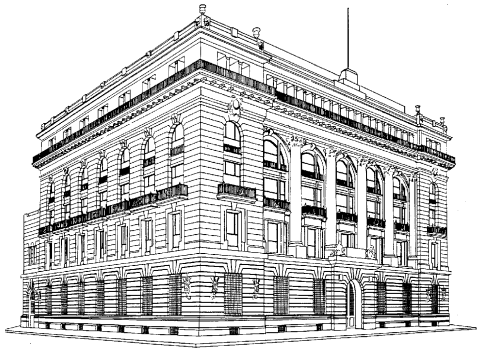
Monetary Policy

Program for 2000



BANCO DE MEXICO

January, 2000

In compliance with Article 51, section I of the Law of Banco de México, the Board of Governors of this Institution presents the following monetary policy program for the period from January 1 to December 31, 2000, to the Federal Executive and the Permanent Commission of the Congress of the Union.

Banco de México has always given the utmost importance to the publication of information that will help decision-making and allow the public to evaluate the execution of its policies. This text is provided only as a convenience to the reader, and discrepancies could eventually arise from the translation of the document into English. The original and unabridged Monetary Policy Program in Spanish is the only official document.

I. Introduction

According to the constitutional mandate set for Banco de México, the primary objective of monetary policy is to seek the stability of the general price level. This mandate is founded on the overwhelming empirical evidence, both in Mexico and abroad, which shows that high inflation rates undermine economic growth, the distribution of income and real wages. For this reason, the primary objective of monetary policy in most of the world's central banks is to curb inflation.

The experience of those economies that have attained a permanent abatement of their rates of inflation within a floating exchange rate regime proves that the costs of reducing inflation are lower if this process is implemented in a gradual manner. Because price growth continues to be high in Mexico, the Board of Governors of Banco de México has proposed a gradual and sustainable strategy, the objective of which is to converge towards the inflation rate of Mexico's main trading partners by the end of 2003. As the short-term goal within said path toward price stability, an annual inflation rate not to exceed 10 percent has been agreed on by Banco de México and the Federal Government for the year 2000's monetary policy target.

This document is prepared to comply with the Central Bank's obligation to inform the legislative and executive branches on its performance to date and plans. To this end, this text first contains a summary of the evolution of inflation during 1999 and the monetary policy actions taken during the year. A concise analysis of the Mexican economy during this period is then presented, as well as the international outlook for year 2000 and some forecasts of the main domestic economic indicators. These elements provide a general framework for monetary policy in year 2000, which is discussed in further detail in a subsequent section. The importance of persevering in the fight against inflation is emphasized in the final remarks, which also point out the monetary policy stance required to attain the objectives established by the Central Bank.

II. Economic Developments: The General Outlook

II.1. International Environment

At the beginning of 1999, it appeared that international events would continue to provide many obstacles for emerging markets. The main reasons for this were the financial turbulence of 1998 and the then imminent financial crisis in Brazil. Today, this scenario is starkly different from the improvement in global economic and financial conditions observed during 1999. This transformation of the international economic outlook stems mainly from the following elements: the continued strength of the U.S. economy, the reestablishment of orderly conditions in international financial markets, the revival of the Asian economies affected by the 1997 crisis, the resurgence of economic growth in Japan and positive economic circumstances in Europe.

On balance, international factors had a net positive effect on the Mexican economy in 1999. Among those whose influence was most important were:

(a) The growth of the American economy was considerably higher than expected;

(b) The international price of crude oil significantly increased;

(c) Some emerging economies grew faster than anticipated;

(d) Access to international capital markets improved considerably over the second half of 1998.

These factors notwithstanding, there were also some external influences that had an unfavorable impact on the domestic economy. These included:

(a) The fear of an upturn in inflation in the United States affected the global financial marketplace;

(b) For most of the year, liquidity in international markets did not return to the levels observed before the Russian crisis, limiting access to international credit for the less developed countries;

(c) The uncertainty regarding whether or not developing countries were prepared to face the Y2K problem inhibited these countries' access to international capital markets.

Following is an analysis of the external events having the greatest impact on Mexican economic developments in 1999.

The U.S. economic expansion continued during the year, and it is anticipated that the American economy will continue to grow at a rate close to 4 percent for the third consecutive year. Although the unemployment rate has fallen to 4.1 percent, there is no indication that labor costs are rising persistently in that country. On the other hand, oil prices rose between 1998 and 1999 and, contributed to a one percent increase in the consumer price index.

This combination of high growth, low unemployment and higher oil prices prompted the Federal Reserve Board to adopt a more restrictive monetary policy stance as a preemptive measure. Indeed, the Federal Reserve raised the federal funds rate by 0.75 percentage points, thus reversing the reductions of the previous year. This monetary policy adjustment was reflected in a 1.389 percentage point increase in the 30-year Treasury bond rate, and moved international financial markets to react with increased volatility during the second half of the year.

As the year progressed, global economic growth projections were adjusted upward. Table 1 presents the International Monetary Fund's growth estimates for 1999 for various regions of the world, published in December 1998 and October 1999.

The most notable aspect of this table is the upward revision of the growth projections for the U.S. economy. The corresponding projections for the Asian economies also improved because of the macroeconomic policies implemented as well as the partial return of foreign capital to this region. As for Japan, the fiscal and monetary stimuli applied have contributed to the moderate rebound of its economy. In the last few months of 1999, the main European economies also recovered from the previous slump and experienced a marked improvement. Responsible for this upturn were the effect of the Euro's depreciation on exports and the European Central Bank's reduction of interest rates within the context of price stability. Europe was not able to sustain the low interest rate, however, and had to implement a 0.5 percentage point increase at the end of the year.

Table 1 **Forecasts for 1999**

The World Economy: Selected Indicators

	Forecasts as of		Change
	December 1998	October 1999	
World economic			
growth (%)	**2.2**	**3.0**	**0.8**
Main industrialized countries	**1.5**	**2.6**	**1.1**
France	2.6	2.5	-0.1
Germany	2.0	1.4	-0.6
Japan	-0.5	1.0	1.5
United Kingdom	0.9	1.1	0.2
United States	1.8	3.7	1.9
Developing countries	**3.5**	**3.5**	**0.0**
Asia	4.3	5.3	1.0
Latin America and the Caribbean	1.5	0.1	-1.4
Middle East and Europe	2.9	1.8	-1.1
Growth of world			
trade (%)	**4.3**	**3.7**	**-0.6**
Imports by industrialized countries	**4.8**	**5.9**	**1.1**

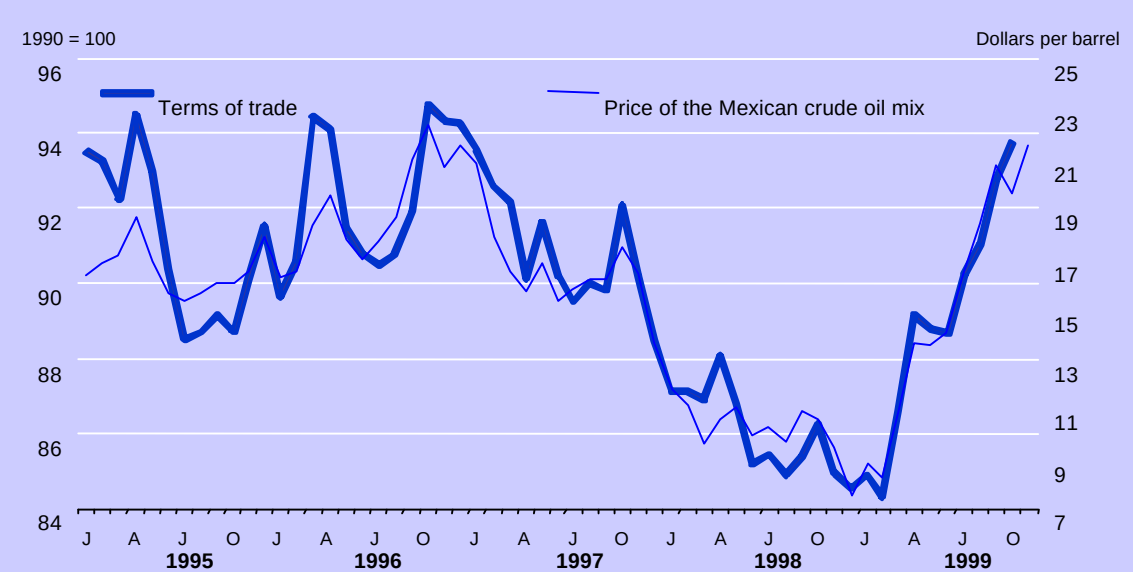
Source: "World Economic Outlook, " IMF, December, 1998, and October, 1999.

The overall balance of Latin America's economic developments in 1999 was negative, with only two countries offsetting the poor performance of all others: Peru and Mexico countered the recessions suffered by Argentina, Chile, Colombia, Ecuador and Venezuela. For Brazil and Mexico, economic activity turned out better than anticipated. While at the beginning of the year Brazil's GDP was expected to contract between 2 and 4 percent, it closed 1999 on a more positive note, with nearly zero growth. The Mexican economy surpassed all expectations and posted the strongest expansion in the region.

A better outlook for world economic growth and the oil-producing countries' decision to reduce oil supply resulted in a significant increase in crude oil prices. In 1999, the Mexican crude oil export mix attained an average price of 15.61 U.S. dollars per barrel, nearly 70 percent above the 9.25 dollar estimate used in the 1999 *Criterios Generales de Política Económica*. In turn, international prices for raw materials and manufactured products stabilized and posted a slight increase.

Graph 1 **Terms of Trade Index and Prices of the Mexican Crude Oil Mix**

Base 1990=100 and dollars per barrel



Source: Banco de México

Throughout 1999, international capital flows remained below the levels observed before the Asian crisis. This can be seen most clearly in the effect said flows had on the net average yield of emerging economies' sovereign bonds, which is presented in Graph 2[1]. In Mexico's case, this index surpassed 10 percent at the beginning of the year, but declined gradually throughout the first semester, only to go back up in response to two main reasons: the restrictive measures implemented by the U.S. Federal Reserve Board and the problems caused by Ecuador's moratorium which prompted a generalized drop in Brady bond prices. After these events, the net yield on Mexico's index continued to decline to levels comparable to those prevailing at the beginning of 1998. As can be seen in the graph, the other Latin American countries have not been able to recover to the same extent; in some cases because of political uncertainty and in others because of poor fiscal conditions.

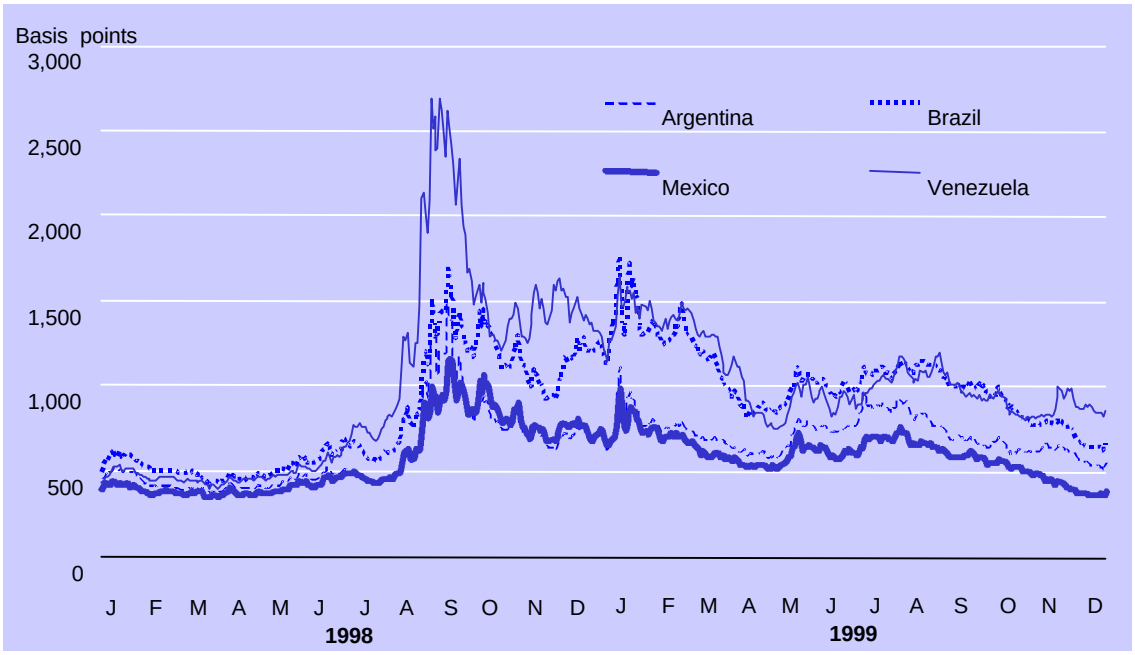
On balance, international events had a positive effect on the Mexican economy in 1999. The consistency of fiscal and monetary policies, as well as the growing integration with the American economy, has encouraged international investors to more clearly

[1] As measured by the JP Morgan's Emerging Market Bond Index (EMBI), which includes net yields on foreign currency-denominated external debt instruments. For the economies listed in Graph 2, the index incorporates Brady bonds, Eurobonds and certain debt instruments of major local firms.

distinguish between Mexico and other emerging economies. This differentiation was significant in obtaining favorable terms for the negotiation of the Financial Strengthening Program 1999-2000. This program gives Mexico access to 16.9 billion dollars in foreign trade and debt refinancing credit lines, as well as an additional 6.8 billion dollars in contingent credit lines under the North American Financial Agreement (NAFA). Another important factor is that rating agencies improved their views on the Mexican economy. Moody's raised the rating on Mexico's foreign currency long-term sovereign debt (from a Ba2 to a Ba1) and upgraded the rating on some Mexican banks' deposits and debentures denominated in foreign currency. Recently, this same agency modified its rating of peso-denominated government debt from "stable" to "positive." Standard and Poors also changed its rating of Mexico's foreign currency sovereign debt from "stable" to "positive."

Graph 2 **Net Yield on Debt of Some Latin American Countries (EMBI+)**

1998-1999



Source: JP Morgan.

This combination of favorable developments on the external front, as well as the prudent fiscal and monetary policies implemented in the domestic front, resulted in a growth rate for Mexico beyond the figure expected for 1999. In addition, these same factors also induced an appreciation of the exchange rate during the year, which

reduced inflation pressures and permitted a fall in interest rates. Nonetheless, since some uncertainty remains on the international horizon, it is imperative to maintain the two fundamental principles of economic policy: healthy public finances and a monetary policy committed to curbing inflation.

II.2. Economic Activity

During 1999, real growth in the Mexican economy was higher than expected, while inflation remained below both the official target and the public's expectations registered at the beginning of the year. The economic growth rate, for its part, was able to overcome the momentum lost in the last quarter of 1998. As for inflation, the growth of the CPI once again headed on a downward path. The recovery in economic activity was accompanied by an improvement in the labor market, as both employment and real wages increased. As for the external indicators, the trade and current account deficits fell as compared to those reported for 1998. Among the factors that explain the decline in said deficits was a stronger growth in non-oil exports induced by the dynamic North American economy, as well as the recovery of oil prices and the modest expansion of Mexico's merchandise imports.

In 1999, the two most important aspects of the Mexican economy were its real growth rate —which was higher than the 3 percent forecast contained in the 1999 *Criterios Generales de Política Económica*— and the 12.32 percent inflation rate which was 0.68 percentage points below the announced target.

Real GDP growth closed at a rate of 4.6 percent for the third quarter of 1999, and is estimated that the figure will come in at 3.7 percent for the year as a whole. The increase in production was similar in all sectors of the economy. A few of the third quarter numbers illustrate this point: real industrial output grew 4.3 percent, whereas that of agriculture rose 3.8 percent and services did so at the rate of 4.8 percent. Within the industrial sector, the performance of manufacturing and construction stands out. Mining activity decreased, however, along with the volume of oil exported and the low prices of minerals and precious metals on the international market during most of the year. In the service sector, transport and communications grew at outstanding rates, while commerce, restaurants and hotels posted respectable gains.

During 1999, all the aggregate components of domestic demand as well as exports of goods and services posted gains; therefore, the economic recovery could be justly considered as balanced. Exports were the most dynamic component, although investment and private consumption also contributed significantly to the economic expansion.

Private investment posted an 8 percent annual growth rate for the third quarter of 1999. Investment was particularly notable in the export sector for the following reasons: higher labor productivity, lower real and nominal interest rates, renewed access to international financial markets, and higher confidence and improved expectations for business.

Private consumption also registered an annual gain (4.2 percent) for the third quarter of 1999. This figure contrasts starkly with the 2.3 percent and 1.8 percent increases of the fourth quarter 1998 and first quarter 1999, respectively. This recovery is explained primarily by an increase in employment and real wages, lower interest rates and the recovery of economic activity itself.

The momentum of merchandise exports was evident in sales of both oil and non-oil products abroad. The latter were particularly stimulated by solid growth in the U.S. economy. During the period from January to November 1999, exports of oil and non-oil merchandise grew at annual rates of 31 percent and 15.2 percent, respectively, which dramatically improved over the -37 percent and 11.3 percent annual rates posted in December 1998. Table 2 shows how Mexican exports fared amongst the highest in the world during 1999. These figures corroborate the fact that the opening of the Mexican economy has enabled it to benefit from the growth of its main trading partner and that the appreciation of the real exchange rate has not been an obstacle to exports.

During the first 11 months of 1999, imports rose 12.9 percent, whereas in 1998 they had posted a 14.2 percent increase. The most notable slowdown occurred in consumer goods imports, which grew only 7.3 percent between January and November 1999, more than 10 percentage points lower than in the corresponding period a year earlier. On the other hand, the growth rates of intermediate and capital goods in the same period of 1999 were 12.6 percent and 18 percent, respectively. It is thus anticipated that the corresponding 1999 growth rate for capital goods will exceed the 1998 figure of 14.6 percent.

Table 2

Growth in the Value of Exports of 30 Selected Economies during 1999*

Measured in current dollars

Countries	Rate of Growth	Countries	Rate of Growth
Industrialized Economies		**Developing Economies**	
United States 3/	0.9	Korea 5/	9.0
Canada 3/	9.9	Hong Kong 4/	-10.9
Japan 4/	7.4	Taiwan 5/	10.1
Germany 4/	-1.4	Singapore 4/	2.4
France 3/	-1.4	China 3/	4.9
United Kingdom 3/	-3.1	Philippines 4/	19.0
Spain 3/	0.1	Indonesia 4/	-2.1
Italy 3/	-6.8	Thailand 4/	6.7
Ireland 1/	11.4	Malaysia 2/	13.7
Finland 4/	-4.1	India 4/	12.7
Netherlands 3/	0.4	Israel 1/	2.9
New Zealand 3/	2.6	Argentina 4/	-13.0
Norway 3/	5.1	Brazil 5/	-6.1
Sweden 4/	-0.6	Chile 4/	3.3
Switzerland 3/	-1.0		
Mexico			
Total Exports 4/	16.2		
Manufactured Exports 4/	15.5		
Non-oil Manufactured Exports 4/	15.2		

*Growth rates are with respect to the same period of the previous year. Exports from these economies represented 82 percent of world exports in 1998.
1) January-August; 2) January-September; 3) January-October; 4) January-November; 5) January-December.
Source: Elaborated by Banco de México with data from Bloomberg, the IMF and central banks.

These trends in Mexico's foreign trade translated into a smaller trade deficit: 4.412 billion dollars between January and November 1999 (7.914 billion dollars for the whole of 1998). Likewise, the current account deficit for 1999 will probably hit 13.9 billion dollars, or 2.9 percent of GDP. This compares favorably against the 15.958 billion dollar deficit (3.8 percent of GDP) reported in 1998.

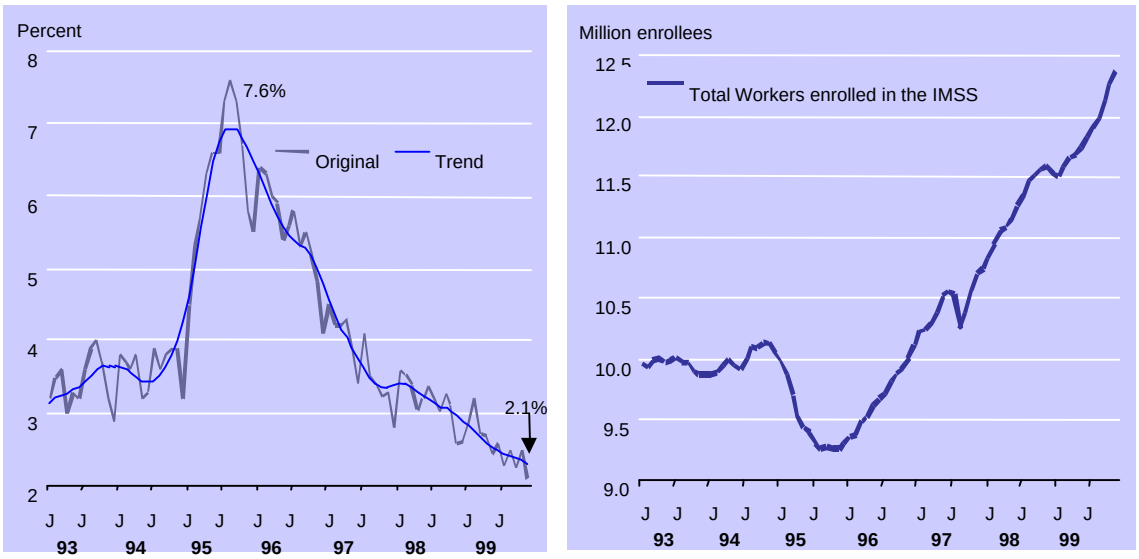
In 1999, the current account deficit of the balance of payments was financed almost entirely through long-term capital inflows, mainly of foreign direct investment (FDI). In particular, FDI represented four-fifths of the current account deficit, whereas in 1994, for example, it accounted for only 37 percent.

Another important trend in the Mexican economy during 1999 was the decline in unemployment. In November, the open unemployment rate stood at 2.09 percent, the lowest ever recorded for that particular month (see Graph 3). According to the numbers of workers registered in the Social Security Institute, 706,000 jobs were created between January and December 1999, of which

488,000 were permanent and 218,000 were urban temporary jobs. In this sense, the recovery of employment that began in December 1995 held steady for the fourth consecutive year, with 2'884,759 jobs created thus far.

Graph 3 **Open Unemployment Rate and Employment**

3a) Open unemployment rate **3b) Employment**



Source: INEGI & IMSS.

Also in 1999, real wages made up some of their previous losses. During the month of October, wages in the industrial non-in-bond manufacturing sector posted an annual increase of 1.9 percent, while wages in the in-bond industry rose by 14.1 percent, both in real terms.

In sum, the performance of the Mexican economy during 1999 turned out better than was expected at the beginning of the year.

The recent evolution of economy activity corroborates the fact that a long period of sound economic policy can indeed establish the foundation for the country to fulfill its potential for economic growth.

II.3. Inflation

The 1999 inflation target was met. Consumer prices rose at a 12.32 percent annual rate, below the 13 percent target and the lowest rate yet in the last five years. This was mainly due to the following: i) a tight monetary policy focused on attaining the inflation target for the year and countering the inflationary pressures of late 1998 which stemmed from both external shocks and increases in the prices of public goods an services; ii) the appreciation and subsequent stabilization of the exchange rate; iii) the decline in the prices of fruits and vegetables; iv) most of the prices for public goods and services were consistent with the projections contained in the 1999 *Criterios Generales de Política Económica*; and v) sound fiscal policy which helped set the stage for curbing inflation.

On the other hand, inflation expectations —implicit in all types of contracts— converged slowly towards the inflation target, thus limiting progress in the fight against price increases.

II.3.1. Consumer Prices in 1999

Last year began with rather unfavorable expectations for the behavior of prices. In January 1999, monthly inflation as measured by the CPI was 2.53 percent, whereas the annual rate reached 19.02 percent. This was the result of three factors: the inflationary pressures of 1998; the impact of the liberalization of the price of tortillas; and the unusual increases in the prices of fruits and vegetables in the same year. These factors weighed heavily in the public's inflation expectations for 1999; by late January, financial analysts had predicted that the annual inflation rate would be in the neighborhood of 17 percent. Nonetheless, price increases slowed down as of February, thus reversing the upward trend observed since June 1998 and adopting a path consistent with the 1999 inflation target.

Table 3 shows the CPI in monthly, yearly and accumulated variations in relation to December of the previous year.

Table 3 **Consumer Price Index**

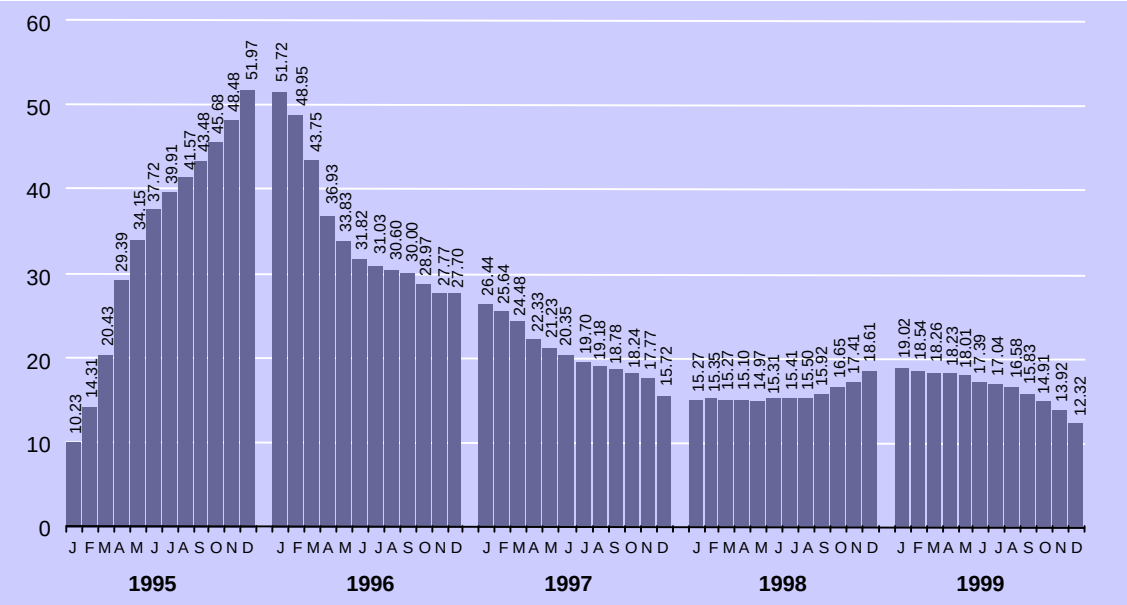
Percentage changes

Month	Monthly rates		Annual rates		Accumulated change over prior December	
	1998	1999	1998	1999	1998	1999
January	2.18	2.53	15.27	19.02	2.18	2.53
February	1.75	1.34	15.35	18.54	3.96	3.90
March	1.17	0.93	15.27	18.26	5.18	4.87
April	0.94	0.92	15.10	18.23	6.17	5.83
May	0.80	0.60	14.97	18.01	7.01	6.47
June	1.18	0.66	15.31	17.39	8.28	7.17
July	0.96	0.66	15.41	17.04	9.32	7.88
August	0.96	0.56	15.50	16.58	10.37	8.48
September	1.62	0.97	15.92	15.83	12.16	9.53
October	1.43	0.63	16.65	14.91	13.77	10.22
November	1.77	0.89	17.41	13.92	15.78	11.20
December	2.44	1.00	18.61	12.32	18.61	12.32

As was mentioned earlier, the annualized inflation rate was at its highest in January 1999 but decreased steadily during the remainder of the year. Starting in February and in each of the following months, monthly inflation rates were the lowest for their respective months since 1994. Banco de México's periodic survey of private sector economic specialists showed that for almost every month of 1999 the observed monthly inflation rates were lower than had been expected at the beginning of each month.

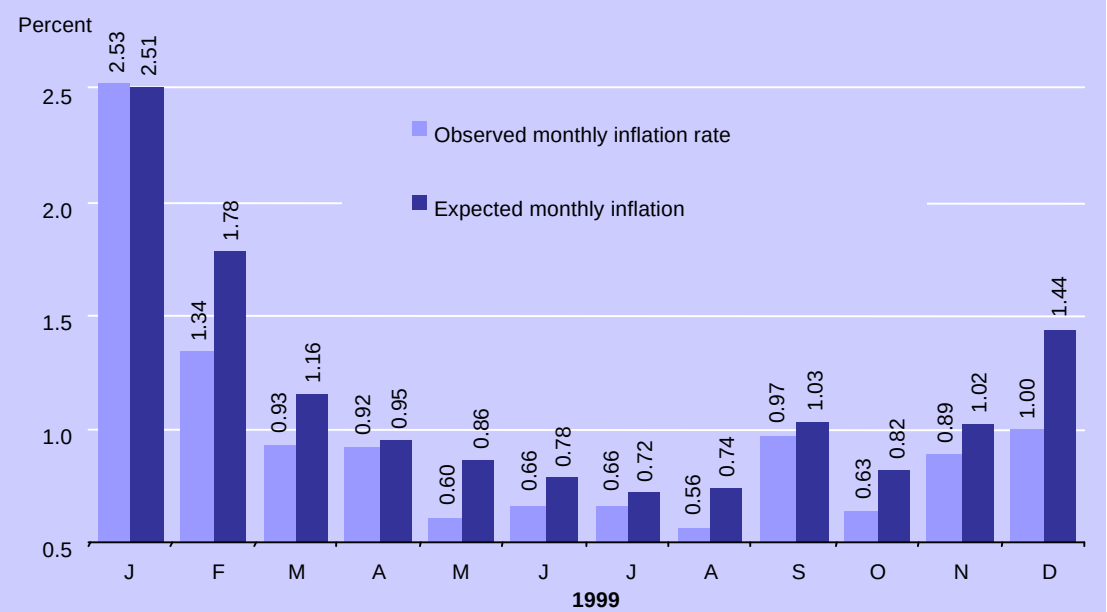
Graph 4 **Consumer Price Index**

Annual percentage change



Graph 5 **Observed Inflation vs. Expected Inflation**

Monthly changes



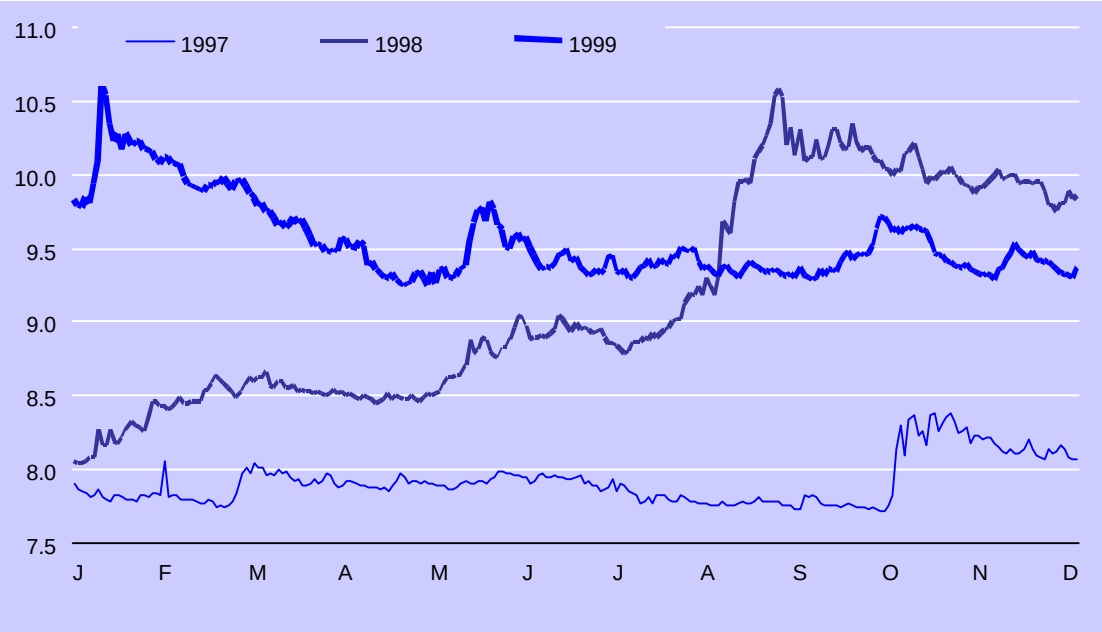
Source: Survey on the Expectations of Private Sector Economic Specialists, Banco de México.

II.3.2. Main Determinants of Inflation

Exchange rate movements are among the factors that have the largest impact on inflation. The exchange rate affects inflation in two ways: i) directly through the pricing of tradable goods, and ii) indirectly by shaping inflation expectations, which in turn impinge upon all types of contracts (regarding wages and credit, among others) and consequently the prices of many goods in the economy. Graph 6 depicts how, after having reached levels of more than 10.50 pesos per dollar in January 1999, the exchange rate started to appreciate until May, and then fluctuated between 9.30 and 9.80 pesos per dollar for the remainder of the year.

Graph 6 **48-Hour Interbank Exchange Rate**

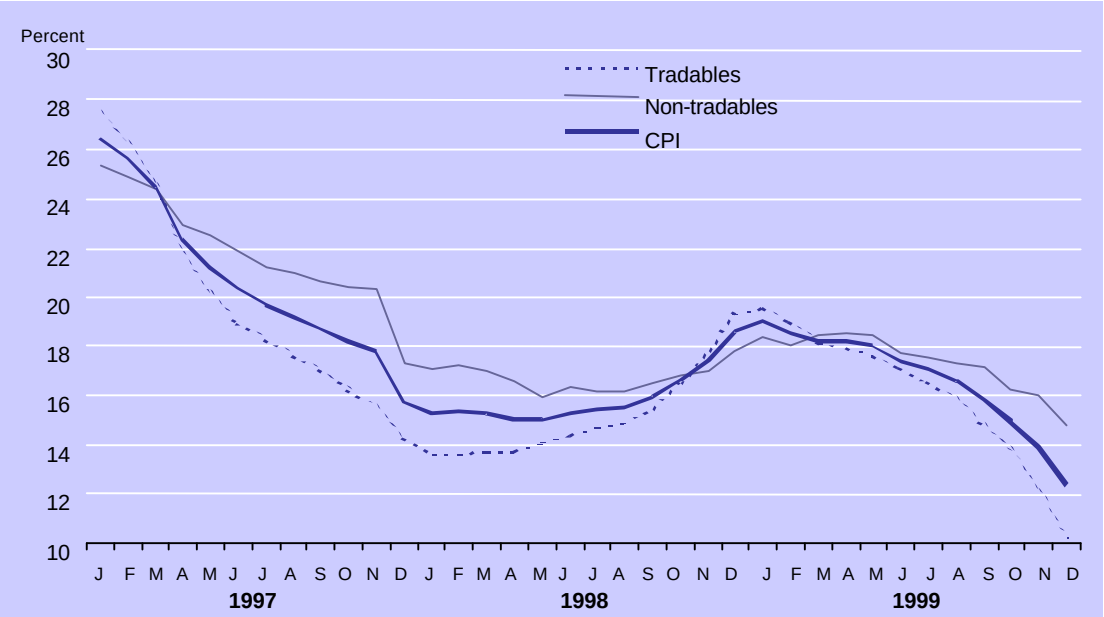
Pesos per dollar



In order to illustrate the effect the exchange rate had on inflation in 1999, Graph 7 shows the annual changes in the CPI and the sub-indices for the prices of tradable goods and non-tradables. This graph clearly depicts how the price increases of tradables edged downward in February 1999 due to the direct impact the appreciation of the exchange rate has on this type of goods. This downward trend continued throughout the year, bringing the inflation rate for tradables down from 19.58 percent in January to 10.26 percent in December 1999 —the lowest annual rate recorded since 1994. This contributed in large part to the decline in the overall inflation rate for the year. The prices of non-tradables did not fall as markedly. The annual inflation rate for these goods remained almost constant during much of the first semester of 1999. However, it started to decrease in July and continued downward throughout the second semester. Thus, the annual variation of this index closed at 14.79 percent in December.

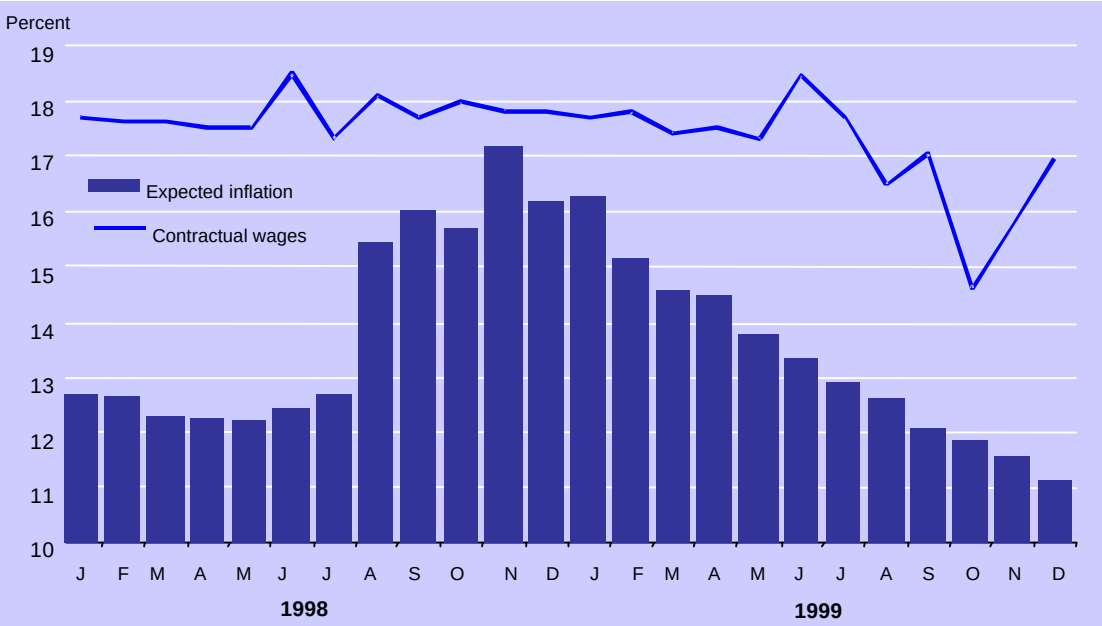
Graph 7 **Consumer Price Index by Type of Goods**

Annual percentage change



The evolution of the prices of non-tradables is determined by two main factors: inflation expectations and revisions of contractual wages. As such, although inflation expectations were reduced as the year progressed, they were slow to converge with the 13 percent target. In turn, as shown in Graph 8, the pace of contractual salary increases became more moderate only after a certain lag. Thus, although inflation expectations for the following twelve months fell from 17 percent in January 1999 to 11.04 percent in December, contractual wages increases of around 17.7 percent were posted in January and were maintained until September. It was not until the end of 1999 that increases in contractual wages edged downward and reached 15.04 percent in the last quarter —a level that compared favorably with the 17.25 percent average registered during the first eight months of the year.

Graph 8 **Inflation Expectations for the Following 12 Months and the Growth Rate of Contractual Wages**



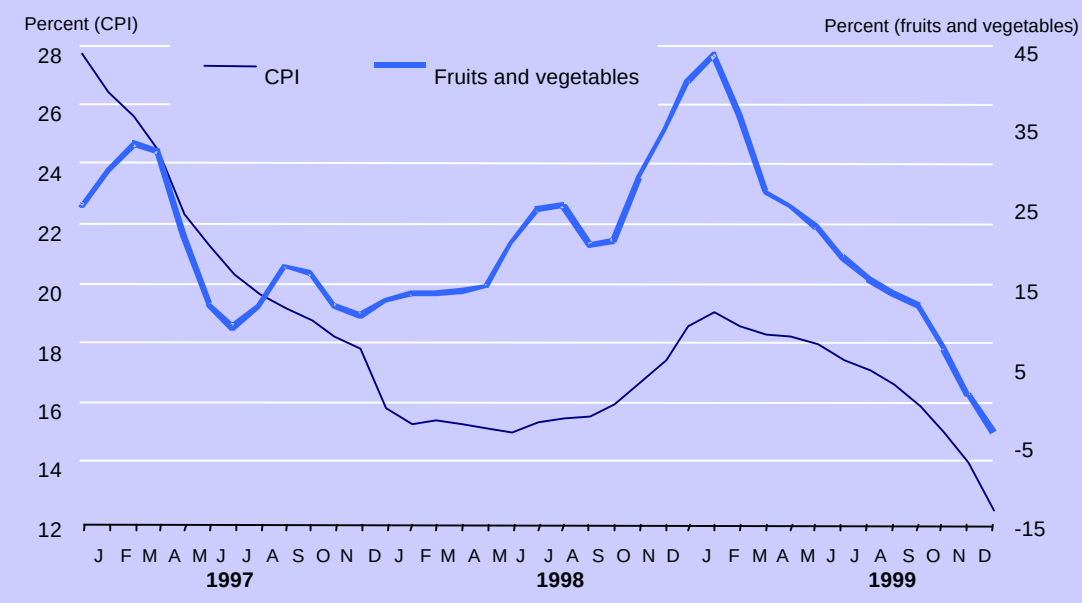
Note: Data on contractual wages for December 1999 is preliminary.

These developments provide evidence of two phenomena. First, there is a significant lag between monetary policy actions or variations in the exchange rate —especially in the case of appreciations— and their impact on the prices of non-tradable goods. Second, economic agents responsible for determining wage increases are not as willing to promptly adjust their expectations —their decisions tend to be irreversible as contracts normally remain valid for 12 months after they are signed. This explains why nominal wages started to decrease only after it became clear that the 13 percent inflation target was indeed attainable.

Graph 9 traces the CPI and the prices of fruits and vegetables during 1998 and 1999. The annualized inflation for these products went from 43.8 percent in January 1999 —the highest annual rate for this index since June 1996— to -3.9 percent in December. This extraordinary decline represented a moderating influence to help curb the annual inflation rate.

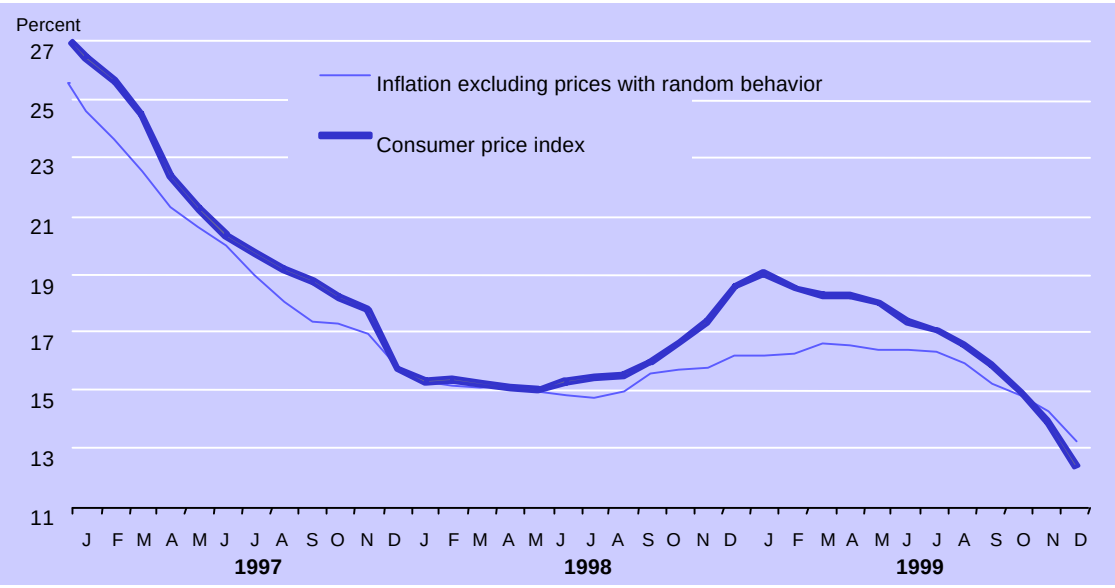
Graph 9 **Consumer Price Index and the Price Index of Fruits and Vegetables**

Annual Percentage Change



Graph 10 **Consumer Price Index and Inflation Excluding Prices with Random Behavior**

Annual percentage change



In order to isolate the effects of random price fluctuations (such as is the case with fruits and vegetables) or the impact from pre-determined price increases (such as those of fuels, electricity and

other public goods and services), a specific index was constructed[2]. The resulting sub-index should, in theory, reflect more accurately the effects of the exchange rate, real wages and monetary conditions in general. Indices such as this are a very useful tool for analyzing inflation pressures, for they eliminate the effect of momentary variations in prices. Therefore, this type of index is used by many central banks to assess the inflation outlook. Data for this sub-index in the 1997-1999 period are presented in Graph 10.

As can be seen in the above graph, this sub-index illustrates the containment of the inflationary bubble that started to form in June 1998. The gap between the sub-index and the CPI closed gradually as of February 1999 and disappeared completely in October. Although inflation as measured by the sub-index was relatively stable during the first half of the year, there was a noticeable decline beginning in August. Consequently, the sub-index lost 3.07 percentage points between August and December and closed the year at 13.23 percent. This clearly indicates that the reduction in inflation has not been merely due to the aforementioned random variations, but rather to the trend of the main factors that influence the evolution of prices. Starting in November 1999, however, the annual inflation as recorded by the CPI was lower than that reported by the sub-index. This indicates that the lower inflation rates posted at the end of 1999 benefited at least partially from transitory phenomena.

In summary, several factors are responsible for bringing 1999 inflation below the 13 percent target. The major ones are: sound and timely monetary policy actions; the appreciation and subsequent stabilization of the exchange rate; and favorable developments in the prices of fruits and vegetables. The contribution of these last two factors to bringing the observed inflation rate 0.68 percentage points below the annual target was estimated at -2.08 percent and -0.70 percent, respectively. On the other hand, contractual and manufacturing wage increases, as well as the unanticipated rise in the price of liquefied gas and in a few other prices, had a greater than anticipated influence on inflation (an estimated 2.10 percentage points).

[2] A detailed explanation of the procedure used to calculate special price indices, similar to the one referred above, is presented in Research Document 9802, "Alternative Measures of Inflation", published by Banco de México, July 1998.

III. Monetary Policy in 1999

The primary objective of monetary policy, established in the Monetary Policy Program for 1999, was to support a reduction of annual inflation to 13 percent. This objective was set taking the following factors into consideration: the inflationary pressures that originated during 1998, the increments to minimum wages and adjustments in the prices of public goods and services, the then prevailing external environment, and the fiscal policy measures that were to be implemented during 1999 in order to reach a fiscal deficit equivalent to 1.25 percent of GDP.

A continuous analysis of prevailing inflation conditions is crucial for the appropriate conduction of monetary policy. The monetary policy stance necessary to attain the proposed inflation target builds upon said analysis. In 1999, two main issues regarding the proper assessment of inflationary pressures captured the attention of both the authorities and economic analysts. The first one was how to determine the level of the "short" suitable for attaining the 13 percent inflation target. The second issue was the gap that arose in the second semester between the observed monetary base and the path originally anticipated by Banco de México. Both issues are analyzed in the section below so as to shed light on the considerations upon which monetary policy decisions were made by the Board of Governors throughout 1999.

A description of monetary policy actions implemented in 1999 is presented to begin with. In addition, the mechanisms by which said actions interacted with the decisions of financial market participants in order to create the monetary conditions required to attain the inflation target are also examined. Secondly, the reasons that moved Banco de México to interpret the growth of the monetary base as an unanticipated increase in the demand for money —as opposed to excess money supply[3]— are presented.

[3] An excess money supply would have signaled inflationary pressures for the future.

III.1. Monetary Policy Actions

At the beginning of 1999 it was indispensable to maintain the restrictive bias of monetary policy. Inflation had been on the rise in 1998, the private sector's inflation expectations were above the target, and international financial markets were volatile.

Towards the end of 1998, inflation expectations for the following year had risen in reaction to three factors: increases in the prices of public goods and services, the depreciation of the exchange rate, and the observed deviation of the 1998 inflation rate from the target established for that year. Thus, as the public's inflation expectations for 1999 had reached 16.5 percent, in November 1998 the Board of Governors of Banco de México decided to increase the "short" from 100 to 130 million pesos. The aim was to offset the rise in inflation expectations, making it possible to reach the 13 percent target for 1999 and resume inflation's downward trend.

In January 1999, domestic financial markets were rocked by the devaluation of the Brazilian currency. Fears that troubles in Brazil might contaminate other emerging economies caused a temporary depreciation of the Mexican peso. Responding to this situation, the same day that Brazil decided to float the real, Banco de México's Board of Governors restricted monetary policy further, increasing the "short" from 130 to 160 million pesos. This swift reaction limited the impact of the aforementioned external shock on the exchange rate and helped bring about its subsequent appreciation, quickly reestablishing order and stability in Mexican financial markets.

These events made it all the more apparent that the "short" had to be made more effective in order to strengthen the Central Bank's capacity to influence short-term interest rates. Therefore, in February the Board of Governors instructed all credit institutions to establish in Banco de México a deposit of indefinite maturity which would earn interest at a rate equivalent to the 28-day equilibrium interbank rate (TIIE). Banks started to make said deposit on February 15th at the rate of 5,000 million pesos per business day, until a sum of 25,000 million pesos was accumulated. The amounts that each individual bank had to deposit were determined according to the balance of total liabilities for each institution at the close of 1998. The liquidity withdrawn by this measure was entirely replenished by means of open market operations, thus granting short-term credit to banks.

This policy measure, combined with the placement of long-term government instruments in the open market allowed the Central Bank to carry out operations under conditions where every day participants in the money market would start the session with a shortage of liquidity. This shortage would have to be restocked through open-market operations and this is generally done through auctions of short-term credit. It should be kept in mind that in such a situation, where the Central Bank participates daily as a supplier of liquidity to the money market, the monetary authority can exercise more control over the conditions for interbank credit and thus have greater influence over short-term interest rates.

It should also be pointed out that these measures do not alter the levels of liquidity prevailing in the money market; rather they provide the conditions for interest rates to react in a timely fashion to changes in the monetary policy stance. Thus, the establishment of the mandatory deposits strengthened the effectiveness of the accumulated balances objective as an instrument of monetary policy.

After the adjustment made to the "short" on January 13th, it was maintained at 160 million pesos for the remainder of the year. This monetary policy measure was needed to bring down inflation, given the inflationary pressures prevailing at the end of 1998, the deterioration of the public's confidence in the attainability of the inflation target, and the inflationary pressures associated with contractual wage increases.

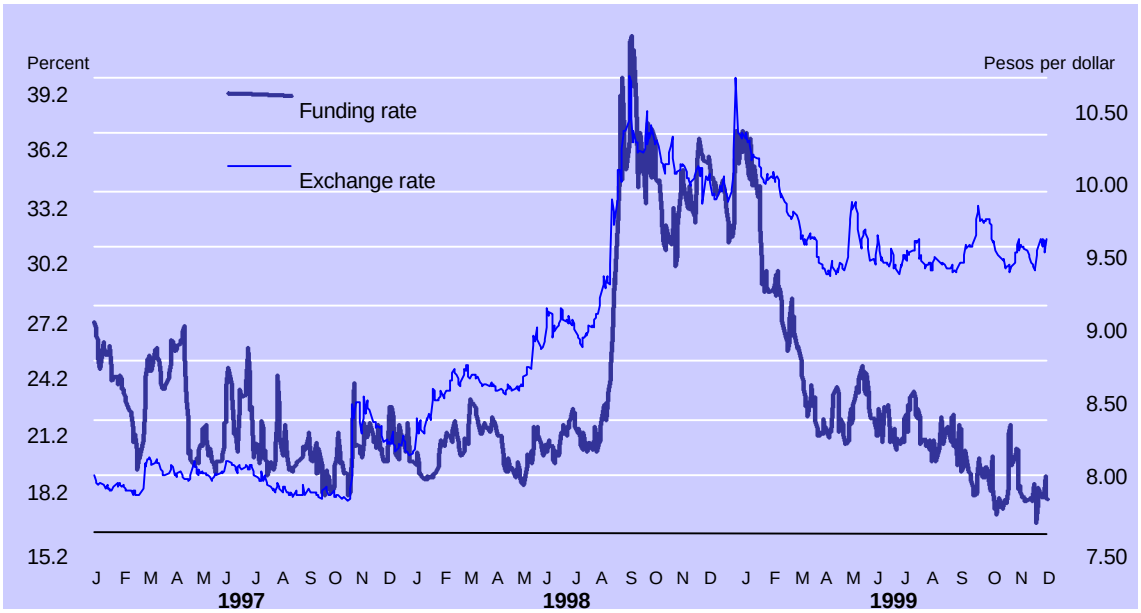
While the evolution of prices was favorably influenced by several events as of February 1999, and inflation rates recovered a path compatible with the target of 13 percent, private sector inflation expectations —implicit in all types of contracts— continued to converge very slowly towards the inflation target. It was therefore necessary to maintain a tight monetary stance. Moreover, since the effects of monetary policy actions on the inflation process manifest themselves with certain lag, the stance of monetary policy implemented in the second half of 1999 was also determined taking into consideration the effects it would have on inflation in the year 2000. Thus, the continuation of the restrictive monetary policy stance was also supported by the fact that private sector inflation expectations for 2000 were over the 10 percent inflation target for the year.

Prevailing monetary conditions are not determined by central bank policy alone. Rather, they are brought about by the

interaction of monetary policy and the decisions of financial market participants. Thus, a tight monetary policy in 1999 was no obstacle for nominal interest rates to decline steadily throughout the year. In fact, interest rates are currently below the levels reported for March 1998, before Banco de México adopted the restrictive monetary policy stance. Nonetheless, restrictive monetary policy measures implemented throughout the year did help in lowering inflation expectations, which in turn had a direct effect on nominal interest rates. In addition, the coordination of monetary and fiscal policies resulted in improvements in Mexico's country risk indicators, which also worked to further bring down interest rates.

As the negative external influences prevalent in the second half of 1998 dissipated, the exchange rate appreciated in the early months of 1999 and remained stable throughout the remainder of the year. This combined with a sizeable increase in Mexican exports that resulted from the recovery of oil prices and the sustained growth of the U.S. economy. Therefore, the appreciation of the exchange rate has been accompanied by a reduction in the trade deficit, which indicates the soundness of the country's foreign accounts.

Graph 11 **Exchange Rate and Funding Rate**

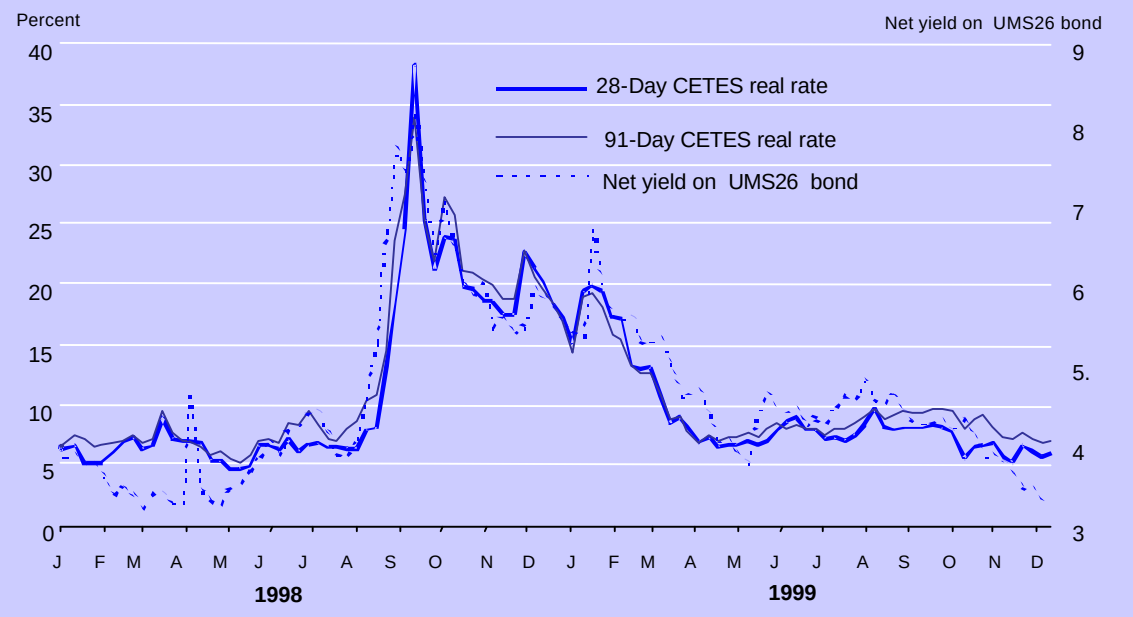


Being completely market determined, peso interest rates have gone down along with the decline in expectations of future inflation, observed inflation rates and the level of country risk. It can not be overemphasized that the decline in interest rates has been the

result of the aforementioned factors and not of a lax monetary policy. Had monetary policy been relaxed, its immediate outcome would have been a depreciation of the exchange rate, and evidently this has not been the case. Graph 11 clearly depicts that during 1999 the decline in interest rates was accompanied first by an appreciation and then by the stability of the exchange rate. This graph also shows that the decline in peso real interest rates was closely linked to a reduction of country risk (as measured by yields of UMS 26 bonds), which in turn reveals that investors feel the Mexican economy is less vulnerable.

Graph 12 **28 and 91-day Real Interest Rates and Net Yields on UMS 26 Bonds***

(Percentages)



Source: Banco de México
* The net yield on UMS 26 bonds equals the spread over U.S. government bonds of similar maturity.

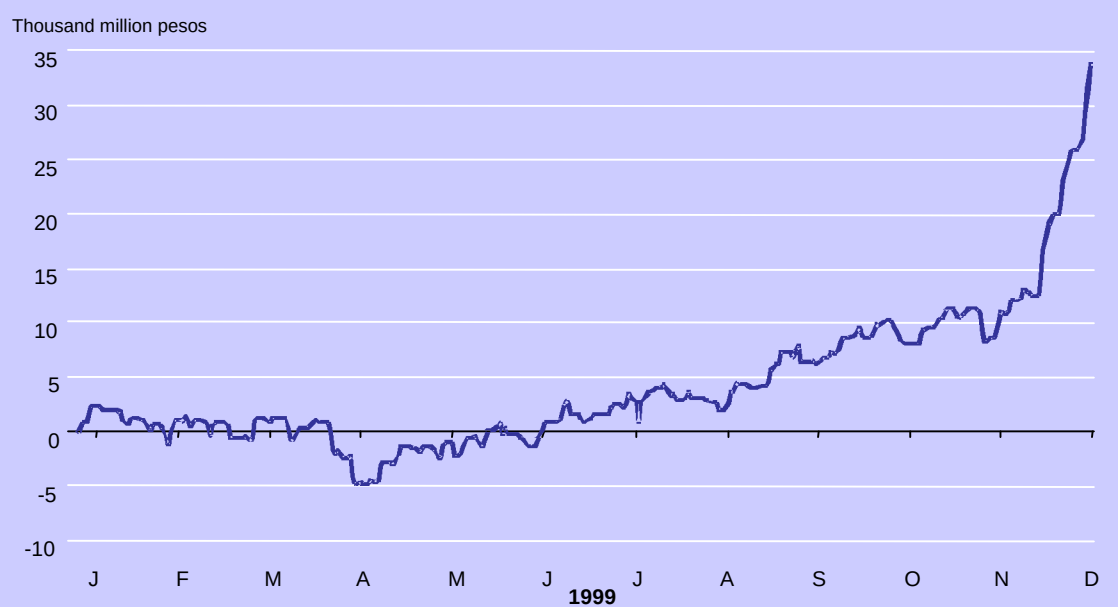
As stated earlier, favorable external factors had a positive effect on the foreign exchange market in 1999. The appreciation and stability of the exchange rate, combined with a restrictive monetary policy, had their initial effects on the prices of tradables. Subsequently, inflation expectations went down and increases in the price index for non-tradables also showed a downward trend in the second half of 1999. Finally, during the last months of the year, it was also possible to see a slight drop in contractual wage increments. This sequence of events shows that, with a floating exchange rate regime, the persistent implementation of restrictive monetary policy affects the evolution of different prices with different lags. Thus, it is only after a prolonged period of disinflation that changes in prices

become more homogeneous and distortions in the structure of relative prices are no longer produced as a result of such changes.

III.2. Evolution of the Monetary Base

Another phenomenon which has attracted the attention of financial analysts in recent months has been the growth of the monetary base. Starting in June 1999, the path of the monetary base was higher than that projected at the beginning of the year. In time, the difference between the forecasted and observed data became progressively larger, until a deviation of 33,829 million pesos (equivalent to 21.8 percent) was reached on December 31st.

Graph 13 **Gap between the Observed Daily Stock of the Monetary Base and its Forecast**



This unanticipated growth of primary money was a demand phenomenon. In order to better understand it, one must analyze the evolution of the monetary base from both the demand side (uses of money) as well as from the supply side (sources).

On the demand side, this aggregate is made up of currency in circulation and the funds that the banking system maintains on deposit in the Central Bank. Since the banking system currently operates under a zero-average reserve requirement, banks have neither the incentive nor the obligation to maintain positive balances

in the current accounts they have at Banco de México. Therefore, had the Central Bank arbitrarily expanded the monetary base, and this expansion had not been accompanied by a greater demand for currency, the consolidated balance of bank deposits in the Central Bank would have continuously been positive. Certainly, such a situation would have reflected an excess supply of money within the economy. However, as can be seen in the last column of Table 4, this was not the case in 1999.

Table 4 **Supply and Demand of Base Money**

Stocks in millions of pesos

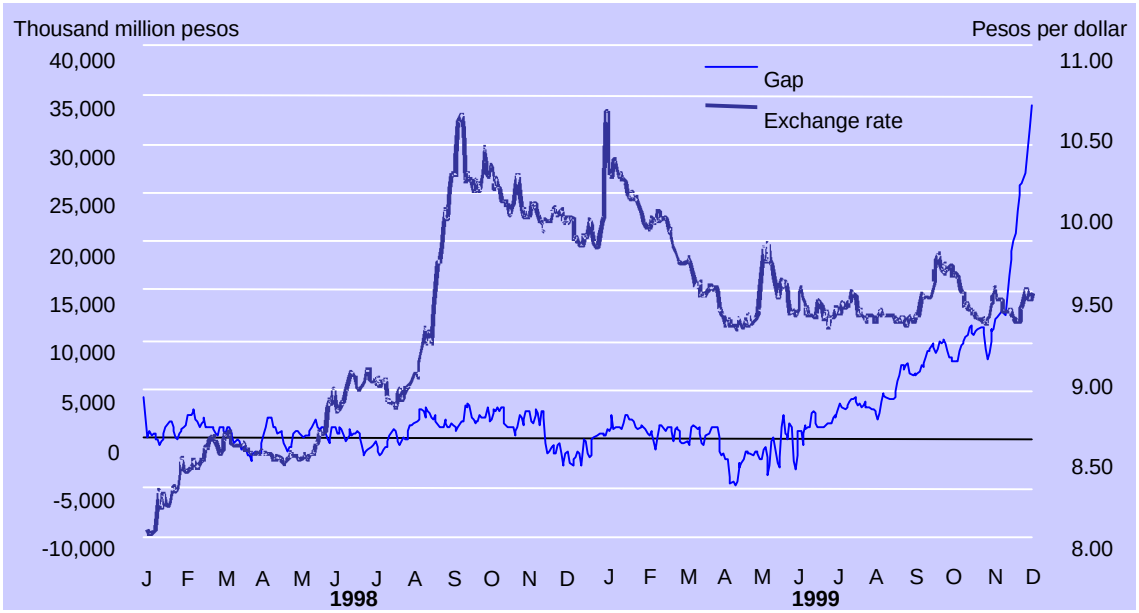
	Components of the Supply of Monetary Base		Monetary Base	Components of the Demand for Monetary Base	
	Net Domestic Credit (1)	Net International Assets (2)	(1)+(2)= (3) = (4)+(5)	Currency in Circulation (4)	Bank Deposits (5)
1998					
December	-100,836	232,364	131,528	131,109	419
1999					
January	-116,387	237,985	121,598	121,598	0
February	-118,552	237,333	118,781	118,703	78
March	-102,727	227,372	124,645	124,616	29
April	-106,382	224,636	118,254	118,254	0
May	-120,339	242,527	122,188	122,188	0
June	-118,250	240,214	121,964	121,794	170
July	-112,963	240,241	127,278	127,278	0
August	-124,709	250,234	125,525	125,463	62
September	-121,219	248,653	127,434	127,434	0
October	-121,162	255,204	134,042	133,979	63
November	-115,201	255,489	140,288	140,288	0
December	-71,350	260,068	188,718	188,718	0

The Central Bank can generate an excess supply of currency only by establishing a positive accumulated balances objective, that is by implementing a "long" position. On the contrary, throughout 1999 Banco de México maintained a negative objective for the accumulated current account balances of the banking system. In other words, at no time did the Central Bank inject more liquidity than what was absolutely necessary to satisfy the demand for currency. Furthermore, by having maintained a 160 million peso "short" throughout the year, Banco de México forced the banking system to generate an overdraft in the accounts kept by credit institutions in the Central Bank. This part of the demand for money was nevertheless satisfied at interest rates well above market rates.

Had an excess money supply been deliberately generated in 1999, there would have been a reaction in financial markets. In particular, economic agents would have tried to rid themselves of excess money by acquiring assets denominated in foreign currency. The result would have been a depreciation of the exchange rate. As can be seen in Graph 14, the growing gap between the observed

monetary base and its anticipated path can hardly be associated with depreciations of the exchange rate.

Graph 14 **Monetary Base Gap and the Exchange Rate**



Inasmuch as the gap between the monetary base and its forecast was not caused by an expansionary monetary policy, the analysis should focus on two questions. First, which were the factors that prompted the observed increase in the demand for money? Second, could any of these factors suggest that the monetary authority might have accommodated a demand for money compatible with an inflation higher than desired? Only if the latter scenario had indeed been materialized the Central Bank should have applied an even tighter monetary policy, in accordance with the Monetary Program for 1999 which specified the following:

As in years past, the path of the monetary base in 1999 will serve primarily as a point of reference in the event that significant deviations arise between the observed and projected behavior. Banco de México will evaluate these deviations and will restrict monetary policy only if they are caused by additional inflationary pressures.

The following factors can be identified as the source of the unanticipated increase in the demand for money during the second half of 1999:

(a) The growth of the economy, of employment and of real wages was higher than that foreseen at the time the original forecast for the demand for base money was made. Particularly noteworthy is the difference between the estimated real economic growth rate of 3.7 percent and the original assumption of 3 percent.

(b) A more favorable than expected economic outlook caused interest rates to be lower than originally anticipated. This reduced the opportunity costs of maintaining positive real money balances and thus increased the demand thereof.

(c) Banks' and commercial establishments' cash management practices changed as Banco de México promoted the use of 500 peso notes, resulting in a larger demand for currency.

(d) There was a shift in the public's preference for the various means of payment, in favor of currency and against checks. This was partly caused by the lower yields paid by checking accounts in recent months.

(e) As is usual in election years, expenditures related to political campaigns are generally associated with bank deposits being converted into currency as political parties require cash to pay many of their expenses. This process began early, as various parties initiated their political campaigns and presidential primaries in 1999 instead of 2000.

(f) In the last weeks of the year, the demand for currency rose because of the public's uncertainty regarding banks' ability to deal with the Y2K problem. The 1999 Monetary Program[4] foresaw this contingency. Moreover, it was explained in said document that there was insufficient data for calculating the effect of the Y2K factor on the demand for monetary base. The extraordinary decline in the stock of currency in circulation which has taken place in the first two weeks of 2000 confirms the appropriateness of this assessment[5].

(g) Banco de México underestimated the remonetization process currently underway in the Mexican economy.

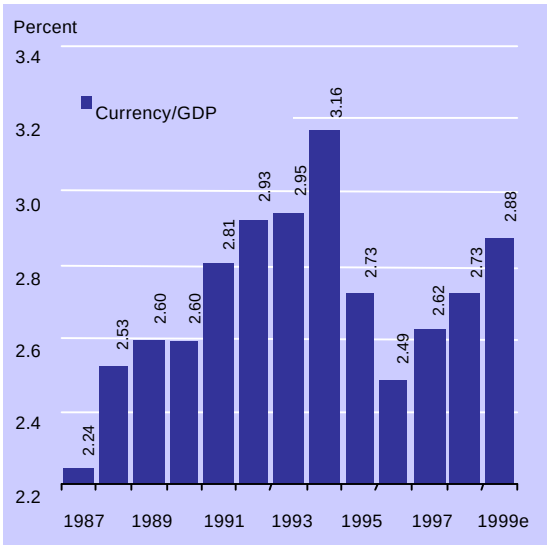
[4] Monetary Policy Program for 1999, January 1999, page 44 (in the Spanish, unabridged version).

[5] The evolution of the monetary base in the first weeks of 2000 is presented in detail in the appendix of this document.

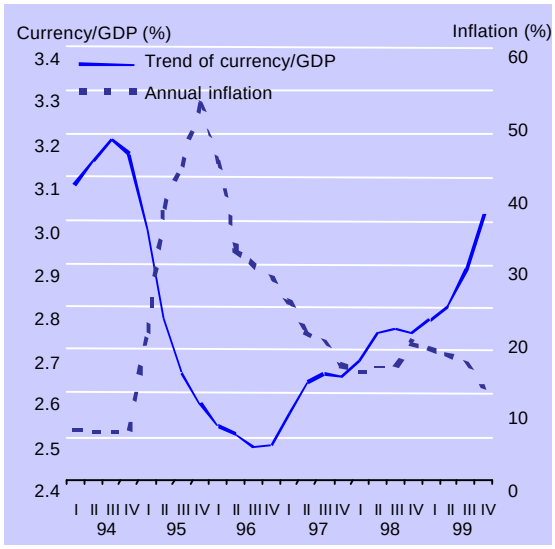
Going further into this last point, the remonetization observed during 1999 resulted from two phenomena. First, the remonetization process that began in 1997 regained momentum once inflation had recovered its downward trend. As can be seen in Graph 15a, the ratio of currency in circulation to GDP in 1998 and 1999 was lower than in 1991 and 1992, when similar levels of inflation had been reported. Graph 15b depicts the relationship between the annual inflation rate and the coefficient of currency in circulation to GDP for the period 1994 to 1999, and it shows that the remonetization process begins only when the decline in inflation has been clearly established. This graph also illustrates that demonetization processes move significantly faster than those of remonetization. Therefore, inasmuch as disinflation is consolidated the aforementioned coefficient should continue to grow.

Graph 15 **Currency in Circulation as a Percentage of GDP and Inflation ***

15a) Currency in circulation as a percentage of GDP



15b) Currency in circulation as a percentage of GDP and inflation



*The stocks of currency in circulation presented in Graph 15a are annual averages.
Source: Banco de México.

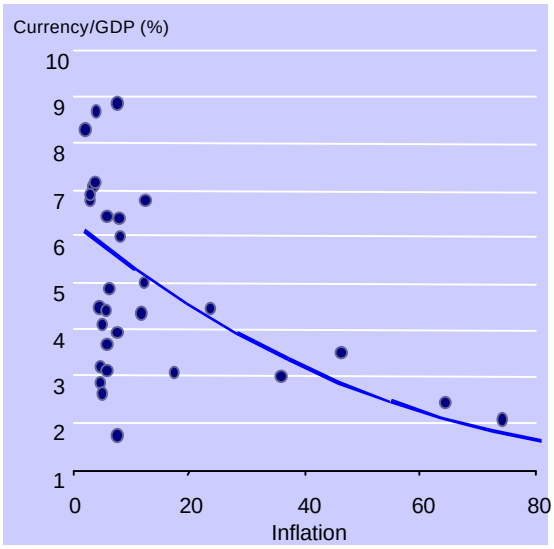
Second, a large drop in the real stock of currency in circulation had taken place in the second half of 1998 as a result of the effects of the international financial crisis on two major financial variables: interest rates and the exchange rate. Consequently, once stability had returned to these markets, the demand for money started to move back to normal levels.

The two factors just mentioned were very difficult to predict and were underestimated at the time the 1999 forecast for the monetary base was made.

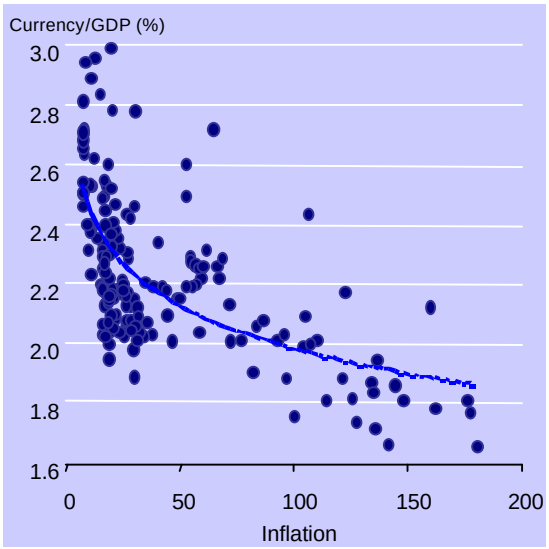
International and domestic experience supports the above remonetization argument. Graph 16a shows the negative relationship that exists between the ratio of currency to GDP and the inflation rate for a sample of 35 countries. Graph 16b shows the same relationship for Mexico. In both of these graphs it is possible to see that remonetization processes intensify when low inflation levels are reached, and that the relationship between the degree of monetization of a given economy and its inflation rate is subject to a great degree of uncertainty.

Graph 16 **Currency in Circulation as a Percentage of GDP and Inflation**

16a) International Experience *



16b) Mexico**



* Sample of 35 countries for the period 1980-1998; annual data.
** Monthly data for the period 1985-1999.

In light of these factors, the observed increase in the demand for base money can be attributed to real phenomena, which are non-inflationary by nature. It should be noted as well that the evolution of inflation in 1999 was consistent with the 13 percent annual target. Therefore, the demand for currency was not determined by a higher-than-expected inflation rate.

Nevertheless, it remains to be established if the growth in the demand of currency might be an indication of an accelerated expansion of aggregate demand, which could in turn make it difficult

to further bring down inflation in the future and might result in a deterioration of the country's external accounts.

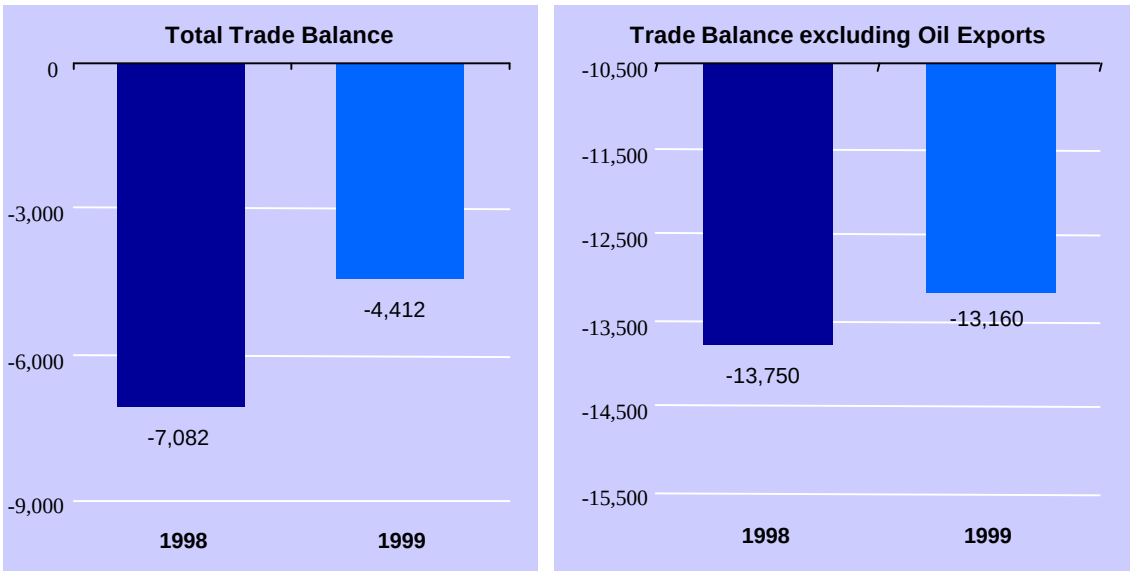
Given the degree of trade liberalization in the Mexican economy, it is certain that an excess aggregate demand would first of all be reflected in an increase in the trade deficit. However, an analysis of the evolution of this deficit in 1999 shows that during the first eleven months of the year there was a 38 percent decline as compared to the same period of 1998. Moreover, as shown in Graph 17, even when the positive effect of higher oil prices is eliminated, the remaining items of the trade deficit cannot be said to have increased between 1998 and 1999. In fact, the trade deficit between January and November 1999 declined. Although important increases in the trade deficit were reported for the fourth quarter of 1999, these were associated with a current account deficit that can be easily financed. In sum, in the external account front no aggregate demand pressures could be detected which would be incompatible with the disinflation objective.

Private consumption was a component of aggregate demand whose significance rose in 1999. Its annual growth rate was 4.2 percent in the third quarter of the year, an increase higher than those reported for the three previous quarters. Still, said growth rate was below that registered for GDP, making it reasonable to expect that private saving would have increased as a proportion of GDP. It is therefore unlikely that the increase in private consumption would pressure aggregate demand to the point that the inflation target could be at jeopardy.

Another important item of domestic demand that reported ups and downs in 1999, and in fact lost momentum in September, was Gross Fixed Investment. The September figure for this item's annual growth rate was 2.2 percent, which negatively compares to the 3.9, 5.9, and 5.4 percent posted in the first and second quarters and in the months of July-August, 1999, respectively. It is estimated that for 1999 as a whole, the average growth rate of this component was around 5.5 percent, a rate that does not indicate excessive pressure on aggregate demand either.

Graph 17 **Trade Balance 1998-1999***

Millions of dollars



*January to November of each year

Although bank credit to consumers and businesses declined at a slower pace than in previous years, it is still posting negative real growth rates. It is therefore hard to argue that bank credit could be contributing to pressures on aggregate demand.

The aggregate demand component showing the strongest growth in 1999 was exports of goods and services. Its momentum can be explained primarily by the strong economic performance of the U.S. and by the expansion of the Mexican export sector. The value of merchandise exports grew significantly from its 1998 levels. Not only was there an increase in the value of oil exports, but also in the value of non-oil sales abroad, which are estimated to have grown 15.2 percent between January and November 1999. Given the very significant investments undertaken in the non-oil export sector, and the utilization of imported inputs for export production, this expansion has not faced important supply restrictions.

Finally, although historically low rates of unemployment have been registered, under-employment in Mexico is still high. This means that the recent economic expansion has also been supported by the members of the country's workforce who have left low-productivity jobs in the informal sector and gained access to formal jobs with higher wages and productivity.

Based on all the above, available evidence indicates that the gap between the observed monetary base and its originally estimated trajectory was not the result of circumstances that would have implied inflationary pressures incompatible with the established inflation target. Nonetheless, given the atypical growth of this variable in 1999, as well as the difficulty in predicting the magnitude and velocity of the remonetization process within a context of lower inflation and increased levels of confidence, the monetary base will continue to be monitored. The monetary authority will be attentive to any differences between the monetary base's projected and observed paths, and will react swiftly should there be any indication that these differences may result from inflationary pressures inconsistent with the disinflation target.

Compliance with the 1999 Monetary Program may also be assessed in light of the growth of net international assets and net domestic credit. These are discussed in the following section.

III.3. Net International Assets and Net Domestic Credit

Between December 31, 1998, and year-end 1999, net international assets increased by 3.9 billion dollars. This increase should be compared with the target established in the Monetary Program, which was to at least maintain net international assets at their year-end 1998 level

The accumulation of net international assets was the result of the following:

(a) net revenue of 7.421 billion dollars from Pemex operations;

(b) net revenue of 1.820 billion dollars from operations with credit institutions, stemming from purchases of foreign currency by means of options (2.225 billion) minus sales of foreign exchange through the automatic auction mechanism (405 million);

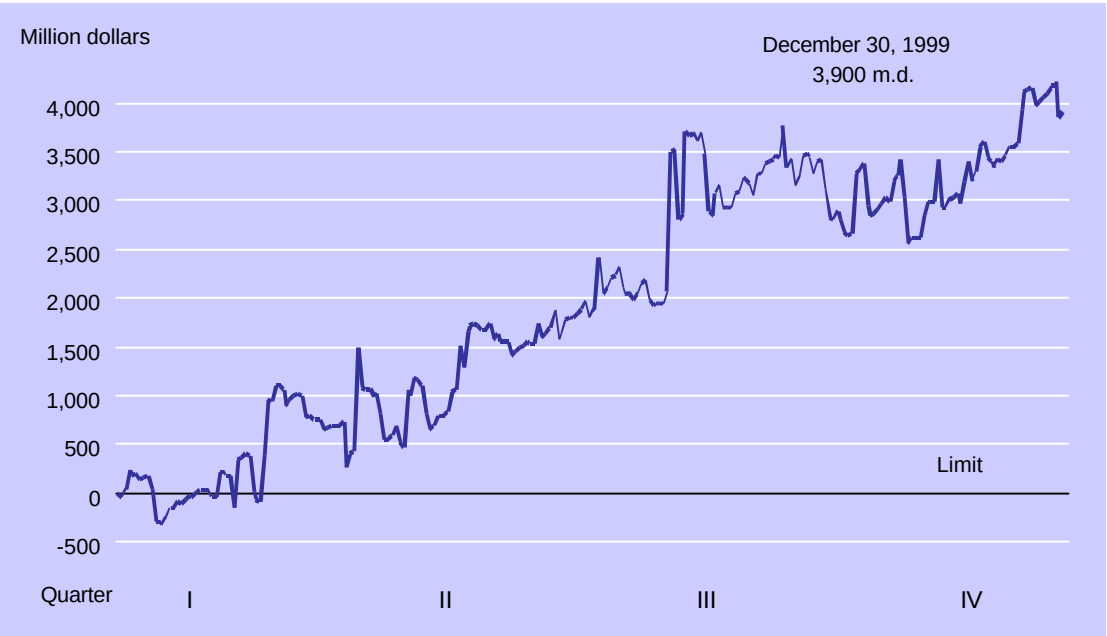
(c) net revenue of 50 million dollars from deposits made by official development funds;

(d) net sales of foreign exchange amounting to 6.415 billion dollars in sales to the Federal Government; and

(e) a positive net balance of 1.024 billion dollars from other operations, including the yields obtained on net international assets.

Graph 18 **Net International Assets in 1999**

Accumulated flows*



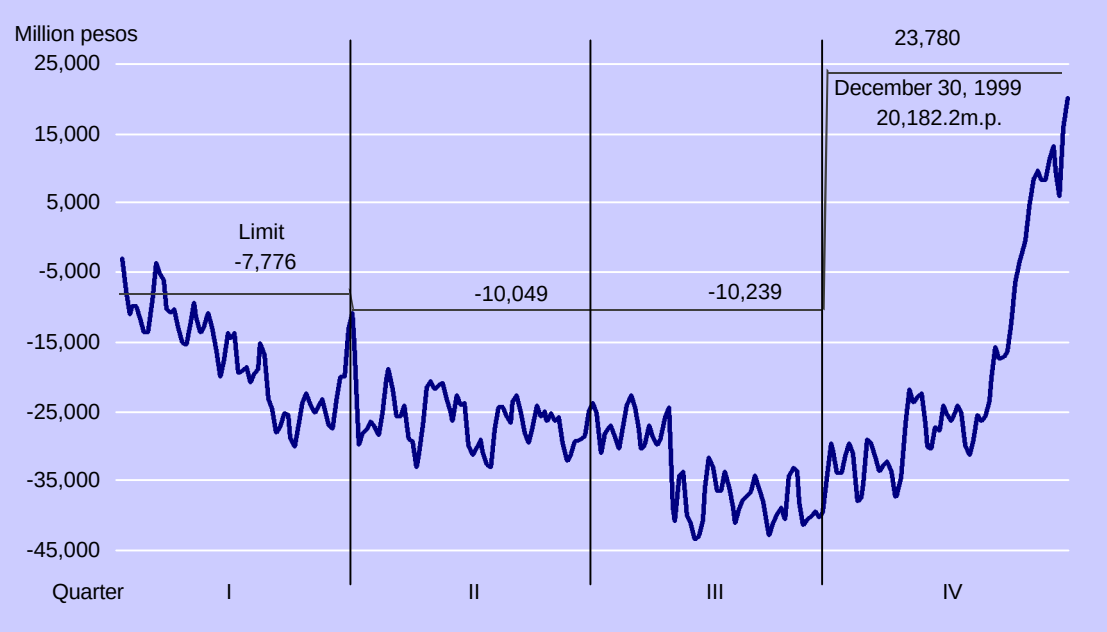
*The accumulation of monthly flows starts at the beginning of the year.
Source: Banco de México.

Net domestic credit is defined as the difference between the stock of the monetary base and the stock of net international assets. Changes in this variable respond, therefore, to the evolution of both components.

Given that the accumulation of international reserves was higher than anticipated, said accumulation more than offset the unanticipated increase in the demand for monetary base. Consequently, the limits established for variations in net domestic credit were observed at the close of every quarter of 1999.

Graph 19 **Net Domestic Credit in 1999**

Accumulated Flows*



*The accumulation of monthly flows starts at the beginning of the year.
Source: Banco de México.

IV. Monetary Program for Year 2000

IV.1 Outlook for Year 2000

Given the vigor of the Mexican economy in the second half of 1999, as well as the relatively favorable international outlook, it is expected that the economy will continue the expansion begun in 1996. These factors, together with prudent fiscal and monetary measures, make it reasonable to expect a 4.5 percent real GDP growth in the year 2000, a further reduction in inflation and a continuation of the growth observed in job creation since December 1995. As for the current account, a deficit of approximately 3.1 percent of GDP is anticipated —a level consistent with the likely availability of long-term foreign resources, primarily foreign direct investment.

IV.1.1. The External Environment

In 1999, international conditions were considerably more favorable for the Mexican economy than those experienced in the second half of 1998. During the past year, fears of a global recession subsided and most of the world's emerging economies affected by recent crises began to post positive growth rates in the second semester.

In addition, strong oil prices and stable raw material prices have had a positive impact on the Mexican economy and other emerging markets. Furthermore, world economic growth, particularly that of the U.S., has been higher than expected.

While the convergence of all of the aforementioned elements points to a reasonably favorable outlook for year 2000, some degree of uncertainty still remains with regard to future international conditions. The sections below will therefore go over the following points: the current outlook for the main external variables that may affect the Mexican economy; the most important risk factors impinging on said outlook; and some domestic developments of a contingent nature that could have some bearing on the Mexican economy during the year 2000.

Although there are indications in the world oil market that the price of Mexican crude may decline in 2000, it is still possible to expect an average price close to the one provided for in the federal budget for the year. It is also likely that the exported volumes will remain constant.

Table 5 **The World Economy: Selected Indicators**

	1998	1999 e	2000 f
World economic			
growth (%)	**2.5**	**3.0**	**3.5**
Main industrialized countries	**2.2**	**2.6**	**2.4**
United States	3.9	3.7	2.6
Japan	-2.8	1.0	1.5
Germany	2.3	1.4	2.5
France	3.2	2.5	3.0
United Kingdom	2.2	1.1	2.4
Canada	3.1	3.6	2.6
Developing countries	**3.2**	**3.5**	**4.8**
Asia	3.7	5.3	5.4
Middle East and Europe	3.2	1.8	3.1
Latin America and the Caribbean	2.2	0.1	3.9
Growth of world			
Trade (%)	**3.6**	**3.7**	**6.2**
Imports by industrialized countries	**4.8**	**5.9**	**5.9**

e Estimated
f Forecasted
Source: "World Economic Outlook", IMF, October 1999

As for global economic activity in year 2000, a significantly stronger growth rate is expected, led primarily by the recovery of developing economies. In the case of industrialized nations, the anticipated slowdown in the U.S. and Canada will probably be offset by higher growth in Japan and Europe. Such a scenario could bring about a modest increase in the prices of non-oil raw materials, which would have a positive, albeit marginal, impact on Mexican exports.

U.S. growth rates for 1999 exceeded all expectations. Should this cycle of expansion continue during 2000, it would be the longest in the economic history of that country. While the growth recently registered in the economy of Mexico's main trading partner reflects an important increase in investment as well as large productivity gains, most analysts agree that said economy will probably slow down. Specifically, the expectation is that there will be a mild correction sometime in 2000, adjusting the growth rate to between 2.6 and 3.1 percent by the end of the year. One implication for the Mexican economy in this case would be that exports would expand at a slower pace.

In the financial realm, one factor likely to contribute to Mexican economic growth during the year 2000 is a presumed increase in net private capital flows towards Latin America, although these flows might continue to be relatively limited especially in terms of portfolio investment. Still, such a phenomenon would mean improved terms for Mexican placements of external debt instruments for both the private and public sectors.

Table 6 **Net Private Capital Flows to Emerging Economies [1]**

Billions of dollars

Net private capital flows	1997	1998	1999 f	2000 f
Total	148.8	66.2	68.3	118.5
Developing countries	125.8	53.0	46.7	88.8
Africa	19.4	13.2	11.7	18.3
Asia [2]	3.3	-44.3	-6.6	-3.3
Middle East and Europe [3]	17.0	10.3	17.4	11.1
Latin America	86.1	73.8	47.2	62.7
Transitional economies	23.1	13.2	21.6	29.7

1 Net capital flows are made up of net direct investment, net portfolio investment and other short-term investments, including official and private loans.
2 Includes Korea, the Philippines, Malaysia, Singapore, Thailand and Taiwan. Data unavailable for Hong Kong.
3 Includes Israel.
f Forecasted
Source: "World Economic Outlook," IMF, October 1999.

Larger flows of foreign investment into Mexico, especially direct investment, and high levels of domestic saving will sustain stronger private investment, private consumption and GDP growth rates, which are expected to expand at the respective rates of 8, 4.1 and 4.5 percent in the year 2000.

IV.1.2. Major Elements of Uncertainty

Although external conditions should favor the growth of the Mexican economy, domestic prospects are still subject to a degree of uncertainty, particularly regarding the future evolution of the U.S. economy.

In this respect, one factor that might have a negative impact on capital flowing into the Mexican economy would be the tightening of monetary policy on a global level. In the U.S., the combination of high economic growth, low unemployment and higher oil prices in 1999 has set the stage for an upturn in inflation. The European Central Bank had to increase its reference rate by 50 basis points in November 1999, when oil price movements combined with the onset

of the economic cycle's expansive phase for most of the EU member countries. Since such trends are expected to continue during 2000, most analysts anticipate a gradual increase in interest rates worldwide.

The probability that the U.S. long-term economic growth rate could pull off a "soft landing" is difficult to assess. Three are the main reasons for this. First, should any unexpected inflationary pressure arise, the Federal Reserve Board could be forced to drastically tighten its monetary policy stance. Logically, such a move would disrupt both economic activity and international financial markets. Second, if international investors were to become wary of the growing U.S. foreign debt, the country might find it hard to finance its growing current account deficit. At worst, the dollar could devalue, leading to unanticipated inflationary pressures and thus higher interest rates. Third, should a slump in U.S. stock market prices arise, perhaps in response to investor concern regarding future profits, the growth of aggregate demand might also falter. The result in this case would be a lower economic growth rate as compared to the current estimate for the U.S. in the year 2000.

Should any of the above scenarios materialize, Mexican exports to the U.S. would slow down, bringing down the domestic economic growth. Furthermore, the government's and the private sector's access to international capital markets might also deteriorate.

The fragile financial and economic situation existing in other emerging markets also poses a risk for Mexico. Should a crisis arise in one of these markets during the year 2000, the spillover could once again contaminate the Mexican market, as has occurred before.

The lingering volatility of international oil markets suggests that any estimate of their future evolution is uncertain. Therefore, another source of external risk would be a considerable drop in oil prices. While the seemingly good health of the world economy makes such a scenario remotely possible, should the U.S. economic growth slow down more than predicted, the price of oil would definitely be affected.

On the domestic front, the major source of uncertainty for the Mexican economy seems to lie in the political arena. The eventuality that conflict or destabilizing events could arise, such as those experienced before the last presidential election, or any serious dispute over the coming election results, might cast doubts regarding

the strength of democratic reforms to date. Less confidence in the political structures could inhibit consensus among political agents, spreading uncertainty about the domestic economic outlook, thus affecting growth and financial market stability. Such a situation would certainly make the fight against inflation more difficult.

IV.1.3. Elements of Strength in the Domestic Economy

When confronted with uncertain external conditions and potential sources of domestic risk, economic policies must remain flexible and be implemented in a coordinated fashion. Over the past five years, Mexico has maintained fiscal discipline. Once again, by establishing the objective of a fiscal deficit of only one percent of GDP for the year 2000, fiscal policy will support both internal saving and private investment while precluding the onset of future imbalances in the country's foreign accounts. The current account deficit is at a sustainable level and is being financed primarily with long-term resources.

It should also be recognized that Mexico's external debt payment schedule has been favorably restructured, and that additional elements exist to support the country's external accounts, such as the 1999-2000 Financial Strengthening Program and a high level of foreign reserves. These factors practically ensure that the country will have no difficulty in meeting all of its external debt obligations for the period 2000-2001.

As for the financial system, it is gradually becoming more solvent and great strides have been made in terms of bank regulation and supervision. Particularly important are the new capitalization and portfolio rating rules issued in September 1999.

The floating exchange rate regime has also played a fundamental role in making the Mexican economy less vulnerable to domestic and external shocks. This regime inhibits speculation against the peso and helps prevent the accumulation of imbalances in the balance of payments.

A monetary policy committed to fighting inflation enhances economic growth, promotes employment, leads to a recovery in real wages and combats economic inequality. Therefore, the sustainable reduction in inflation —with the medium-term objective of price stability— is a crucial ingredient for a solid macroeconomic environment.

These elements have allowed financial analysts to increasingly differentiate the Mexican economy from others in Latin America, even in moments of high volatility in financial markets. Consequently, the country risk factor for Mexico has gone down steadily, as can be attested by the yields on its debt instruments, particularly as compared to those issued by other countries in the region. Under the current circumstances, economic analysts expect that the growth of the Mexican economy will once again be among the highest in Latin America during the year 2000. The country is also well braced to ward off domestic or external shocks that might foster financial or exchange rate instability during the period leading to the change in government administration.

Table 7 **Prospects for the Leading Economic Indicators in Selected Latin American Economies**

	2000			
	Real GDP Growth (%)	Consumer Price Inflation (%)	Fiscal Deficit (% GDP)	Current Account (% GDP)
Mexico (CGPE)	4.50	10.00	-1.00	-3.10
Mexico (market)	4.38	10.77	-1.14	-3.36
Argentina	2.97	0.40	-1.76	-4.58
Brazil	3.00	6.90	-4.28	-3.90
Chile	5.27	3.78	-0.52	-3.26
Colombia	2.50	9.75	-3.86	-2.72
Ecuador	0.60	47.50	-3.33	-1.05
Peru	3.62	4.87	-1.46	-4.46
Venezuela	2.17	23.25	-3.32	1.68

Source: *Criterios Generales de Política Económica* (CGPE) Mexican Finance Ministry, and averages from J.P. Morgan, Goldman Sachs, Morgan Stanley, Deutsche Bank, Credit Suisse and Salomon Smith & Barney.

IV.2. Objective of the Program

According to the legal mandate established for Banco de México, the primary objective of monetary policy is to seek stability in the general price level. Even though inflation came in under the target rate for 1999, the expected rate of price growth in Mexico is still one of the highest in Latin America (see Table 3).

Since monetary policy actions affect inflation with a lag, and inflation is still high in Mexico, the disinflation strategy should go beyond the short-term and put forward a program that leads to price stability in the medium-term. Consistent with this view, in January 1999 the Board of Governors proposed to bring inflation into line with that of Mexico's main trading partners toward the end of 2003 as the medium-term goal for Banco de México's price stabilization

efforts. Thus, in order to establish a short-term reference within the trajectory toward price stability, in September 1999 Banco de México and the federal government agreed to set the inflation target for the year 2000 at a rate not to exceed 10 percent.

As for the implementation of the disinflation strategy, a tight monetary policy is a requisite for a successful fight against inflation, although it is usually insufficient by itself to attain the desired objective within socially acceptable costs. The attainment of the disinflation goal could be thwarted by other factors such as unforeseen increases in the prices of public goods and services, salary increments above those resulting from the combined effect of productivity gains and the inflation target, or a fiscal policy inconsistent with price stabilization. Therefore, in order to keep the social cost of lowering inflation as small as possible, monetary policy must concur with other economic policies, especially the ones mentioned above.

It is worth stressing that no effort in favor of price stabilization may succeed in the absence of a sound fiscal stance. In Mexico's case, responsible fiscal policy has indeed been crucial for the country's macroeconomic progress. It has prevented refinancing problems, increased private saving and investment, and kept the possibility of external account imbalances down to a minimum. Sound management of the country's public finances has been fundamental for establishing the economic conditions essential to adequately implement a monetary policy geared toward price stabilization.

Mexico's fiscal revenues, however, are still highly dependent on fluctuations of oil prices. In the past, for example in 1998, the prices of many public goods and services had to be increased to partially make up for the drop in revenues from oil exports. Although these increases caused short-term hikes in the general price level, these measures had to be taken to prevent fiscal imbalances, which would have otherwise translated into even higher inflation.

The federal finances' dependence on oil revenues is one of the most serious deficiencies faced by the Mexican fiscal structure. Therefore, a fiscal reform is required to reduce the fiscal accounts' vulnerability to fluctuations in oil prices.

A fiscal reform of this type could prolong the period necessary to reach the medium-term inflation goal. Such a reform

would most probably mean that the loss in fiscal revenues from oil exports would have to be compensated for by increasing revenues from other taxed goods and services. As the prices of the latter would rise along with the applicable taxes, the disinflation process would be delayed. Nonetheless, in much the same way as in the 1998 increases in the prices of public goods and services, this reform would in the end contribute to long-term price stability by strengthening public finances.

External shocks, such as a decline in the terms of trade or a drastic retrenchment of capital inflows, induce a depreciation of the real equilibrium exchange rate. This means that tradable goods would become more expensive in order to bring about the necessary correction of the balance of payments' current account. A depreciation of the real exchange rate can take place by any number of combinations of nominal depreciation and inflation. The best way to minimize the adverse effects for the economy as a whole is to have the lowest possible nominal depreciation and inflation rates. Banco de México's actions toward this end have focused on using restrictive monetary policy. Measures of this type have not been intended to maintain a specific exchange rate. Rather, their purpose has been to lessen the direct impact of external shocks while avoiding the secondary effects that occur when inflation expectations worsen and the dynamics of the disinflation process are disrupted.

While the aforementioned shocks would make inflation go off target in the short- term, the monetary authorities would respond by tightening its monetary policy stance to maintain the medium-term price stability objective. The medium-term goal will serve as a benchmark, so that once the shocks triggering temporary deviations in inflation have subsided, disinflation efforts can get back in track. The confirmation of the long-term goal and the timely reactions of the monetary authority will thus complement each other to keep inflation expectations from rising. In short, if unexpected or uncontrollable shocks arise, they should have only a temporary effect on inflation and the announced disinflation path shall be resumed as soon as possible.

In order to support the process described above, the Board of Governors of Banco de México will continue to advocate the need for the Federal Government's economic programs to be consistent with bringing inflation down to the levels of the country's main trading partners by the year 2003. In keeping with this goal, the

inflation target for the year 2001 should be considerably lower than inflation observed in 2000.

If confronted with any phenomenon capable of creating unexpected inflationary pressures during the year 2000, the measures to be taken by the monetary authority shall minimize the impact on the year's inflation and refocus on attaining the medium-term goal. This would avoid the deterioration of inflation expectations. Thus, the medium-term inflation strategy would be consolidated and monetary policy would not become a source of uncertainty for economic agents.

IV.3. Considerations on the Implementation of Monetary Policy

In order to design a sound monetary program to fight inflation the sources of inflation must be well understood. When the central bank supplies a quantity of primary money greater than what is demanded by economic agents, an excess supply of money is generated, which quickly translates into inflation. However, Banco de México, like other autonomous central banks in the world, has explicitly cancelled the possibility of such an occurrence. To that end, the Central Bank has adopted a rule establishing that its daily operations must always ensure that the money supply will match the demand for monetary base. As in previous years, this rule is one of the basic elements of the monetary program for the year 2000.

Although this rule makes it impossible for Banco de México to generate inflation by creating an excess money supply, the Central Bank could possibly be accommodating a demand for money consistent with an inflation rate above the target. Such an occurrence could result from circumstances such as the following: i) external shocks that cause abrupt depreciations of the exchange rate; ii) unexpected increases in the prices of public goods and services; iii) wage increments incompatible with the inflation target and productivity gains; and iv) an excess aggregate demand. Any, or a combination of these phenomena could have direct and indirect impacts on the general price level.

It is the responsibility of Banco de México to assess whether or not these factors might at any given time be pushing inflation above target levels and respond to the situation in a timely manner. To make this evaluation, many central banks have kept

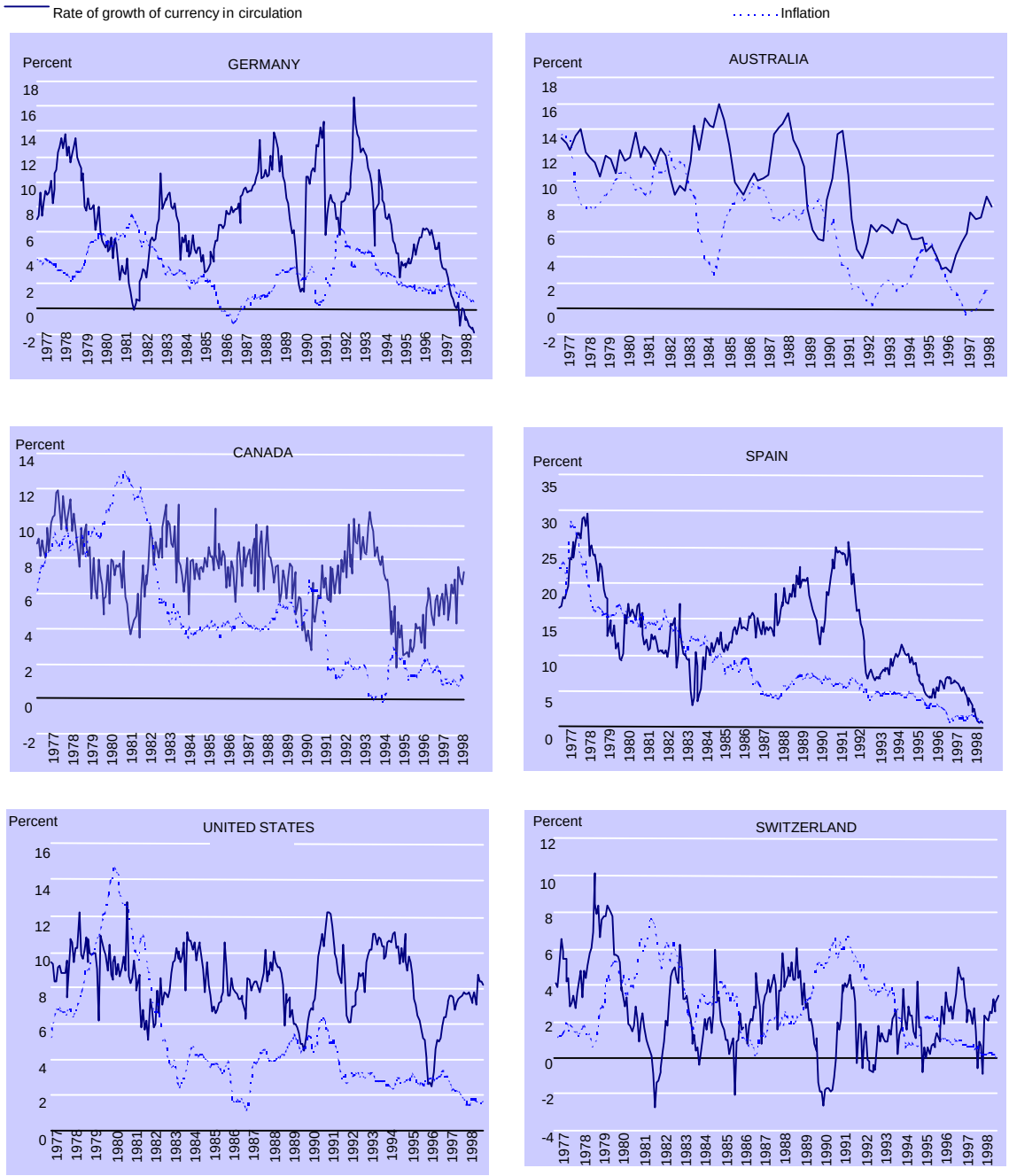
track of the monetary aggregates. The reason for doing so is simple: if the relationship between these aggregates and the general price level is sufficiently stable, an excessive growth of the monetary aggregates would be a good indicator of a rise in inflationary pressures. Once the latter are identified, the monetary authority would almost automatically take corrective action to bring the aggregates back to levels compatible with the inflation target.

Since the relationship between these aggregates and inflation has however proven unstable, the roll of the monetary aggregates in the analysis and evaluation of inflationary pressures has been reduced by most central banks, which no longer use them mechanically for conducting monetary policy. Empirical evidence in support of this developments is presented in Graph 20, where a comparison is made between the growth rates of the monetary base and the general price level for several developed countries. The Graph depicts that the aforementioned relationship has not been stable —particularly over the short-term. In fact, on several occasions, it has been detected that the monetary base rises considerably when inflation goes down.

Both Mexican and international experiences show that it is difficult to accurately predict inflation rates based on trends in only a few variables. During some periods and under certain circumstances, however, the behavior of the monetary aggregates has been relatively useful in signaling future inflation and as evidence of for central bank's commitment to price stability.

When inflation is high, there is usually a high correlation between the growth rates of prices and currency. Under these circumstances, increases in the monetary base are a seemingly good indicator of inflationary pressures. For this reason, as of 1995, the monetary programs of Banco de México have included estimates of the annual growth of the monetary base. Furthermore, since 1997 the Central Bank has published a forecast of the monetary base compatible with the inflation target for each corresponding year, as well as the assumptions used in developing said forecast.

Graph 20 **Growth Rates of Currency in Circulation* and Inflation: The International Experience****



*Data on currency in circulation correspond to category 14-A of the IMF's International Financial Statistics.
**Monthly figures, except for Australia, where quarterly figures are used.
Source: International Monetary Fund.

In practice, Banco de México makes a daily comparison between the observed monetary base and the path that it has

estimated to be compatible with the annual inflation target. This path is very difficult to forecast *a priori*, however, due the following reasons: i) the relationship between inflation and the monetary base changes over time; ii) the basic assumptions used to estimate the demand for primary money in any given year —namely GDP growth and interest rates— may not materialize; iii) the relationship between the demand for monetary base and the variables that explain its evolution may also change over time; and iv) the occurrence of phenomena that temporarily change the public's preference for cash. For all of these reasons, Banco de México must continually evaluate the gap that may arise between the monetary base forecast and the figures observed, along with additional indicators of the possible future course of inflation. Such indicators are: inflation expectations, wages, the exchange rate and the relationship between aggregate supply and demand.

When inflation goes down the relationship between currency and prices becomes more uncertain, giving rise to situations such as that observed in 1999. As has already been mentioned, throughout the last part of the year the monetary base growth rate accelerated while a significant drop in inflation took place. This shows that movements in the monetary base may provide ambiguous information on current and future inflationary trends. The path of the monetary base as an indicator of inflationary pressures has therefore become less reliable in recent times. The analysis of inflation must then be based on a careful study of a series of indicators.

In order to help financial market participants to better evaluate the actions of the monetary authority, the Board of Governors of Banco de México has decided to publish a quarterly report of inflation. This report will give details on the evolution of inflation and the factors explaining it, and will include an evaluation of how monetary policy was implemented during the period. This is also intended as a means to facilitate the transition of monetary policy towards a scheme of explicit inflation targeting.

IV.4. Elements of the Monetary Program

Three are the pillars of the monetary program for 2000. The first one, of an operative nature, is aimed at guaranteeing that, as a general rule, the Central Bank will not create excesses or shortages of primary money. The second element responds to the purpose of granting the monetary authority the necessary flexibility to react

swiftly to inflationary pressures inconsistent with the inflation target. The third element seeks to reinforce communication mechanisms vis-à-vis economic agents.

Regarding the first fundamental element of the monetary program for the year 2000, the Board of Governors has again established a basic operating rule to ensure that the Central Bank will abstain from creating either excesses or shortages in the money supply. Thus, Banco de México will continue to make daily adjustments to the supply of primary money so as to match the demand for it, providing resources at prevailing market rates. Any imbalance in liquidity resulting from miscalculations in the estimated daily path of the demand for monetary base will be corrected immediately through open market operations.

In technical terms, this criterion is equivalent to pursuing a zero target for the consolidated balance of the current accounts commercial banks have at the Central Bank. This rule also implies that Banco de México will sterilize the monetary impact resulting from, among other things, variations in its net international assets and from Federal Treasury operations with the Central Bank.

As mentioned previously, this rule does not guarantee the desired reduction of inflation. This is due to the fact that the Central Bank could be passively accommodating a demand for money consistent with an inflation rate above the target. Higher price growth could be related to the inflationary effects generated by any of four factors mentioned previously: external disturbances causing an excessive depreciation of the exchange rate; wage increments incompatible with the inflation target and gains in productivity; unforeseen increases in the prices of public goods and services; and an excess aggregate demand.

Any of the above inflationary pressures would lead to automatic increases in interest rates, which would tend to counteract the impact of these phenomena on prices. The resulting market adjustment could nevertheless be insufficient to bring inflation back in line with the target. In such a situation, Banco de México would restrict its monetary policy stance by implementing a "short" or increasing its level; in other words, by establishing or increasing its negative target for the consolidated balance of commercial banks' current accounts in Banco de México. What this means is that although the Central Bank will always satisfy the financial system's demand for liquidity, a fraction of said liquidity would be provided at

above-market interest rates, thus exerting upward pressure on the latter.

The Central Bank will influence prices and inflation expectations mainly by means of implementing discretional monetary policy measures swiftly so as to attain the inflation target. Banco de Mexico must therefore keep constant watch over all the potential sources of inflationary pressures and act immediately should the analysis indicate the actual presence of said pressures. The more timely the action, the clearer the signal from the monetary authority and, hence, the stronger its influence over inflation expectations and price formation processes.

The above paragraphs may be summarized as follows: Banco de México reserves the right to discretionally adjust monetary policy—in particular to tighten monetary policy when warranted by prevailing conditions. This leads to the second fundamental element of the Monetary Program for year 2000: Banco de México may adjust monetary policy whenever unforeseen circumstances make it advisable to do so.

Specifically, the Central Bank would use the "short" mechanism to adopt a more restrictive monetary policy stance, mainly under the following circumstances:

(a) When future inflationary pressures inconsistent with the attainment of inflation objectives are detected.

(b) When inflationary shocks arise. In particular, monetary policy will make every effort to neutralize the secondary effects of exogenous shocks on prices, and on occasions will act in a precautionary manner to partially counteract the direct inflationary effects set in motion by movements in key prices. The ultimate objective is to create the conditions for the necessary adjustments in relative prices to affect the CPI only moderately; in other words, this index could rise but without disrupting inflation expectations.

(c) Whenever it becomes necessary to restore orderly conditions in the foreign exchange and money markets; and

(d) When inflation expectations deviate considerably from the inflation target.

The attainment of the inflation objective, by means of effectively applying the second element of the monetary program, will be the nominal anchor for the economy. It is by means of applying discretional policy measures in a swift manner that the authority may in effect alter the evolution of inflation and fulfill its primary mandate.

To apply these discretional monetary policy actions correctly, the prevailing inflation conditions must first be carefully analyzed. Given that monetary policy actions affect the inflation process with a lag, the analysis should also focus on detecting future inflationary pressures. Thus, the monetary authority will be in a position to act preemptively and minimize the costs associated with disinflation.

Notwithstanding the considerations presented above regarding the monetary aggregates, daily movements in the monetary base can still be used as a general reference for monitoring monetary policy. For this reason, the expected daily path of the monetary base is presented in the appendix to this document, along with the assumptions used for the estimation. Said path is consistent with the inflation target for the year, and was computed on the basis of information available in January 2000.

A central bank can change the primary money supply to match the demand for it either by adjusting net domestic credit or net international assets. The monetary authority, however, has greater control over the former variable. Therefore the simplest way to create an excess supply of monetary base is by expanding the net domestic credit. Consequently, in order to reinforce the certainty that Banco de México will not deliberately generate inflationary pressures, the Board of Governors has once again decided to incorporate quarterly limits on the variation of net domestic credit into the monetary program for 2000.

The Central Bank has made a forecast of the foreign exchange transactions it will probably carry out vis-à-vis the federal government and Pemex, as well as of the foreign currency it will likely purchase from commercial banks by means of the options mechanism. Based on this forecast, the Exchange Commission has committed itself to preventing decreases in net international reserves in the year 2000. This commitment reflects the Commission's belief that the current international reserve level is sufficient to face this year's financial obligations abroad if an adverse scenario should arise.

This, of course, assuming that appropriate economic policy measures be taken to confront such a situation.

The quarterly limits for the variation in net domestic credit detailed in Table 8 have been calculated on the basis of the expected increase in the monetary base and the commitment not to reduce the level of international reserves.

Table 8 **Quarterly Limits on Net Domestic Credit Variations in 2000**

Effective accumulated flows in millions

	Minimum increases in net international reserves		Monetary base	Limits on Net Domestic Credit Variations [1]
Quarter	Dollars (A)	Pesos (B)	Pesos (C)	Pesos (C - B)
I	0	0	-40,157	-40,157
II	0	0	-30,647	-30,647
III	0	0	-30,262	-30,262
IV	0	0	17,144	17,144

1 A negative limit implies that net domestic credit shall decline by at least the stated amount.

Due to the shortcomings of the monetary base as a tool for the analysis of future inflationary pressures and to the greater emphasis placed on the study of a wider set of indicators to determine said pressures, Banco de México shall strengthen its communication mechanisms vis-à-vis the public. The intention is to provide a clear and timely report of the analyses being used to back monetary policy decisions. Therefore, and with regard to the third element of the monetary program for the year 2000, starting in April this year Banco de México will publish quarterly inflation reports in the months of April, July, October and January. Again, this measure will reinforce the existing communication mechanisms and foster the transparency of monetary policy decisions.

V. Final Remarks

In 1999 the behavior of the main macroeconomic variables turned out better than anticipated. Recent economic trends indicate that real GDP grew 3.7 percent for the year while more than 700,000 jobs in the formal sector were created. In addition, the annual inflation rate was 12.32 percent, 0.68 percentage points below the target established in the monetary program. The favorable developments in the Mexican economy over the course of the past year are mainly explained by the congruency maintained between fiscal and monetary policies and by the propitious external environment.

The restrictive monetary policy implemented was essential to attain the 1999 inflation target. As was explained earlier, the effects of the restrictive monetary policy stance were reinforced by transitory factors that are unlikely to be repeated in the future, namely the appreciation of the exchange rate and the drop in the prices of fruits and vegetables.

Despite efforts made over the past few years in the battle against inflation, it still remains at high levels in Mexico. International and domestic experiences conclusively show that inflation has harmful implications for economic growth, income distribution and real wages.

Several reasons explain inflation's negative effects on economic growth. First, high inflation is generally associated with higher volatility in relative prices, which distorts the signals that the price mechanism sends to producers and consumers. Second, higher inflation rates often imply greater uncertainty regarding future rates of inflation. These two phenomena are accompanied by higher interest rates and shorter loan maturities. Consequently, inflation is detrimental to investment and consumption. Recent Mexican experience is compelling. Between 1957 and 1998, annual GDP growth averaged 6.2 percent for those years when the inflation rate was in the single digits. On the other hand, in those years when inflation was higher, average GDP growth was only 3.8 percent.

In addition, lower investment leads firms to employ fewer workers. This has a negative impact on real wages and job creation.

Between 1957 and 1998, real wages declined 2.7 percent per annum in those years with higher than single-digit inflation. Conversely, in the more stable years, real wages rose by 6 percent.

Inflation also hinders the equitable distribution of income because it represents an obstacle to job creation and promotes declines in real wages. This phenomenon responds to the fact that people of limited means tend to maintain a large proportion of their financial assets in cash, for they do not have easy access to the instruments that could shelter them from price instability. Recent research in Mexico reveals that a 5 percentage point reduction in inflation could lead to an 11.4 percent increase in the long-term per capita income of the poorest quintile of the population[6].

Finally, inflation also has a detrimental effect on public finances. Traditionally, the public sector is a net debtor in the economy. Therefore, the elevated real and nominal interest rates associated with high inflation tend to increase the burden of servicing the public debt.

For all of the above reasons, it is essential to continue lowering the inflation rate until the medium-term target is reached, namely, to attain inflation levels comparable to those prevailing in Mexico's main trading partners by the end of 2003. Consequently, Banco de México will continue to advocate the need for the federal government's economic programs to be consistent with the aforementioned objective.

In September 1999, Banco de México proposed as the monetary policy objective for the year 2000 an annual inflation rate not to exceed 10 percent.

Although in 1999 an inflation rate below the target was achieved, economic agents' inflation expectations for 2000 are still above the objective. Moreover, it is unlikely that the nominal appreciation of the exchange rate and the fall in prices of fruits and vegetables registered in 1999 will be repeated this year. Therefore, in order to reach an inflation rate not to exceed 10 percent in the year 2000, the restrictive bias of monetary policy must be maintained.

[6] Research Document No. 9806 "The Effect of Inflation on Income Distribution"; Banco de México, December 1998.

There are currently several risk factors that could hamper the decline in inflation and consequently give rise to corrective monetary policy measures. These risk factors include:

(a) The persistence of a gap between inflation expectations (those of financial analysts and those held by economic agents responsible for wage negotiations and credit contracts) and the inflation target set for the year; and

(b) Domestic and external circumstances that might cause high volatility in Mexican financial markets and have negative impacts on inflation.

In order to reach the proposed inflation target at the lowest possible social cost, inflation expectations must converge as soon as possible with the inflation objective, and this convergence needs to be reflected in contracts of all kinds. Furthermore, it is essential that increases in the prices of public goods and services be consistent with the inflation objective as well.

The electoral process and the changeover of the federal public administration that will take place this year are elements that warrant additional measures to guarantee financial stability and economic growth. As far as Banco de México is concerned, it is indispensable that monetary policy be conducted fittingly to ensure a continuous lowering of inflation.

Banco de México continues to reinforce its lines of communication with the public. This measure responds to the conviction that the public's understanding of the damage caused by inflation would help in building a social consensus in favor of price stability, and thus the costs of the disinflation process could be reduced. Furthermore, as monetary policy implementation becomes more transparent, economic agents' uncertainty will be abated and monetary policy will thus become more effective as well. Consequently, Banco de México shall continue to strengthen its communication mechanisms vis-à-vis the public. To that end, the Board of Governors has decided to publish quarterly reports to explain the evolution of inflation and the monetary policy measures implemented during the year.

The Board of Governors is aware that the disinflation achieved in 1999, although significant, is neither sufficient nor irreversible. To reinforce the public's credibility with regard to the

monetary authority's objectives, it is required that all available instruments be used to attain the proposed goals.

Appendix: Anticipated Path of the Monetary Base for 2000

Background

Since 1997, the annual monetary programs of Banco de México have included an estimate of the daily path of the monetary base for each corresponding year. This path is very difficult to forecast *a priori*, however, due the following reasons: i) the relationship between inflation and the monetary base changes over time; ii) the basic assumptions used to estimate the demand for primary money in any given year —namely GDP growth and interest rates— may not materialize; iii) the relationship between the demand for monetary base and the variables that explain its evolution may also change over time; and iv) the occurrence of phenomena that temporarily change the public's demand for monetary base.

As was mentioned in section III of this document, the gap between the observed monetary base and the expected path during the second half of 1999 was the result of an unforeseen increase in the demand for primary money. This was in turn explained in terms of the factors mentioned in the text. In spite of the fact that this type of projections is always subject to probabilistic error, the evolution of the monetary aggregates —and of the monetary base in particular— is still considered as a valuable reference by the Board of Governors, for it helps supplement the Board's assessment of the prevailing economic conditions and outlook. Consequently, the path expected for this variable during year 2000 is herein published once again.

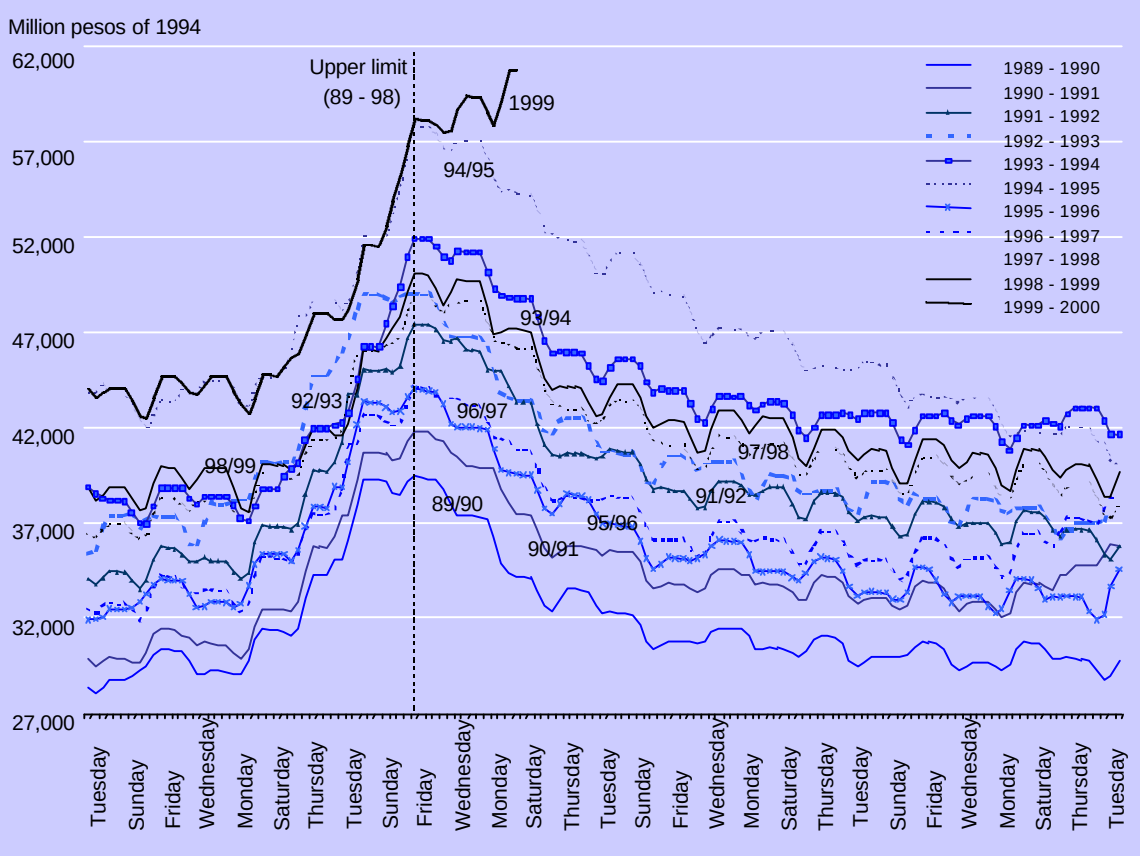
Methodology for Estimating the Adjusted Stock of the Monetary Base at Year-End 1999

In 1999, the corresponding Monetary Program alerted to the fact that most central banks would face a certain amount of uncertainty toward the end of the year due to the fear that the Y2K problem could result in an extraordinary, albeit temporary, increase in the demand for currency. The document also stated that Banco de México was prepared to supply the additional demand should it

materialize, since doing so would not imply an excess money supply and the evolution of inflation would remain unaltered. It was also mentioned that there was insufficient data for calculating the Y2K factor into the estimate for the demand for monetary base, and thus this eventuality would not be included in the projections for the year.

As it turns out, the Y2K effect did create a temporary increase in the demand for currency during the last few weeks of the year. Graph 21 shows that in every one of the last 10 years the monetary base has reached its annual maximum on the Friday just before or coinciding with December 24th. However, in 1999 the monetary base kept growing until December 31st, possibly due to Y2K fears. This atypical occurrence complicated the analysis of monetary events during 1999 as well as the estimations for 2000.

Graph 21 **Currency in Circulation in December and January (1989-1999)**

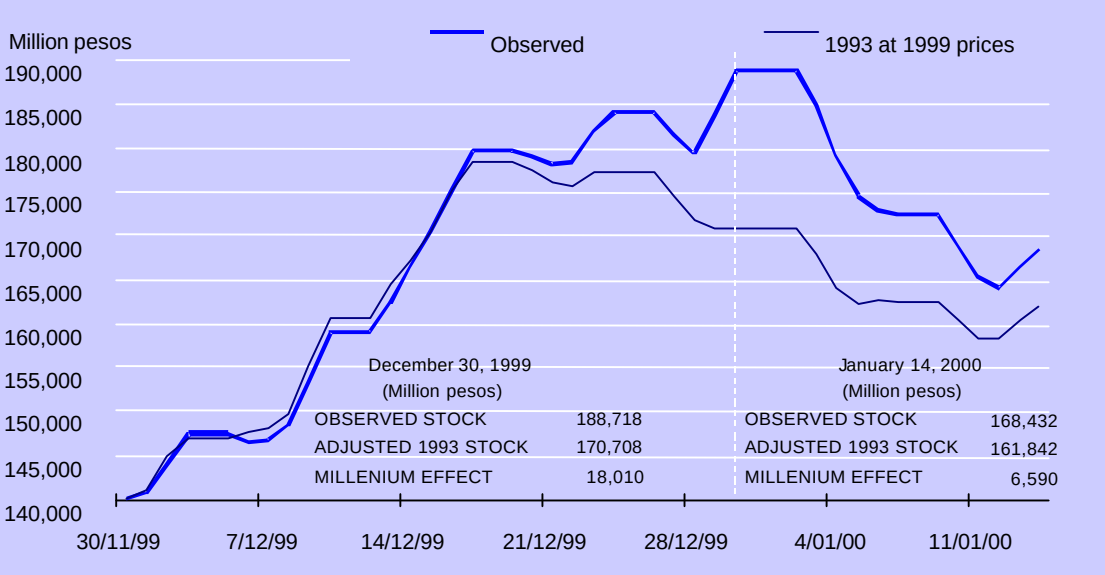


Due to the transitory nature of the aforementioned upsurge in the demand for monetary base, it was deemed necessary to compute a stock of base money for year-end 1999 adjusted for the

millenium effect, which could be used as a sounder basis to forecast the corresponding stock for this year. To this end, a methodology was used that separated the seasonal pattern from the total monetary base. The December 1999 monetary base flows were thus estimated on the basis of the seasonal pattern that tends to repeat itself every December and the flows that have been observed in similar periods (that is, December months when the holidays and weekends have fallen on the same days of the week, for example 1993).

The corresponding estimation of the monetary base —which excluded the Y2K effect and incorporated the seasonal pattern only— was obtained as follows: the monetary base flows posted between November 30th and December 31st, 1993, adjusted to 1999 prices, were added to the stock of the monetary base on November 30th, 1999 (see Graph 22).

Graph 22 **Estimate of the Additional Demand for Currency in Circulation Associated to the Millenium Effect**



An approximation of the Y2K effect was obtained by subtracting the estimate computed as per the above methodology (170,708 million pesos) from the monetary base stock observed at year-end (188,718 million pesos). Correspondingly, the impact of the Y2K problem on the stock of the monetary base in late 1999 was estimated at 18,010 million pesos. This figure, however, is meant only as an indicator of the order of magnitude of said effect, and must be interpreted with due caution, for it assumes that the entire

difference between the observed monetary base stock and the seasonal component is due to the millenium effect.

Figures available for the first few days of 2000 show that the Y2K effect on the monetary base has reverted itself by approximately two-thirds (see Graph 22). If as a result of the Y2K effect the monetary base figures of the days following the publication of the Monetary Policy Program for 2000 deviate significantly from current estimations, Banco de México shall release the observed data on occasion of the inflation report to be published in April.

Estimate of the Monetary Base Path

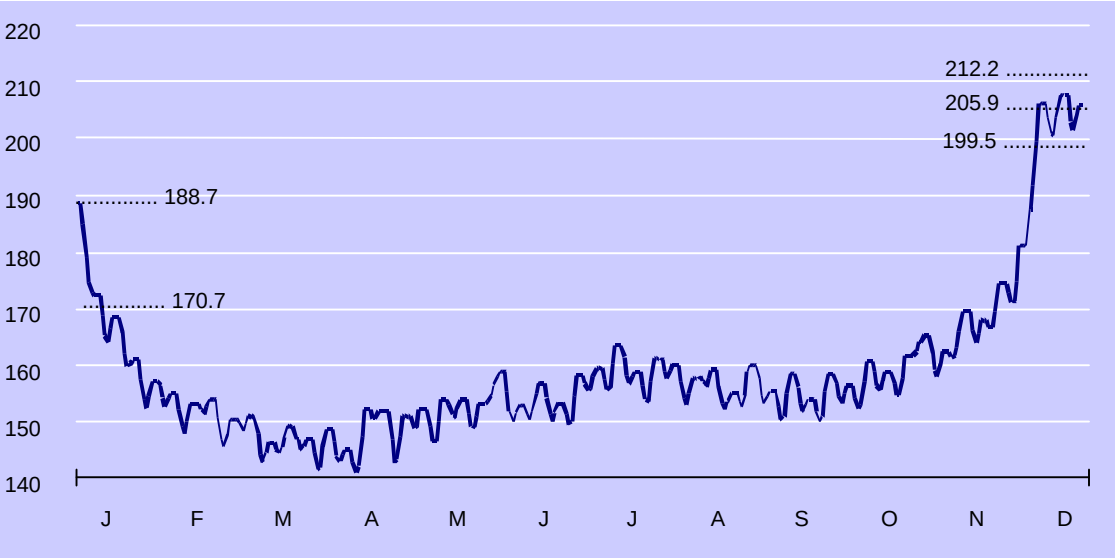
All the calculations presented in the following section are based on the monetary base stock adjusted for the millenium effect (170,708 million pesos).

The projected path of the monetary base in the year 2000 is compatible with a real GDP growth rate of 4.5 percent, an annual inflation rate not to exceed 10 percent, and a remonetization factor of 4.9 percent approximately. Therefore, Banco de México expects the monetary base to grow 20.6 percent this year over the adjusted year-end 1999 stock (170,708 million pesos). Hence, by the end of year 2000 the estimated stock would amount to 205,862 million pesos. Using one standard deviation of the model's residuals, the confidence interval for the latter figure is between 212,182 million pesos and 199,542 million pesos[7]. The estimates for the daily stock of monetary base in year 2000 are presented in the table included at the end of this appendix as well as in Graph 23. The annual monetary base flow for the year 2000 is 35,154 million pesos —calculated on the basis of the 1999 adjusted stock (170,708 million pesos). This figure differs from the one presented in Table 8, section III of this document, since the latter number was obtained using the monetary base stock observed at year-end 1999 (188,718 million pesos).

[7] This is equivalent to +/- 3.07 of the projected year-end stock. The independent variables used by the model to explain the estimated demand for monetary base include: GDP growth, interest rates, the lags of the dependent variable, and a series of binary variables used to capture seasonal components.

Graph 23 **Anticipated Path of the Monetary Base for the Year 2000**

Daily stocks, in thousand million pesos



As in previous years, the projected path of the monetary base for the year 2000 will serve as general reference for monetary analysis and in the event large deviations between the observed and estimated figures do arise. In this case, Banco de México will duly assess such deviations and will restrict its monetary policy stance only if they appear to indicate additional inflationary pressures.

In preparing the projected path for the monetary base in the year 2000, the 1999 remonetization[8] —approximately equivalent to 11.4 percent, excluding the Y2K effect— was taken into account, as well as some events that are expected to take place throughout this year. Among these events are the population census and the political campaigns, whose costs are normally paid in cash and are therefore associated with bank deposits being transformed into currency. Based on these considerations as well as on the results expected from the disinflation process, the implicit 4.9 percent remonetization effect for the year 2000 seems reasonable.

[8] This remonetization figure is computed as the residual from the combined result of the economic growth expected for 1999 and the annual (December-December) inflation rate, minus the nominal increase in the monetary base between year-end 1998 and 1999 adjusted by the millenium effect.

Considerations on the Remonetization Coefficient

The economic literature makes no distinction between remonetization and the decrease in the velocity of circulation of money, in other words, increases of currency in circulation greater than nominal GDP growth.

As was mentioned in section III of this Monetary Program, during the last four years the Mexican economy has experienced a process of remonetization which has meant an increase in the stock of currency in circulation as a proportion of GDP. This has occurred in a context of declining inflation in Mexico as in a number of other countries. The analysis of this phenomenon suggests that the remonetization process intensifies when low inflation levels are reached, and that the relationship between an economy's degree of monetization and the inflation rate is unstable.

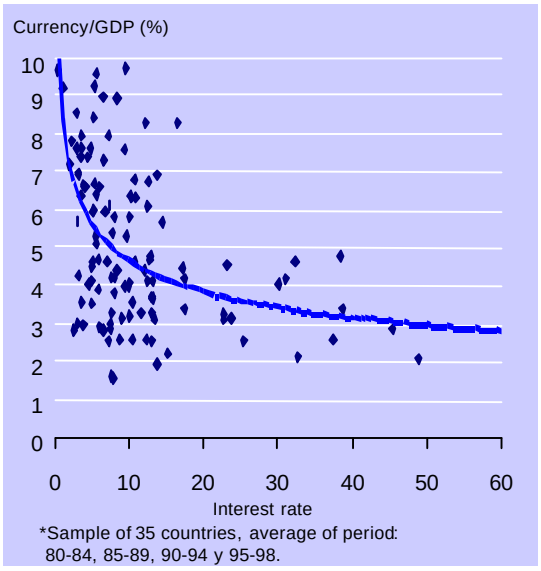
Since interest rates reflect the public's opportunity cost of holding cash as part of their assets, the relationship between interest rates and the degree of monetization is analyzed in more detail in the following section.

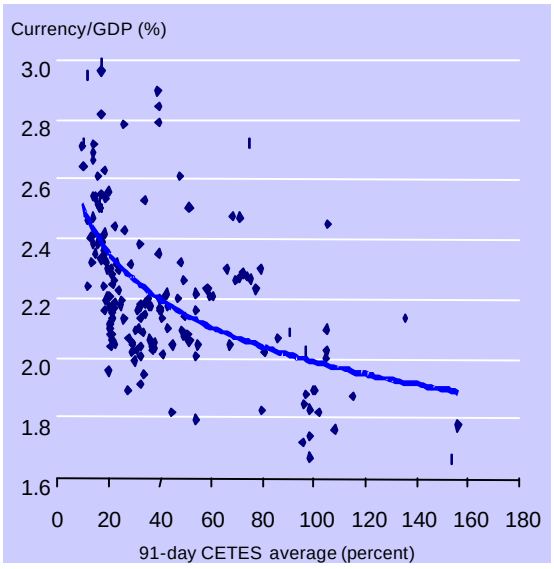
Theory and empirical evidence alike point to an inverse relationship between interest rates and the economy's degree of monetization. Graph 24a illustrates this inverse relationship for a sample of 35 countries. Graph 24b does the same for the Mexican case. These two graphs confirm that the remonetization process intensifies with lower interest and inflation rates.

Graph 25 presents the evolution of interest rates and the monetization trend for Mexico since 1980. During the last two decades, increases in interest rates have been accompanied by reductions in the use of currency as a percentage of GDP. More specifically, the lowest levels of monetization were recorded at the end of the 1980's, when interest rates reached historical highs. The 1995 interest rate hikes caused a demonetization of more than 21 percent between December 1994 and September 1996. In contrast, the current remonetization trend is at least partially due to the recent decline in interest rates.

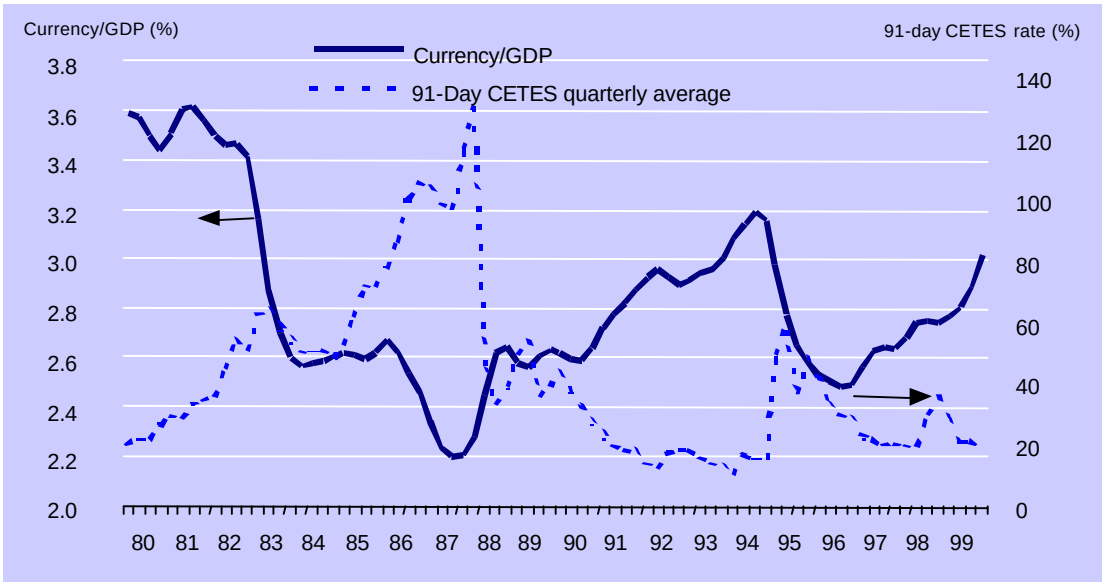
Graph 24 **Currency in Circulation as a Percentage of GDP and Interest Rates in the World and in Mexico**

24a) International Rates (1980-1988*) 24b) Monthly Rates for Mexico (1985-1999)





Graph 25 **Interest Rates and Currency in Circulation as a Percentage of GDP**

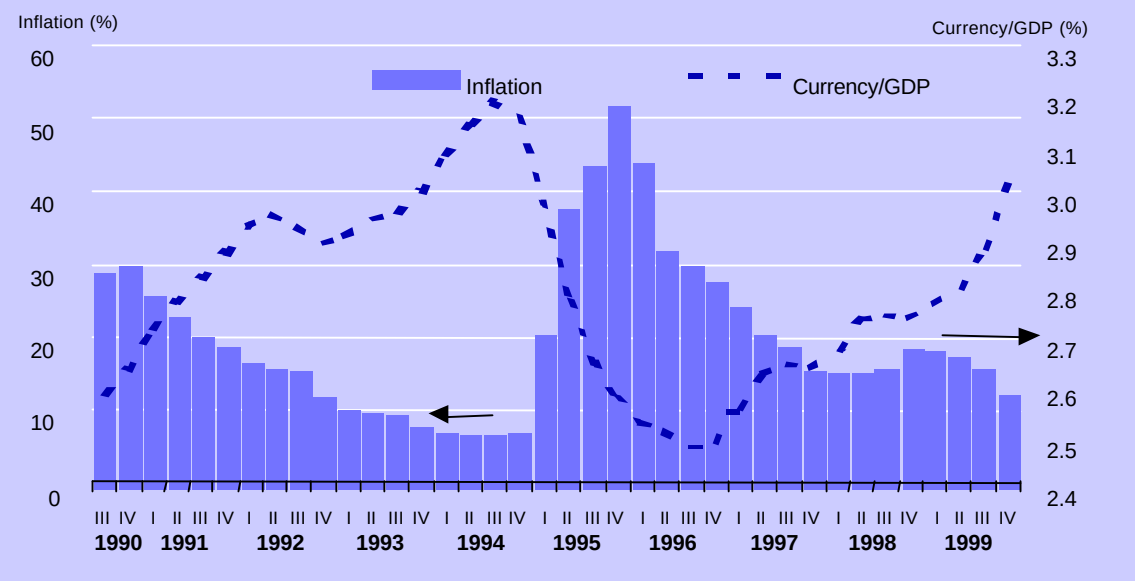


Graph 26 depicts the relationship between the inflation rate and the trend of currency in circulation since the third quarter of 1990. The disinflation of the early 1990's resulted in a significant remonetization, which was reversed after the upturn in inflation of 1995. Correspondingly, the remonetization experienced by the

Mexican economy since late 1996 has been associated with a disinflation process. The return of higher inflation rates in the second half of 1998 as a result of external shocks caused a temporary interruption in the remonetization process, which has nevertheless regained momentum as inflation retook its downward trend[9].

Graph 26 **Inflation and Trend of Currency in Circulation as a Percentage of GDP**

(1990-1999)



The conclusion of this analysis is that the remonetization process experienced during 1999 is neither a new phenomenon nor qualitatively different from those observed in previous years. It also confirms the close relationship between inflation and the level of monetization in the Mexican economy.

[9] The degree of remonetization as measured by M4 shows a similar pattern.

Table 9 **Forecast of the Daily Stock of the Monetary Base for the Year 2000***

(In thousand million pesos)

Days	JAN	FEB	MAR	APR	MAY	JUN
1	188.7	154.0	148.2	148.6	150.9	157.8
2	188.7	152.7	149.7	148.6	148.9	158.7
3	184.9	154.0	150.8	146.3	148.9	158.7
4	179.0	155.0	150.8	143.9	152.1	158.7
5	174.5	155.0	150.8	142.9	152.1	155.3
6	172.9	155.0	147.8	144.0	152.1	151.7
7	172.3	152.0	144.2	144.9	152.1	150.0
8	172.3	149.1	142.7	144.9	148.9	151.4
9	172.3	147.8	144.3	144.9	146.3	152.8
10	168.8	149.9	146.2	142.7	146.5	152.8
11	165.2	153.2	146.2	140.9	149.8	152.8
12	164.1	153.2	146.2	142.1	153.7	151.2
13	166.4	153.2	145.0	147.2	153.7	150.4
14	168.4	153.3	144.5	152.1	153.7	151.8
15	168.4	152.0	145.2	152.1	153.0	154.8
16	168.4	151.1	147.2	152.1	151.2	156.7
17	165.9	152.5	149.0	150.6	150.5	156.7
18	162.1	153.6	149.0	150.6	152.3	156.7
19	159.6	153.6	149.0	151.9	153.9	154.0
20	160.2	153.6	146.7	151.9	153.9	151.0
21	160.7	150.6	146.7	151.9	153.9	149.9
22	160.7	146.9	145.0	151.9	151.4	151.5
23	160.7	145.5	145.6	151.9	149.1	153.2
24	157.4	147.6	146.9	146.6	148.6	153.2
25	153.6	150.3	146.9	142.7	150.7	153.2
26	152.4	150.3	146.9	143.3	153.2	151.1
27	154.4	150.3	144.3	147.2	153.2	149.4
28	157.0	150.3	141.5	150.9	153.2	150.1
29	157.0	149.5	141.7	150.9	153.6	154.3
30	157.0		145.4	150.9	154.6	158.1
31	156.3		148.6		156.4	

*/ Forecasted data as of January 17th.

Forecast of the Daily Stock of the Monetary Base for the Year 2000*

(In thousand million pesos)

Days	JUL	AUG	SEP	OCT	NOV	DEC
1	158.1	158.7	159.9	158.5	163.9	174.1
2	158.1	157.7	159.9	156.7	163.9	174.1
3	156.8	158.9	159.9	154.3	165.2	174.1
4	155.4	160.0	157.6	153.3	165.2	172.8
5	155.9	160.0	154.7	154.9	165.2	171.1
6	158.0	160.0	153.2	156.3	162.3	171.5
7	159.4	156.9	154.3	156.3	159.1	175.0
8	159.4	154.0	155.2	156.3	157.9	181.0
9	159.4	152.8	155.2	154.1	159.8	181.0
10	157.2	154.8	155.2	152.3	162.2	181.0
11	155.5	157.7	152.5	153.0	162.2	187.3
12	156.1	157.7	150.3	157.1	162.2	187.3
13	160.2	157.7	150.9	160.5	161.5	191.9
14	163.6	157.7	155.0	160.5	161.8	199.4
15	163.6	157.0	158.4	160.5	163.0	206.2
16	163.6	156.2	158.4	158.8	165.9	206.2
17	161.4	157.7	158.4	156.6	169.2	206.2
18	158.1	158.9	156.1	155.6	169.2	203.9
19	156.6	158.9	153.2	157.3	169.2	200.9
20	157.7	158.9	151.8	158.8	169.2	200.8
21	158.7	156.3	152.9	158.8	166.1	203.8
22	158.7	153.1	153.8	158.8	163.9	207.8
23	158.7	152.1	153.8	156.7	165.5	207.8
24	156.4	153.4	153.8	154.7	167.8	207.8
25	153.7	154.8	151.6	154.5	167.8	207.8
26	153.5	154.8	149.8	157.7	167.8	203.0
27	156.9	154.8	151.0	161.6	166.7	201.5
28	161.0	153.3	155.1	161.6	166.8	204.1
29	161.0	152.6	158.5	161.6	169.2	205.9
30	161.0	154.6	158.5	161.6	174.1	205.9
31	160.8	158.6		162.3		205.9