotiations or face a suspension of interest payments. [redacted]

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⁴ Prices referred to here are keyed to averages for Mexican Isthmus crude (light, roughly 40 percent of exports) and Mayan crude (heavy, about 60 percent of exports). Historically, there has been a \$2 to \$3 per barrel differential between lower priced Mexican oil and international spot market prices. [redacted]

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... **Reach OPEC Targets.** On the other side of the coin, successful OPEC price coordination ⁵ could lead to higher than expected oil revenues ⁶ and significantly boost growth. Mexican export prices of \$18 per barrel would translate into oil revenues \$2.2 billion higher this year than forecast in our baseline case; in 1988, our assumption of Mexican oil at \$24 per barrel yields revenues of \$5.2 billion higher. If all of the windfall were channeled into domestic programs and original government plans were maintained, we calculate that Mexico could:

- Achieve a sizable increase in real GDP, from the 2- to 2.5-percent range in our most likely scenario to about 6 percent in 1987. Growth in 1988 would surge from about 3 to 4 percent in the baseline to nearly 6.5 percent.
- Ease strains on the federal deficit and thereby slow inflation. In this scenario, we project an inflation rate of 110 percent for 1987 and a 90-percent level for 1988.
- Experience a surge in private consumption of 5 percent in both 1987 and 1988 as compared with baseline projections of 1- to 2-percent growth. The return to pre-1980s consumption patterns would create jobs and expand private businesses, and could stimulate significant increases in foreign investment as domestic markets revitalized.

We project that by the end of 1988 such an economic upturn would generate as many as two-thirds of the 900,000 jobs needed annually to satisfy the demands of the growing work force. Moreover, additional resources almost certainly would be used to raise government wages, which subsequently would tend to drive up all workers' pay.

⁶ Although not often referred to, the other end of Mexico's oil price contingency calls for reduced external financing should prices rise above \$14 per barrel. In such a case, foreign lending would be reduced by an amount equal to the excess (over \$14 per barrel) oil revenue in the preceding quarter.

We believe, however, that for reasons of political expedience Mexican leaders would not use the additional revenues to ease the pain of structural adjustment needed for sustained growth. Similarly, increased oil export earnings would not necessarily translate into current account surpluses. According to our calculations, the large boost in oil revenues would be offset by a surge in import demand in both years and larger domestic debt-servicing costs from the higher interest rates, which we project if oil prices rise. Consequently, in this scenario, despite a \$1 billion and \$2.5 billion improvement in the current account this year and next, when compared to our baseline forecast, we still calculate deficits of about \$1 billion and nearly \$2 billion, respectively.

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A Troubled Long-Term Outlook

While we do not predict an economic breakdown in Mexico during the remainder of de la Madrid's term, we believe there is little hope for major improvement. Most likely, the economy will muddle along at modest levels of growth. We believe there is a good chance, however, that de la Madrid will leave his successor in the throes of a financial crisis shortly after he takes office in December 1988. Beyond that period, slow oil price increases and decreased oil production may combine with creditor unwillingness to lend additional money and upset the preelection growth pattern on which the PRI has come to depend.

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The rules of the financial game are already changing. Mexico's difficulty in obtaining commitments for 100 percent of commercial banks' share of its \$13.7 billion financial package and the recent debt moratorium by Brazil suggest that current debt strategies will have evolved significantly by the time Mexico once again returns for new money.⁷ Given these likely changes in the international financial arena, Mexico City may be hard pressed to offset fiscal excesses with foreign credits.

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While short-term palliatives, such as increased borrowing, will relieve some of Mexico's economic problems over the next two years, many of these problems are more intractable. Higher than expected oil prices would postpone—but certainly not alleviate—some of these problems. For example, unemployment has more than doubled since mid-1982 and currently stands at over 18 percent nationwide; there may be another 30 percent who are underemployed. The problem is even worse in urban areas where approximately two-thirds of Mexico's more than 80 million people reside. Current strains will only intensify: US forecasting firms estimate that the economy would need 6- to 7-percent growth per year to satisfy the 3.5-percent annual increase in the labor force. This harsh reality, coupled with prospects for further losses in real wages unless inflation is controlled, is likely to lead organized labor and other groups to intensify their efforts to gain greater job security, control over subsidies, and more frequent wage hikes, in our judgment. [redacted]

Moreover, the demographic strains now gripping Mexico are sure to worsen. The population, which has doubled in the last 25 years, will reach 104 million by the end of the century, according to the US Bureau of the Census. Meanwhile, the search for jobs will intensify the rush to Mexico's cities, contribute to the burgeoning slums—which now contain 20 percent of the country's population—and place additional strains on the government's already inadequate ability to meet rising demands for water, health, and other services. [redacted]

Even looking well beyond de la Madrid's term, we see almost no chance of sustained growth and little chance for the robust growth of the 1960s and 1970s in any one year—unless it is an election year. The political realities suggest that neither de la Madrid nor his successor will make much progress in implementing the structural economic reforms that are needed to achieve growth on a sustained basis. Because these policy changes run counter to the entrenched view of government as the protector of domestic employment and industry, we do not expect much progress in opening the economy to trade and investment or a significant reduction in dominance of the government over the economy. [redacted]

When de la Madrid leaves office in September 1988, Mexican citizens almost certainly will assess his economic performance negatively even if his stimulative policies revive the economy. Although a disastrous earthquake and the plunge in oil prices were unavoidable setbacks, we believe none of the problems identified at the beginning of his term—including slow economic growth, massive budget deficits, high inflation and unemployment, sharply reduced living standards, and current account deficits—have been solved, despite deep sacrifice by the Mexican people. Indeed, most of the positive trends set in motion through their sacrifice will have been reversed. From a broader perspective, economic growth will average far lower and inflation much higher during de la Madrid's six years in office than at any other time in recent Mexican history (see figure 5). [redacted]

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We conclude that the economic demands on the next president will be substantial and that the pressures on him to find a lasting solution to his country's problems will be even greater than those faced by de la Madrid. Most likely, he will be forced to respond to this challenge with fewer resources and an unhealthy economy made shakier by the economic policies of his predecessor. Moreover, we believe de la Madrid's "muddle-through" strategy, which is dependent on periodic external bailouts, will be increasingly difficult to preserve. [redacted]

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If short-term solutions are unavailable, the next president would have several options for dealing with Mexico's economic problems. He could react either by taking tough structural adjustment measures—deciding to ask the Mexicans to sacrifice the present for a better future—or, conversely, by increasing further the government's economic role. History would argue for the latter approach. In addition to using the government's economic dominance to buy political support, the next president could respond by:

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- Allowing populist considerations to dominate his economic decision making.
- Adopting an "inward" orientation, which stresses nationalism and the need for Mexicans to be self-reliant.

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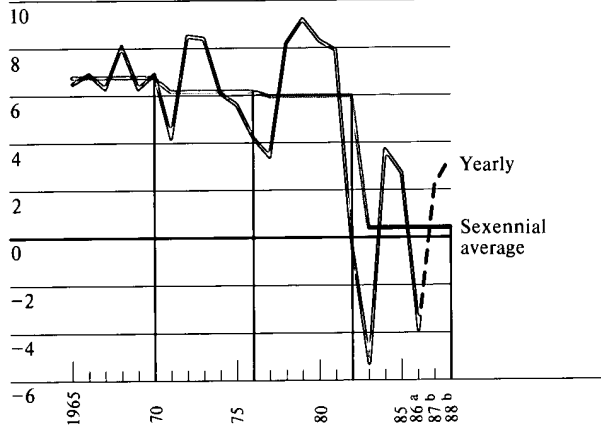
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Figure 5
Mexico: De La Madrid's Legacy

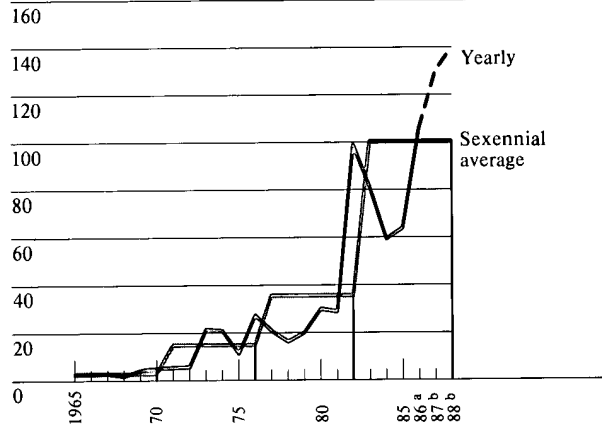
Note scale change

Real GDP, 1965-88
Percent change



^a Estimated.
^b Projected.

Inflation, 1965-88
Percent change in CPI



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- Becoming increasingly unwilling to compromise with creditors or, in the extreme, suspending debt payments.

In any case, we believe the Mexican people are headed for even more difficult times than those experienced over the past four years.

Implications for the United States

We believe Mexico's long-term economic prospects depend to a great extent on conditions in the United States. Export sales are linked to US import demand, and changes in US interest rates directly affect international rates, thus determining the size of Mexico's debt-servicing bill. Although both countries are

becoming more economically linked, in our view, Mexico is more beholden to the United States than the converse. For example:

- Mexico sells about 60 percent of its petroleum exports to the United States, yet this figure only accounts for 16 percent of US imports and 5 percent of US consumption.
- Mexico's border industry program—its second-largest source of foreign exchange and one of the few truly bright spots on its horizon—is totally dependent on continued access to US markets.

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Tourism, Mexico's third-most important source of foreign earnings, also is influenced by US economic conditions and public perceptions of Mexico's good will.

- Mexican exports to the US provide a shot in the arm for the Mexican economy, with the US market providing much of the impetus to growth of Mexico's nonoil exports. As the US dollar continues to depreciate, however, Mexicans will be forced to increase their competitiveness if they hope to continue to diversify their export base. [redacted]

Perhaps more important, Mexico's financial dependence on the United States will continue to grow, and Mexico City—and its commercial creditors—almost certainly will look to Washington for more financial support, possibly by the end of 1988. In our judgment, the difficulty in once again raising large sums of money for Mexico is likely to change the rules of the game. If Mexico is unable or refuses to service its debt, US moneycenter banks stand to lose more than other creditors should Mexican debt be written down or payments suspended. Moreover, whatever the direction of change, we believe the international financial community will look to Washington to limit the pain. [redacted]

Mexico City's inability to raise living standards and create sufficient jobs to satisfy its growing labor force will significantly strain the Mexican system, creating additional problems for Washington and the US southern border. As interest groups in Mexico vie more desperately for pieces of a shrinking resource pie, we expect strains in the system to intensify. One consequence of this will be an increase in the thousands of Mexicans that immigrate illegally to the United States. If new US immigration legislation proves effective in narrowing what has become a vital

safety valve for Mexico, additional political strains could confront the PRI. According to press reports, significant numbers of illegal emigrants already are returning to Mexican villages and swelling ranks of the unemployed.⁸ We also expect an upsurge in Mexican drug cultivation and narcotics trafficking as more Mexicans turn to illicit activities to supplement their incomes. [redacted]

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We conclude that economic conditions in Mexico will continue to shape its bilateral relations with the United States. Moreover, this reality is likely to transcend economic relations between the two countries, spilling over into other areas of mutual concern, such as foreign policy and border issues. A prolonged economic slump in Mexico would have a mixed impact on Mexican-US relations. Although Mexico City may respond to such a situation by increasing its reliance on Washington and becoming more sensitive to US concerns, we believe that fierce Mexican nationalism will require its leadership to continue to publicly distance itself from the United States. Economic prosperity in Mexico also could cut both ways. Although a sustained period of growth would decrease the country's need for US support and could lead Mexican leaders to take a tougher stance in areas where mutual interests conflict, it also could relieve the pressure on top Mexican leaders to make the economic changes necessary to put the country on a sounder, and more politically stable, economic footing. [redacted]

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Appendix

An Econometric Model of Mexico

Introduction

The econometric model of Mexico used in this paper is designed to help analysts make conditional estimates of Mexican economic prospects. It provides a convenient mechanism for looking at the interactions of many economic factors simultaneously and for studying the potential impact of policies and economic events on the path the economy is expected to follow.

The model can be used to project four groups of variables. These groups—the model's endogenous variables—include measures of:

- *Real domestic economic performance.* The key variables include gross domestic product, private consumption, and private fixed investment.
- *The government's financial position.* In this category we include the overall public-sector deficit and the amount of public-sector borrowing from the monetary authorities.
- *Balance-of-payments accounts.* This group of variables includes components such as the balance of trade, the current account balance, and the change in international reserves.
- *Inflation.* The model projects changes in the gross domestic product deflator.

All forecasts derived from the model are conditioned by assumptions regarding three groups of exogenous variables:

- *Fiscal policies.* The more important of these measures are public-sector consumption and investment and the aggregate implicit tax rate. Also included are net transfers to the private sector, nontax revenues of the public sector, and the deficit of the public-sector enterprises.
- *Monetary policies.* These include government debt-management policy, changes in the required reserve ratio for the banking system, and the level of public-sector foreign borrowing.

- *Foreign economic developments.* These influences on the Mexican economy include the level and changes in US real economic activity, the US inflation rate, changes in US real per capita disposable income, and US imports of agricultural goods. Mexico's import and export prices in dollar terms are also considered exogenous variables, along with the level of net foreign transfers and several categories of Mexican exports.

Structure of the Basic Model

One hundred and fifty-seven equations connect the exogenous and endogenous variables of the basic model. Of these equations, 20 involve econometric estimates of relations among variables. The rest of the equations are accounting identities. The model can be collapsed for presentational purposes into a demand-and-supply framework of 18 equations. This simplified model ignores most national income accounting identities, trade disaggregation, and lag structures.⁹

The general structure of the model consists of four sectors—real demand, aggregate supply, price formation, and financial.

Components of Real Demand

Gross domestic product (GDP) equals private consumption (CP) plus private investment (IP) plus government consumption (CG) plus government investment (IG) plus exports (X) less imports (M).

$$GDP = CP + IP + CG + IG + X - M$$

⁹ Copies of a discussion of the complete model, including its parameter estimates and policy multipliers, are available on request.

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Private consumption (CP) depends on current disposable income (DY), on the rate of inflation (INFL), and on a real wage rate index (WAGE).

$$CP = f(DY, INFL, WAGE)$$

Disposable income (DY) equals gross domestic product (GDP) minus taxes (T) plus transfer payments and government subsidies (TR).

$$DY = GDP - T + TR$$

Private investment (IP) depends on the change in the level of GDP [$\Delta(1:GDP)$], on real money supply (RM2), and on the gap between the actual and the trend level of gross domestic product lagged one year [GAP(-1)].

$$IP = f[\Delta(1:GDP), RM2, GAP(-1)]$$

Nonoil exports (X) depend on economic activity in the United States (USGNP), on the ratio of exchange-rate-adjusted Mexican prices to US prices (PMA/PUS), and on the lagged level of exports [X(-1)].

$$X = f[USGNP, PMA/PUS, X(-1)]$$

Oil exports are projected outside the model.

Imports (M) depend on gross domestic product (GDP), on the ratio of exchange-rate-adjusted US prices to Mexican prices (PUSA/PM), and on the lagged ratio of the current account deficit to export earnings [BAL(-1)/X(-1)].

$$M = f[(GDP - X), X/PM, PM/YPD]$$

Imports (M) depend on gross domestic product netted of total exports (GDP - X), on exports deflated by the import price deflator (X/PM), and on import prices relative to the GDP deflator (PM/YPD).

Government consumption (CG) and government investment (IG) are exogenous variables.

Aggregate Supply

The *trend level of output (GDPTREND)* equals the lagged level of trend output [GDPTREND(-1)], plus an estimated function of real private investment from the current year and each of the last four years weighted in decreasing value.

$$GDPTREND = GDPTREND(-1) + f[IP, IP(-1), IP(-2), IP(-3), IP(-4)]$$

The difference between actual GDP and trend GDP (GAP) is used as a measure of excess demand pressure, and is an explanatory variable in the private investment equation.

$$GAP = GDP - GDPTREND$$

Price Formation

The *inflation rate (INFL)* depends on the percentage change in the money supply (ddM2), on the percentage change in the exchange-rate-adjusted import price index (ddPMS), and on the percentage change in a wage rate index (ddWAGE).

$$INFL = f(ddM2, ddPMA, ddWAGE)$$

Financial Sector

The *money base (MB)* equals net foreign reserves in pesos (NFR) plus net credit from the Central Bank to the public sector (NCPUB) plus net credit from the Central Bank to the private sector (NCPRI) less liabilities of the Central Bank (CBLIAB).

$$MB = NFR + NCPUB + NCPRI - CBLIAB$$

$$M2 = f(MB)$$

The *accumulated treasury deficit (ADEF)*, equals last period's deficit [ADEF(-1)], plus loans from the Central Bank, which are assumed to equal the public-sector deficit (PSDEF).

$$ADEF = ADEF(-1) + PSDEF$$

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The *public sector deficit (PSDEF)* equals government consumption (CG) plus government investment (IG) plus net government transfer payments (TR) less taxes (T), less net government foreign borrowing (GFB).

$$PSDEF = CG + IG + TR - T - GFB$$

Total tax revenues (T) are equal to the sum of tax receipts from petroleum exports (TP), domestic gasoline sales (TG), and the level of disposable income (TY).

$$T = TP + TG + TY$$

Petroleum tax revenues are assumed to equal a fixed proportion (PTXRATE) of oil export revenues (OR).

$$TP = PTEXRATE \times OR$$

Gasoline tax receipts are calculated as a fixed proportion (GTXRATE) of gasoline sales (GS).

$$TG = GTXRATE \times GS$$

The remaining *tax revenues* are assumed to equal a fixed proportion (YTXRATE) of disposable income.

$$TY = YTXRATE \times DY$$

Net foreign reserves (NFR) equal lagged net foreign reserves (NFR) equal lagged net foreign reserves [NFR(-1)] plus export earnings (X) less imports (M) plus net government foreign borrowing (GFB) plus net private foreign borrowing (PFB).

$$NFR = NFR(-1) + X - M + GFB + PFB$$

The *exchange rate (XR)* can be treated either as an exogenous variable or as an endogenous adjustment to differing rates of inflation in Mexico and the United States. In the latter case the exchange rate is equal to the exchange rate last period [XR(-1)], times one plus the rate of Mexican inflation (INFL) divided by one plus the US inflation rate (ddUSP).

$$XR = XR(-1) \times (1 + INFL) / (1 + ddUSP)$$



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