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DOMESTIC SAVINGS IN MEXICO
AND PENSION SYSTEM REFORM

ABSTRACT

The main aim of this paper is to offer a brief overview of the recent pension system reform in Mexico, viewed as a crucial element of the government strategy to increase the rate of domestic saving. There is a consensus that, at least in the short run, an important part of increasing the Mexican national saving rate will fall on public saving. But for the medium and long terms, it is crucial to raise the rate of private saving. The achievement of this goal will require the design of adequate policies to promote this behavior. Although the recent National Development Program mentions the use of fiscal incentives and pension policy reform as the two main measures to improve private savings, we believe that the latter will be the single most important measure to achieve this goal. The current pension system reform in Mexico is an important step towards this objective. But it should be stressed that gains from a reform are not straight forward. Therefore it is crucial for the current reform to offer the right incentives and signals, otherwise the probabilities for a success will be strongly reduced.

I. Introducción

During the last few years, we have seen a resurgence of interest in themes related with saving and economic growth. Certainly this is not a new issue and national saving rates have been widely believed to be fundamentally important in determining financial stability, economic growth and international competitiveness. But the decline on the rate of saving during the last decade in many countries and its impact on investment has fueled this renewed interest.

This experience has been more dramatic for Latin American countries, particularly for Mexico in light of the 1994 'peso crisis'. The problem highlighted here concerns the possible impact of a low level of savings on the nation's growth potential and squeezing on living standards. A simple comparison of GNP per capita, (with the usual reserves) will give us an idea of this statement. According to the World Bank, in 1993 the GNP per capita (in US dollars) for Mexico was 3,750 dollars, compared with the 19,310 dollars of Singapore (a high saving country) or 24,750 dollars for the US economy.

The purpose of this paper is to review the role of saving on the recent evolution of the Mexican economy and the current policy proposals to promote an increase on the domestic saving rate, particularly on private saving rate, mainly through fiscal incentives and an important pension system reform. To set the stage, section II briefly discusses the importance of saving on economic growth. Section III surveys the recent evolution of the Mexican economy and its rate of saving while section IV presents the main policy measures proposed by the National Development Plan to increase domestic saving rate. We emphasise in particular the current pension system reform in Mexico, proposed to improve and strengthen the individual capitalisation fully funded (FF) scheme introduced by the Mexican government on 1992. Section V discusses the fiscal cost of this reform and its impact on savings and capital market development. Finally, section VI concludes with some final comments.

II. Saving and Growth

The importance of domestic saving in the process of economic development has been stressed by a long line of distinguished economists. For example, Lewis (1954) argued that the 'central problem of economic development is to understand the

process by which a community which was previously saving and investing 4 or 5 percent of its national income or less converts itself into an economy where voluntary saving is running at about 12 or 15 percent of national income or more. This is a central problem because the central fact of economic development is rapid capital accumulation (including knowledge and skills with capital)'

More recently, Kotlikoff (1989) pointed out that savings is the central economic link connecting the past, the present and the future. Moreover, savings or nonhuman wealth, together with human wealth, determine which individuals or families, which regions and which nations are rich or poor.

For some scholars, these statements might be too strong because there is still a debate among academicians about the precise link and causality between saving and growth. For example, according to Solow's growth model, growth arises from the accumulation of capital and the evolution of the stock of capital is affected by the rate of saving, the rate of population growth and the rate of growth in technology, which are exogenous. In the steady-state the growth rate of income is determined only by the technological growth parameter and does not depend on the saving rate. But the latter does play an important role during the transition path because a greater saving rate causes a period of high growth until the new steady state is reached. That is, in the long run an economy's rate of saving determines the size of its capital stock and thus its level of production. The higher the rate of saving, the higher the stock of capital and the higher the level of output. More recently, the endogenous growth models postulate the possibility of a permanent effect of the rate of saving on economic growth as a consequence of externalities associated with the capital accumulation process that reduce or eliminate the decreasing returns that explain Solow's result. Also, it is well known that the life-cycle model predicts that per capita income growth will have a positive effect on aggregate saving because workers are saving on a larger scale than the retirees are dissaving as long as productivity growth makes the young richer than the old. But as Deaton (1990) showed, actual age-consumption profiles are not consistent with this prediction. Many other empirical cross-country studies, reviewed by Schmidt-Hebbel et. al. (1995), find a significant positive effect of real income growth on saving rates. In any case, all these studies are still unable to identify the precise mechanism that unravel the causality between growth and saving. But what seems more clear is that there is a consensus about the existence of a virtuous circle between development and saving and the need to raise domestic saving to ensure a sustainable path of economic growth.[1]

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1 We recognise that the other side of the story relates to investment. That is, maybe the problem is not only a shortfall of savings but an efficient use of the funds through an efficient investment process. In any case, it is argued that a pension reform that substitutes a pay-as-you-go (PAYG)

Unfortunately, one of the most disturbing problems that policymakers have faced over the last decade is a dramatic decline on the rate of domestic saving, in particular a drop in the rate of private saving. This trend has been spread worldwide, with few exceptions, mainly Japan, Chile, Singapore and other East Asian countries. According to a recent International Monetary Fund (IMF) report (1995), the world rate of saving dropped from a 25 percent (as a percentage of GDP) on average for the period 1970-80 to less than 23 percent on average for the period 1981-94. Moreover, in other study Edwards (1995) points out that during the most recent period Latin America's private saving ratios have been the lowest in the world. This strongly contrasts with some high performing East Asian countries that have aggregate saving rates of the order of 30 or 40 percent. For Mexico this issue acquires particular relevance in light of the 1994 'peso crisis'. This is because a strong falloff in the rate of private saving since the late 80's, combined with the sudden and severe curtailing of foreign savings at the end of 1994, cut severely the supply of funds for investment financing, restraining capital formation and increasing financial instability.

TABLE 1
NATIONAL SAVING RATES
AN INTERNATIONAL COMPARISON
(percentage of GDP)

	1988 - 1994	1995e)
WORLD	22.8	23.1
INDUSTRIALISED COUNTRIES	20.4	20.0
EUROPEAN UNION	20.3	20.2
ASIA	31.1	33.6
AMERICA	19.0	18.4
AFRICA	17.0	18.3
MEXICO	16.7	16.8

e) estimated
SOURCE: IMF

system by a fully funded (FF) private system will have a positive effect on investment efficiency by shifting resources from the informal to the formal financial system and by its positive effect on financial deepening. Nevertheless, in this paper we will emphasise savings and the policies to promote it.

III. The Mexican Economy

III.1 Economic Evolution and Structural Reforms

In 1988 Mexico began a major transformation of its economic structures, after almost a decade of macroeconomic and financial difficulties. These efforts included a comprehensive stabilisation programme aimed at correcting macroeconomic imbalances and deep structural reforms designed to improve efficiency of the market mechanisms in the pricing and allocation of resources among the different sectors of the economy. The restructuring of financial markets has been one of the crucial reforms, that included liberalisation measures and institutional reforms. The main components of this reform were: a) financial deregulation, including liberalisation of interest rates and controls on credit allocation; b) restructuring of the financial system legal framework; c) strengthening of preventive regulations and modernisation of the supervisory commissions; d) restructuring of the development banks and e) reprivatisation of the commercial banks.

The financial services opening has been the last stage of the financial modernisation programme. Under the North American Free Trade Agreement (NAFTA), signed by Canada, the United States and Mexico, financial institutions of the first two countries, regardless of the nationality of their capital, will be able to open affiliates in Mexico to provide all type of financial services, subject to certain market share limits.[2] These measures were extended to all Organisation for Economic Co-operation and Development (OECD) members after the formal accession of Mexico to this organisation. This financial reform process, that started in 1989 and is not still exhausted, has produced a radical change in the structure of the Mexican financial system.[3] For example, there was a significant financial deepening implying a reintermediation in the domestic financial system. The M4 monetary aggregate increased at an annual average nominal rate of 40 percent while the corresponding rate for the net credit to the private sector increased at a 66 percent.

The Mexican economy showed a favorable performance after 1988. The annual rate of growth of the GDP rebounded from a 0.5 percent on average for the 1985-88 period to an annual rate of 3.5 percent for the 1989-92 period (see Table 2).

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2 The particular provisions about this issue are contained on NAFTA's Chapter XIV.

3 For a detailed review of these financial reforms see 'The Mexican Financial System: An Overview', mimeo.

The inflation rate was drastically reduced from a 160 percent in 1987 to less than 12 percent in 1993. The real rates of interest turned positive and fiscal balances improve significantly during this period. Finally, external public debt that represented 50 percent of GDP in 1988, was reduced to 22 percent in 1992. Mexico regained gradually access to the voluntary international capital market financing after having been virtually excluded for much of the decade. But together with the strong inflow of foreign capitals during this period, there was also a dramatic increase in the current account deficit, reflecting in part a decline in national savings rates. Although during 1994 real GNP was still growing and the inflation rate was decreasing, the conjunction of political problems, overvaluation of the peso and the very large current account deficit led to the December 'peso crisis'. An exhaustive analysis of these events are beyond the objectives of this paper.

TABLE 2
MEXICO
MAIN ECONOMIC INDICATORS

	1988	1989	1990	1991	1992	1993	1994	1995	1996e)
REAL GDP (% growth)	1.2	3.5	4.5	3.6	2.8	0.6	3.5	-6.9	3.0
GROSS INVESTMENT (% GDP)	20.4	21.4	21.9	22.4	22.8	20.6	21.6	16.7	16.9
CURRENT ACCOUNT BALANCE (% GDP)	-2.3	-2.9	-3.2	-4.8	-6.8	-6.4	-8.0	-0.1	-0.3
INFLATION	51.7	19.7	29.9	18.8	11.9	8.3	7.1	51.97	20.5
NOMINAL EXCHANGE RATE (pesos for US dls)	2.26	2.64	2.94	3.08	3.12	3.11	4.99	6.60	7.7
INTEREST RATE CETES 28 DAYS (annual)	52.3	40.6	26.0	16.7	16.9	11.8	30.0	48.59	
M1 (growth rate)	58.1	40.7	62.6	119.8	17.3	17.9	5.7	-2.06	
M4 (growth rate)	58.9	50.8	46.4	30.9	19.9	25.0	17.1	25.99	
INTERNATIONAL RESERVES (bill. US dls.)	6.0	6.5	10.1	17.9	19.4	25.4	6.3	15.7	

e) estimated   p) preliminary

Source: SHCP, BANXICO, FMI

III.2 The Measurement and Evolution of Saving

Despite the Mexican authorities' ongoing efforts to promote financial market development, the Mexican economy still faces the problem of a shortage of short-term saving and a severe scarcity of long-term saving. Unfortunately, the financial restructuring process has not been reflected on the behaviour of the domestic saving rate. It is difficult to quantify the precise magnitude of the decline in Mexican saving and its components because the well known measurement problems with these variables.[4] Keeping these problems in mind, we can still outline certain significant trends and problems with saving behaviour using current estimates. According to the Bank of Mexico (1995) estimates, gross domestic saving reached an average of 20 percent of GDP during the 80's, dropping to slightly less than 16 percent of GDP by 1992 (see Table 3). The main contributing factor has been a reduction in private saving, which declined continuously from a level of around 18 percent of GDP in 1988 to under nine percent in 1992, showing a slightly recovery since 1993. On the other hand, public saving has shown major fluctuations since the beginning of 80's around five to six percent of GDP, reaching almost eight percent in 1991. In any case, Mexico's moderate level of domestic saving has constituted a constraint for the rate of investment and has made the country more vulnerable to foreign capital flows. It should be remembered that foreign savings was almost seven percent of GDP in 1992. As is now well known, one of the main consequences (and causes) of the 'peso crisis' of 1994-95 was the sudden and severe curtailing of foreign capital inflows. During the first quarter of 1995, foreign investors fled Mexico despite very high interest rates on Mexican securities, an undervalued currency and financial indicators that pointed to long term solvency. The vulnerability of the Mexican economy to exposure to external short term capital was evident. It is now widely accepted that although foreign savings will continue to play an important role in the medium and long term, it is crucial to increase domestic savings as the main source for financing economic growth.

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4 Most of existing estimates are drawn directly from national income accounts (NIA). But estimates of gross domestic savings derived from NIA are problematical because such estimates are residual arrived at after deducting the balance of payments deficit on current account (assumed to equal gross external saving inflows) from estimates of gross domestic capital formation. Since data on capital formation, and to a lesser extent on the current account deficit, are subject to substantial margins of error, the saving residual is vulnerable to erroneous influences from both sources. Still, there are other serious problems when breaking the total down into its components, private and public savings, such like adjusting the figures to neutralise the effects of inflation and devaluation and to allow the effects of exchange rate over or under-valuation.

TABLE 3
SAVING RATES IN MEXICO
(% GDP)

	DOMESTIC	PUBLIC	PRIVATE	FOREIGN
1960-1969	18.0	3.4	15.6	2.2
1970-1981	19.8	3.9	15.9	3.6
1982-1989	21.3	3.7	17.6	-0.8
1990	19.0	3.0	12.8	2.8
1991	17.6	8.0	9.9	4.7
1992	16.2	9.4	8.9	6.9
1993	17.0	5.2	11.8	6.6
1994p)	16.1	4.1	12.0	7.2
1995e)	16.7	6.9	9.8	0.5

p) preliminary
e) estimated
SOURCE: BANCO DE MEXICO, INEGI.

III.3 The Determinants of Saving in Mexico

For purposes of policy formulation it is important to know what are the principal factors determining national saving rates and also how policy instruments could be used effectively to influence saving behavior in desirable directions and under various circumstances. In general, the level of public savings can be affected directly by public policies. Fiscal policies that affect government spending and revenues and the financing of the budget deficit will strongly determine the level of public saving. It should be stressed that we are not implying that government savings are exogenous, as it is usually assumed. As Edwards (1995) points out, the degree of political stability and political polarisation are factors that affect this variable. In any case, for the purposes of our paper, we emphasise the behavior of private savings. Unlike public savings, in general private savings is affected indirectly through changing incentives and preferences. Many empirical studies about the determination of private saving in Mexico have been carried out and a recent survey of the main results can be found in Villagómez (1993). The empirical evidence advanced by this work can be summarised as follows:

- It is suggested that current disposable income plays an important role in explaining private saving. Some studies estimate a marginal propensity to save around 0.19, which is lower for rural consumers and elderly people. In the case where consumption functions are estimated, the 'excess sensitivity' result is very common.

- In general, the findings with regard to the responsiveness of private savings to real interest rates are conflicting. But even in the cases where the evidence suggests a positive effect of interest rates on savings, this effect is somewhat weak. Certainly this is not the case where the dependent variable is financial savings, showing a stronger positive correlation with the interest rate.

- There appears to be a positive relationship between private saving and inflation explained by the erosion of the real value of household wealth that induces an increase in the rate of saving. Also, there is some evidence that inflation uncertainty excerpts a positive effect on private savings, may be explained by a precautionary motive.

- The theoretical literature suggests a relevant role of income distribution. Unfortunately the empirical evidence for Mexico has been inconclusive.

- With respect to the interaction between private and public saving, empirical evidence for Mexico tends to reject the Ricardian Equivalence proposition, at least in its stronger form. In any case, the substitution effect is much lower.

- It appears that there is an inverse relationship between foreign saving and domestic saving, although results are weak.

- Finally, recent empirical evidence for Mexico tends to support an important role for liquidity (borrowing) constraints.

While a complete understanding of the factors underlying the recent decline of the private saving rate is not yet available, a number of reasons have been put forward based on the previous results. These include a reduction in inflation (and inflation uncertainty) after 1989, significant run-ups in asset prices (a wealth effect on consumption), but in particular the process of financial deregulation and liberalisation which may have permitted households that have been liquidity constrained prior to deregulation to engage in consumer borrowing. In any case, it is an issue that still requires further empirical work, in particular at the household level. It is clear that unless we can understand more fully the determination of private saving in Mexico, and in general domestic saving, it will be difficult for any policy to succeed in promoting it.

IV. Policies to promote domestic saving

The National Development Plan 1995-2000 stated as one of its main economic objectives the urgent need for the government to promote policies that will foster domestic saving to increase from its current 16 percent to a level of 22 percent of GDP by the turn of the century. This will be possible by designing policies to increase public saving and policies to promote private saving.

IV.1 Fiscal Policy and Fiscal Incentives

Fiscal Policies affect both public and private saving. The first category of policies relates to deficit reduction, that is, tightened fiscal policies. To achieve this goal, the Mexican authorities have increased the VAT from 10% to 15%; public sector prices and tariffs will be gradually increased in line with their international references and the government expenditures decreased by almost ten percent in real terms at the end of 1995. With respect to the promotion of private savings, policymakers can make use of a wide range of government policies that can potentially affect private saving incentives. Most of these policies operate through the tax system and include income tax policies that drive a wedge between the pretax and the postax return to saving or policies that encourage consumers to save in particular institutional forms. In a recent paper, Feldstein (1995) put forward many suggestions of tax reforms in Mexico to stimulate saving. Basically, he suggests to change the tax treatment on life insurance. In particular, he points out that a reduced tax on the interest income of insurance companies would be a better way to encourage saving through life insurance. He also recommends to extend the favorable tax treatment to annuities and other non-life insurance products; to foster tax favored individual saving accounts like the 'Cuentas Especiales de Ahorro' (special saving accounts), although these measures can also be extended to voluntary retirement deposits, employer-based voluntary additional individual saving contributions to retirement savings accounts or permit medical saving accounts. Finally, he argues that private saving would probably be increased by taxing retained earnings at a lower rate than dividends and by reducing the corporate tax rate and substituting a higher rate of value added tax, payroll tax or personal income tax.

In any case, it is important to note that, broadly speaking, all these forms of fiscal incentives for private saving like exemptions, deductions, credits, bonuses, etc., act by raising the effective rate of return on saving, or at least on particular assets in which savings can be held. It is well known that there is still an important

debate about the net impact of fiscal incentives on savings and its possible distortionary effects. First, because these measures have both income and substitution effects on individual consumption and saving decisions. Therefore, at neither the theoretical nor the empirical level have strong conclusions been reached about the net final effect. Second, because if tax changes are not neutral, they will reduce fiscal revenues and will reduce public saving. Therefore, it turns out that retirement saving will be an important source to increase private saving in the medium and long terms.

IV.2 Pension Reform in Mexico

If retirement saving is, for the moment, the most important single source to increase private saving, then it is crucial to have and adequate and efficient pension scheme that facilitates the achievement of this goal. Therefore, pension system reform is at the forefront of policy and changes in Mexico as in many other countries. Moreover, pensions play a critical role in several aspects of economic activity, not only by representing a potential sizable share of national saving. Pension plans can account for a significant amount of private asset holding, can foster the development of financial markets through the development of long term institutional investors and can affect the functioning of the capital and insurance markets. Pensions plans can also provide important incentives for workers to remain with a firm or to retire and their benefits can provide substantial amounts of retirement income to the elderly. Finally, pension schemes have important public finance effects ranging from tax efficiency questions to deficit financing issues.

One of the most important trends on pension system reform is the modification or substitution of state-run pay-as-you-go pension systems by private fully-funded schemes. It is often argued that the latter scheme generates factor market distortions, growing financial deficits which forced a raise in state subsidies and heavy financial burden of the system on GDP and the payroll provoking negative effects on employment and national savings. These problems are exacerbated because the maturation of the current pension schemes and demographic changes that resulted in an aging population and higher life expectancy, thus reducing the ratio of contributors and increasing the cost of the pension system. Therefore, many countries are undertaking important changes in their pension systems, although with different coverage. An extreme case is Chile which launched a radical reform at the beginning of the 80's closing the public scheme and supplanting it by a fully-funded private scheme. Current approaches to reform are not as radical, and include modifications to the current system to combine a

reformed public scheme with a private fully-funded scheme as a complement.

IV.2.1 The Public Pension System

Mexico has been operating a traditional defined-benefit, pay-as-you-go public pension scheme. This system is fragmented between the *Instituto Mexicano del Seguro Social* (IMSS), the *Instituto de Seguridad y Servicio Sociales de los Trabajadores del Estado* (ISSSTE), local state programmes and other small public and private programmes. Nevertheless, almost 80 percent of the working population in the formal sector is covered by the IMSS pension programme. Therefore, we will explain the current pension system by referring to the main features of the IMSS programme, known as the disability, old age, dismissal at old age and life insurance (IVCM).[5] Its main goal is to guarantee at least a minimum level of welfare to those workers leaving the labor market due to old age, disability or death. Some of the main features of the IVCM program are the following:

Coverage: the program covers all employees participating in the formal private sector and self-employed workers who voluntarily chose to contribute to the Institute, as well as their families. In November 1995, the total number of affiliates at IMSS was 10.9 millions. Although this amount represented only 25 percent of the Economic Active Economic (PEA), it is estimated that it represented almost 80 percent of the labour force in the formal sector. The number of IVCM pensions at that time was around 1.2 million, of which 65 percent correspond to direct old age pensions and 35 percent are pensions for widows, orphans and other relatives'

Contributions: this programme is financed by contributions from the employer, the employee and the government based on the following shares, 70-25-5 percent respectively. The total contribution for 1996 amounts to 8.5 percent of the salary, and it is distributed as follows: disability and life three percent; old age and dismissal at old age three percent; medical services for the retired 1.5 percent; administration expenses 0.6 percent and social assistance 0.4 percent. In the case of workers earning one minimum wage, their corresponding contribution is paid by the employer

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5 IVCM stands for invalidez, vejez, cesantía y muerte.

FIGURE 1

Total Pensioneers to Contributing Workers at the IMSS
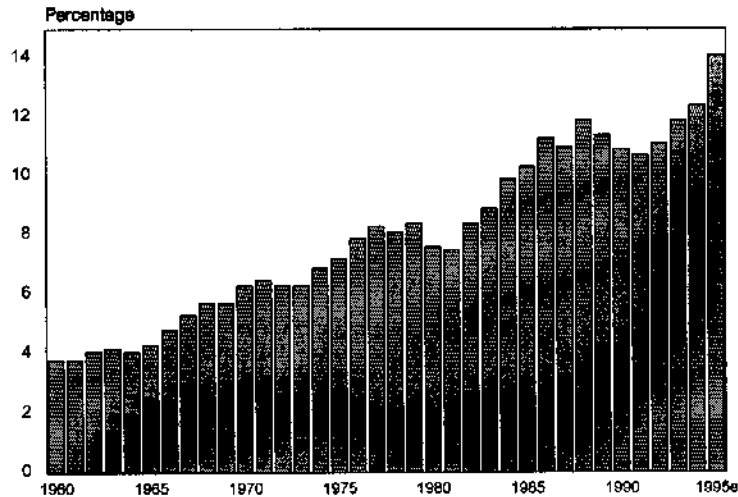
Source: Informes de Gobierno, 1994 y 1995.

Eligibility: in order to fulfill the requirements for a disability pension, disability must be formally proven. For eligibility, the worker must have contributed at least 150 weeks. In the case of an old age pension, it is required that the insured be at least 65 years old and have contributed a minimum of 500 weeks. The same conditions apply for dismissal at old age. Finally, in case of death, the death-in service survivor's pension is paid to the widow and/or descendants, or to his or her parents. In any case, the insured must have contributed at least 150 weeks.

Benefits: benefits depend on the number of weeks of contributions exceeding the required 500 weeks of contributions. These benefits are based on the workers basic contribution salary (BCS), defined as the average of the last five years divided by the current minimum wage.6 For example, for a typical worker whose BCS is equivalent to three times the minimum wage, will be entitled, when reaching 65 years of age, to a pension equivalent to 27.8 percent of the average BCS of the last five years. This percentage could reach 100 percent if the individual has contributed for 40 years. The workers will not receive a pension if she contributed for less than ten years. The minimum pension an insured is guaranteed after contributing 500 weeks, is the equivalent of 100% of the minimum wage. Additionally, all retired workers have the right to receive medical assistance for her and her family. All

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6 The current minimum wage for a day is around 3.2 US dollars.

pensions are indexed to the minimum wage for Mexico City.

Reserves and Investment: reserves must be invested in Federal Government bonds or in other assets of highly credited issuers as approved by the National Banking and Securities Commission. Table 4 shows the way stipulated for the investment of these reserves. IMSS deposits at national commercial banks the amounts required to face immediate obligations. Income and spending of each branch of insurance are registered in separate accounts. These resources will be used to cover only the services corresponding to each branch of insurance.

Table 4
IMSS: RESERVE INVESTMENTS

YEAR	IMSS Infrastructure	Construction for Low-Cost Housing	Mortgages	Government Bonds	National Credit Institutions Bonds	Private Bonds
1943	w.l.(1)	20.0%	w.l.	20.0%	30.0%	
1947 IVCM				67.0%		
Others	w.l.	20.0%	w.l.	20.0%	30.0%	
1956	80.0%	w.l.	5.0%	or in National Credit Institutions 15.0%	5.0%	
1973	85.0%	-	5.0%	or in National Credit Institutions 10.0%	5.0%	
1974	85.0%	-	-	10.0%		-
1990		-	-		5.0%	-
1992	-			100%	5.0%	
1995	-	-		100%		5% in bonds and stock issues by Mexican societies.

(1) without limit
Source: IMSS

Tax treatment: the employers can deduct as expenses their contributions to IMSS. Workers pay taxes at the moment of retirement when they receive the benefits, but taxes apply only for the amount exceeding nine minimum wages

Toward the end of the 80s, the current public pension system was facing increasing problems and imbalances that affected the achievement of their goals. Moreover, to be consistent with the financial reform, it was required to reformulate the whole pension system. At the more general level, these problems are derived from the changing economic, demographic and social environments and are similar

to those faced by other public pension systems around the world. But we can point out some particular factors that have put a growing pressure on the Mexican public retirement scheme.

a) Current contributions will be insufficient in the medium and long terms to finance increasing generous benefits that have been extended to all the worker's relatives. This is a serious problem not only because the actuarial formula used to compute these benefits was not balance. But also, it is of particular concern given the current demographic trends. discussed below.

b) There is almost no relation between benefits and life-time contributions , incentivating evasion and underreporting of wages. The reference BCS to calculate the pension is based on the average of the last five years divided by the current minimum wage and not on the earnings for all years of service.

c) The marginal payroll tax rate is very high even for low income workers. For example, for a worker receiving between one and two minimum wages, this marginal tax rate is over 20 percent. This raises labor costs, favors evasion and induces informality.

d) The increasing size of the informal sector. There is a growing number of young people that have already quit the formal labor market. The informal sector do not contribute to the social security system.

e) There are portability losses because workers with only one employer receive higher benefits at retirement than workers with more than one employer. Moreover, some workers might loose benefits if they change from a job covered by the IMSS insurance to other covered by other programme.

f) The inadequate use of reserves is other problem. The surplus generated by the IVCM programme has been used to finance other IMSS programmes, in particular the health-maternity programme. These transfer of resources has strongly decapitalised the reserves of the pension programme.

The demographic trends have started to pressure the pension programme. Mexico's population has grown at high rates, 3% per year on average, although the recent estimates yield 1.9%. In 1930 total population was 16.5 million and it rose to 90 million in 1994. Despite that Mexico's population pyramid shows an important share of young people, 36.2% between 0 and 14 years old, the fact is that the population in terms of contributors to the social security system is aging very rapidly. Demographic trends show an increase in the share of old people. According

to the OECD, Mexico's total population is expected to be over 142 million by 2030, representing the people over 65 years old around 10%. This trends imply that the ratio of retirees to workers will drive up the cost rate of the current pension system which will face major long-term financing problems. Moreover, this problem is being accentuated by an increase in life expectancy.

TABLE 4
AGE STRUCTURE

	1990	2000	2010	2020	2030
Total Population (millions)	81,249	98,787	114,020	128,455	142,334
Population between 15-64 years old (%)	58.3	61.9	66.6	68.7	67.5
Population between 0-14 and over 65 years old (%)	41.7	38.1	33.4	31.3	32.5
Population over 65 years old (%)	3.7	4.3	5.3	7.2	10.0
Population over 75 years old (%)	1.3	1.3	1.8	2.4	3.5

Source: OECD

The problem generated by this change in the population structure of the country is being accentuated by a reduction in the fertility rate and an increase in life expectancy. According to IMSS, the expected average annual rate of retirees for the next 20 years will be 5.7 percent compared with a rate of 2.6 percent for contributors.

FIGURE 1
ELDERLY DEPENDENCY RATIO

■ Total Population   ■ People over 65   ◆ Dependency ratio
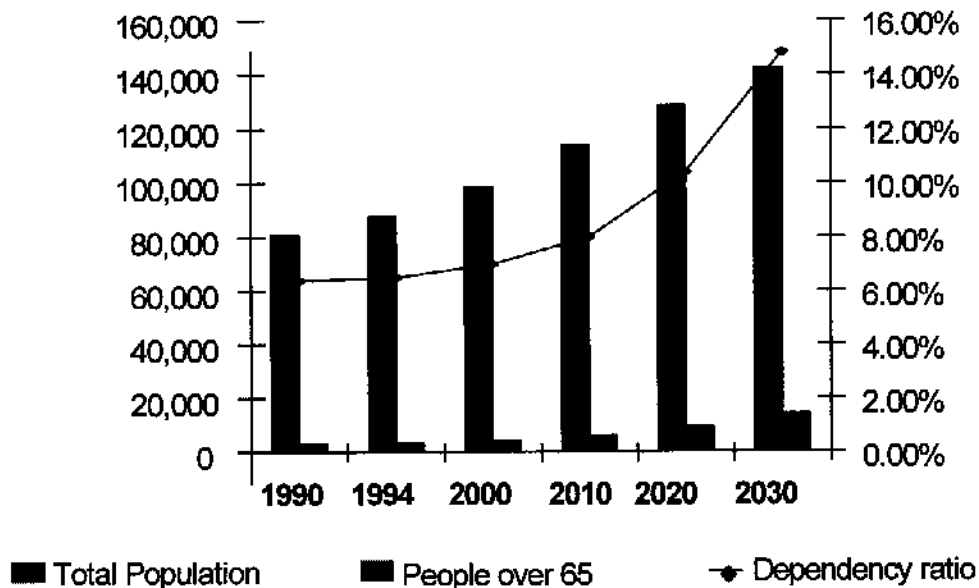
IV.2.2 A Fully Funded Retirement Saving System (SAR)

The retirement saving system (SAR) was established in 1992 as a mandatory fully funded saving scheme to complement the PAYG system. This system is based on individual accounts. Some of the main provisions that characterize this system are the following:[7]

a) **Contributions**: each worker has an individual bank account integrated by two subaccounts: one for retirement and one for housing. Employers pay two percent of salaries (BCS) to the retirement subaccount and five percent to the housing subaccount. These contributions are in addition to the contribution paid to the public pension system..

TABLE 5
EVOLUTION OF SAR RESOURCES
(million of new pesos)

	RETIREMENT	HOUSING	TOTAL
MAY 1992	0.28	1,112.7	1,113.0
DEC. 1992	2,456.9	3,046.1	5,503.0
DEC. 1993	6,325.6	9,735.4	16,061.0
DEC. 1994	11,093.5	17,726.6	28,820.1
DEC. 1995	22,307.0	26,778.0	49,085.0
MAR * 1996	24,862.0	28,486.0	53,348.0

March 18, 1996.
Source: Banco de Mexico

b) **Benefits**: workers are entitled to receive the total capitalised funds from their individual subaccounts in one payment, or to purchase an annuity in the following cases: i) at retirement, ii) when they are entitled to receive a pension because of partial or permanent disability from the IMSS and iii) in the case of death, the funds are given to the beneficiaries designated by the insured.

c) **Other Benefits Provisions**: the insured has the right to withdraw as much as 10% of the total balance of the retirement subaccount in the following cases: i) if partial disability lasts longer than the period established by the Social Security Law. or ii) in case of unemployment. This right can only be claimed by a worker whose balance

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7 A more comprehensive discussion of the SAR is presented by Solís-Soberón (1995).

in the retirement account is no less than the result of 18 times the last employee's contribution, and only if there have been no withdrawals during the past five years. With respect to the housing subaccount, if the workers receives a credit for housing form the INFONAVIT[8] , the funds accumulated in the subaccount must be used as a down payment and the employers contributions plus a workers contribution equal to 25 percent of his wage are used to pay the loan.

d) **Administration**: contributions are deposited in personal accounts managed by commercial banks. These institutions are responsible for keeping the records and financial statements and making the various required filings. They can hold the SAR funds for four days, and have to send them to the Central Bank (Banco de Mexico). Commercial banks charge an annual fee of 0.8% of the balance of the balance retirement subaccount for operating expenses.

e) **Investment**: according to law, Bank of Mexico assigns the resources of the housing subaccount to INFONAVIT. Funds of the retirement subaccount are channeled to the government as a direct loan. Also, the government is obliged to pay an interest rate for using these funds which must be no less than two percent per year, over the inflation adjusted balance using the inflation rate of the previous month. With respect to the housing subaccount, INFONAVIT pays interest according to the remaining operation funds of the year.

f) **Taxation**: individual balances are tax exempt. In addition, amounts withdrawn from these accounts are taxed in the same way as other labor or social security benefits for workers.

g) **Regulation**: the regulatory task is performed by the National Commission for the Retirement Saving System (CONSAR) established in July 1994, who acts as the supervisory authority. Their main functions are the determination of the rules and procedures to ensure the correct functioning of the system. This supervisory body receives applications for registration and have powers of inspection and monitoring of financial intermediaries that managed pension funds. CONSAR also provides the technical support to all participants.

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8 INFONAVIT *(Instituto del Fondo Nacional para la Vivienda de los Trabajadores)* is a government housing agency created to provide subsidised housing loans for workers.

IV.2.3 The Pension Reform

Since the early 90s there was a generalized consensus that the social security system, and in particular the pension system, needed to be reformed. A study performed by the IMSS (1995) described the current system as one financially unfeasible, unable to guarantee and provide the promised benefits and with many elements of inequity. On mid-December, 1995 the President submitted to the Congress a proposal for a new social security law which was approved with no major amendments. This system is expected to be fully implemented starting January 1997. Meanwhile, the regulatory law is currently being discussed by Congress.

One of the main objectives of the reform is to improve and strengthen the individual capitalisation (fully funded) scheme under the SAR system. This implies the substitution of the old PAYG system by a FF system of mandatory retirement savings, complemented with a minimum pension guarantee. Basically this requires the development of transparent mechanisms for pension funds management that allow the right incentives for all participants; the development of a more clear regulation and supervision process for the management and investment of funds that also fosters the development of capital markets; a separation from other social security benefits and to establish close relationship between contributions and benefits.[9]

The main features of this new proposal includes the following issues:

A. Basic Operating Characteristics

Coverage: the new system is mandatory only for all workers in the labor force that are affiliated to IMSS.

Contributions: the new contribution will include the employer's contributions of two percent for retirement and five percent for housing of the SAR system with 4.5 percent contribution from the old age and dismissal at old age of the IMSS system. Also, it will include an additional 'social contribution' by the government equivalent at the moment of the reform to 5.5 percent of the minimum wage and this amount will be indexed to the CPI. Pension contributions will be separated from other social security contributions and their management will be concentrated on specialised pension fund management firms known as *Administradoras de Fondos de Retiros* (AFOREs).

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9 An interesting discussion about alternative possible reform proposals can be found in Feldstein (1995) and Bosworth, Dornbusch and Poterba (1995).

Benefits: benefits are based on contributions accumulated during affiliate's life plus the interest earnings minus commissions paid. The insured has two options at the time of retirement: a) to purchase a life annuity from a private insurance company which guarantees a fixed monthly pension for the insured and his/her survivors, and b) to receive a programmed withdrawal pension directly paid by the AFORE and calculated by dividing the balance from the insured's individual account by the number of years that he/she is still expected to live.

Guaranteed minimum pension: the government will guarantee a minimum pension, equal to one time the general minimum wage at the time of the reform. If the individual's funds are not sufficient to obtain this minimum pension, the government. will make up the difference. This pension will be adjusted for inflation accordingly to the consumer price index.

B. Administration[10]

Management: the management of pension funds will be entrusted to new competing pension funds mangers (AFOREs), regulated and supervised by CONSAR. These institutions should perform their business in an exclusive manner and are allowed to operate several pension funds for its affiliates. The AFOREs main functions include the bookkeeping, issuing reports, making various required filings and paying benefits if the affiliate chose the scheduled withdrawals option.

Individual accounts:participants must affiliate with one AFORE of their choice and must have one individual account. Affiliates have the right to transfer their accounts to another AFORE once per year, although there are some exceptions in case the AFORE changes his commissions or his pension funds investment structure or in case the AFORE is intervened by the authority. The contributions for housing will be channeled to INFONAVIT.

IMSS role: IMSS will be the contribution's collector agency, transferring them latter on to the AFORE selected by the worker.

Commissions: AFOREs will be allowed to charge management fees for several services such as contributions deposits, management of individual accounts, transfer of accounts and for managing the programmed withdrawals option. These fees can be based on the contribution flows, on the outstanding individual account balance, a fixed fee or any combination of them. Commissions must be the same to all

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10 All the features related to the administration, regulation and supervision of the new system are beeing discuss by the Mexican Congress ate the time of this writting. They are expected to be approved by the end of April, 1996.

participants to avoid discrimination.

Insurance Companies: These intermediaries have an important role in the new system. They will be engage in the provision of annuities in favor of pensioners who decide for this option. They will also pay disability and life insurance benefits.

C. Regulation and Supervision

Investment of Funds: Investment regulation and supervision is crucial for the success of the new system. The basic operating principles that guide investment are safety and profitability. Therefore, pension funds are invested only in approved, properly diversified, assets. These assets include Government securities, state companies securities, equity, private debt instruments, shares of other pension funds and another instruments issued or endorsed by credit institutions. Investment on foreign instruments are not allowed. Maximum limits will be established by CONSAR and the AFORE is free to seek the highest returns under these rules.

CONSAR: the regulatory and supervisory tasks will be performed by CONSAR. His main functions are the determination of the criteria and procedures for the correct functioning of the system. This supervisory body will authorise and revoke the license of AFOREs, and has powers of inspection, monitoring and enforcement of financial intermediaries that managed pension funds.

AFORES: these intermediaries should meet several requirements. There is a minimum capital requirement determined by CONSAR. AFOREs can be established by any group of national corporations or financial groups. Foreign participation is allowed, but only for those nationals of a country that has an agreement with Mexico, such as NAFTA. The AFORE is required to maintain investment 'special reserves' as percentage of its total portfolio. There are also rigorous information disclosure requirements. Finally, the AFOREs are not allowed to issue liabilities, provide guarantees, obtain loans or control a firm.

D. The Transition

The new system, that will start functioning on January 1, 1997, is mandatory and all workers are required to shift to the individual capitalisation scheme and stop contributing to the old system. Therefore, the government faces the problem of honoring the pension liabilities of pensioners and workers who have contributed to the old public pension system. This situation implies a government debt that should be financed somehow, but not with workers contributions because these are now directed toward the new individual accounts.

Payment of pensions to current pensioners will continue to be done by the IMSS and will be financed using the existing IVCM reserves and by resources obtained directly from general revenues of the Federal Government. In the case of those workers that have been contributing to the IMSS-IVCM programme before January 1, 1997, and therefore have pension rights under the old system, the reform states the following procedure. A worker already contributing to the old system will shift contributions to the new system. When she reach the eligibility age for retirement, she will choose among the highest pension between the one obtained with the old system (that is, using the benefit formula from the IVCM system) including the SAR funds accumulated by December 1996, plus returns from that date till retirement, and the one obtained with the funds accumulated in her individual account under the new system. If she decides for the latter, the new rules apply. If she decides for the first one, this pension will be financed with the funds in her individual account and will be complemented with government resources.

V. Macroeconomic Impact of the Reform

According to the literature on this issue, the possible macroeconomic effects of a pension reform occur basically through three channels: more saving, higher formal sector employment and production and development of capital markets. This is an issue still under debate, both theoretically and empirically. What is crucial for the final net effect is the way the transition pension deficit is financed. According to recent research, a positive effect on saving, capital and output will be obtained in the case of tax financed transition deficit; small positive effects (or even negative effects) will be obtained in the case of financing the transition with debt while the use of a combination of both alternatives will end up with a result in between.[11] For the purposes of our paper, in this section we discuss three aspects related to this issue. The first one relates to the estimated transition pension deficit of the actual Mexican pension reform. Secondly, we make an assessment of the impact of this reform on savings and, finally, we discuss the impact on the development of capital markets.

A. The Fiscal Cost

This fiscal impact differs among pension reforms depending on the degree of maturation of the old pension system, the size of the formal-informal sectors, the amount of benefits and its relationship with contributions, etc. Therefore, the size of

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11 For a discussion on these results see Corsetti and Schmidt-Hebbel (1995).

this debt and the way to finance it play a crucial role in the discussion of the pension reform and on its success.

In the case of Mexico, the fiscal transition cost has two basic components. The first one includes the cost of honoring current pensions. The second component includes the liabilities derived from current contributing workers. The latter have the option at the time of retirement to choose between the highest pension under the old system and the one obtained with their accumulated individual funds, which depends on the rate of return obtained by them and the rate of growth of wages. In the case they choose the first option, the government will need to use fiscal resources to complement their individual funds. The estimation of this fiscal cost can be obtained from an actuarial model that simulates annual pension revenues, expenditures and liabilities of the IVCM-IMSS pension programme affected by the reform under alternative scenarios. According to a simulation performed for the Mexican case assuming an annual output growth of five percent and a wage growth of 2.8 percent, Sales, Solís-Soberón and Villagómez (1996) estimate that this fiscal cost will be 0.48 percent of GDP in 1997, raising to 2.59 percent or 2.29 percent of GDP (for a 3.5 percent and eight percent interest rates respectively) in 2035. After reaching a peak around 2030, the transition cost will start to decline to a value around 1.87 percent of GDP in 2047.[12] Compared with other pension reforms, such as the Colombian and the Chilean cases, this fiscal transition cost turns out to be smaller. It is not yet clear how this cost will be financed, but it might include a combination of taxes and debt.

B. Savings

Although it is not possible to have a complete evaluation of the impact on savings of this reform, we can advance a preliminary assessment on this issue. It should be clear that the discussion is not in terms of establishing a pension system and its effects on savings, but of substituting a pay-as-you-go system with a fully funded one. Although the debate in the academic literature is still unsettled, there seems to be a growing consensus that in the case of a substitution of systems there will be a positive effect on national savings in the case of a full tax financed fiscal transition deficit. In the case of a partial tax financing strategy, the result depends on the used mix of debt and taxes, but the effect tends to be smaller the higher the proportion of

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12 Sales, Solís-Soberón and Villagómez (1996) performed simulations for alternative scenarios inlcuding a low growth case. Additionally, these authors estimated the total cost for the government derived from the implementaion of the new pension scheme. This total cost includes also other costs for the government that will be permanent as a result of the minimum pension guarantee, the government's contributions to the new system and the 'social contribution'. On average, these items add an additional half percentage point of GDP to the transition cost.

debt used. There is also a positive effect on savings strongly related to financial deepening. There may be other reasons explaining a positive effect. For example, Bosworth et. al. (1995) point out that switching from a PAYG to a FF system would seem to involve a net addition to current saving for the same expected stream of retirement benefits. Corsetti and Schmidt-Hebbel (1995) stress two other factors that might be relevant in the Chilean case. First, a new mandatory saving programme will not offset one for one additional voluntary saving if there is an increased consumer awareness of the need to save. This reduction in consumer myopia could be related to the characteristics of a FF pension system. Second, there will be a positive effect on savings in the case of borrowing-constrained consumers, who could be pushed by the reform into a corner solution. These two effects might also be relevant for the Mexican case if we acknowledge the existence of an important fraction of consumers behaving in this way.[13] Also, recent empirical evidence for the Chilean and Singaporean cases suggest a positive effect of FF pension system on saving.[14] On this line, Bosworth, Dornbusch and Poterba (1995) estimated that, by assuming an increase in the worker's participation base of around 60 percent of total labor income and with a seven percent contribution rate to a funded pension programme, there will be a cash flow inflow equal to 20 percent of GDP after a decade. Of course, this scenario does not include potential offsetting declines in either private or public saving. In any case, these issues will require further empirical work.

If we assume that the transition pension cost is financed using a mixed strategy with a higher tax component, and that liquidity constraints and a reduction in consumers myopia will have a particular relevant role for the Mexican case, we believe that the impact of the pension reform on savings will be positive and that mandatory saving will not offset one for one additional voluntary saving. But we also believe that in the short and medium terms, its most important impact will be on financial savings as a result of financial deepening. In Sales et.al (1996) it is estimated that the future financial saving flows derived from the contributions to the new pension system will represent between 1.5 percent and 3.5 percent of GDP depending on their low or high growth scenarios. But more important, the financial savings accumulated as a results of these pension funds will represent around 21 percent of GDP after ten years and around 50 percent of GDP after 20 years.

C. Capital Market Development

An important effect of a PAYG - FF pension reform is on the development of capital markets because the increased needs of more and new instruments for the

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13 For a discussion of liquidity constrains in Mexico see Villagómez (1993).
14 See Corsetti and Schmidt-Hebbel (1995) and Faruquee and Husain (1995).

accumulated pension funds as well as its impact on competition. We perceive the pension system as a mean of developing a larger and more efficient financial system. In developed countries, fully funded pensions play an integral role in the capital market because their portfolio of assets represent a larger fraction of the total debt and equity of private sector enterprises. The long term savings structure of a funded pension system, unlike individual investment, promotes long term fixed investments in assets such as bond and equities. Also, the growth of pension funds will increase the availability of medium and long term capital. These effects derived from financial deepening should have an accumulative positive impact on output and welfare in the medium and long terms. This stands in line with a recent strand of the economic growth literature that argues that financial intermediation raises growth by raising the rate of return on investment.

We find at least three important channels for a positive impact of pension reform on the development of the Mexican pension system. First, the large accumulation of funds implied by the FF scheme and its investment will have as a counterpart a large increase and diversification of financial assets, in particular long term securities. A second channel is derived from the new role of insurance companies. The provision of this sector of annuity pensions to a part of the pensioners of the new system will allow the broadening of the Mexican annuity market as well as to consolidate the role of insurance companies as long-term investors. Finally, the need to develop the required regulatory and supervisory framework for the functioning of the new system, that guarantee that prices and contracts are realised at fair values and to avoid fraud will be another channel affecting positively the financial system.

It is interesting to see the Chilean experience on this issue, in particular given the similarities between the Mexican and Chilean economies and the pension reforms implemented in both countries. The Chilean capital market structure at the time of the pension reform was characterised by a relatively small participation in terms of the capitalisation of the stock market. It represented 29.9 percent of GDP. But this participation increased significatively by 1992 to 87.5 percent of GDP. In the case of Mexico, the stock market capitalisation represented 37.1 percent of GDP in 1995. In terms of the flow of funds derived from the Mexican new pension scheme, and based on the investment rules explained above, it can be expected a substantial broadening and deepening of the Mexican capital market in the following ten years.

VI. Final Comments

The main aim of this paper was to offer a brief overview of the recent pension system reform in Mexico, viewed as a crucial element of the government strategy to increase the rate of domestic saving. There is a consensus that, at least in the short run, an important part of increasing the Mexican national saving rate will fall on public saving. As Bosworth, Dornbusch and Poterba (1995) argue, this will require an improvement in the tax structure and an efficient mobilisation of revenues. But for the medium and long terms, it is crucial to raise the rate of private saving. The achievement of this goal will require the design of adequate policies to promote this behavior. Although the recent National Development Program mentions the use of fiscal incentives and pension policy reform as the two main measures to improve private savings, we believe that the latter will be the single most important measure to achieve this goal. The current pension system reform in Mexico is an important step towards this objective. But it should be stressed that gains from a reform are not straight forward. Therefore it is crucial for the current reform to offer the right incentives and signals, otherwise the probabilities for a success will be strongly reduced. These include a clear separation between the saving and insurance functions from the redistributive function of the system, a clear set up for the management of these funds, and to clarify the real impact of this reform on the government finances.

Finally, It should be remembered that pension reform is part of a broader reform of social security systems. Along this paper we emphasise the pension side because it is the one closely related to the savings issue discussed here. Moreover, our emphasis has been on the savings and insurance functions performed by these old-age security systems, but certainly we recognise that a successful comprehensive reform should also give the same importance to the redistributive function for alleviating long-term poverty.

References

Banco de Mexico (1995) 'The Mexican Economy 1994'.

Bosworth, B., R. Dornbusch and J. Poterba (1995) 'Public Policies to Support Saving and Investment in Mexico', mimeo.

Corsetti, G. and K. Schmidt-Hebbel (1995) ' Pension Reform and Growth', April, mimeo.

Deaton, A. (1990) 'Saving in Developing Countries:Theory and Review', *Proceedings of the World Bank annual Conference on Development Economics*, The World Bank.

Edwards, S. (1995) 'Why are Latin America's Saving Rates so Low? An International Comparative Analysis', Paper presented at the First Annual Latin American Conference on Development Economics, World Bank, Rio de Janeiro.

Faruquee, H. and A. Husain (1995) 'Saving Trends in Southeast Asia: A Cross Country Analysis', Working Paper 39, IMF.

Feldstein, M. (1995) 'Public Policies to Increase the Private Saving Rate in Mexico', mimeo

Fondo Monetario Internacional (1995) 'Perspectivas de la Economía Mundial', Mayo.

IMSS (1995) 'Diagnóstico', Marzo 1995

Kotlikoff, L. (1989) 'What Determines Savings?', MIT Press.

Lewis (1954) 'Economic Development with Unlimited Supplies of Labour', *The Manchester School*, vol. 22 p.39-191.

Organisation for Economic Co-operation and Development,(1995) 'Aging Populations, Pension Systems and Government Budgets: How do they Affect Saving?', Working Paper No. 1 of the Economic Policy Committee.

'The Mexican Financial System: An Overview' (1996) mimeo, Mexican Group of the Financial Development Markets Project from PECC, April.

Sales, C., F. Solís-Soberón and A. Villagómez (1996) 'Pension System Reform: The Mexican Experience', Paper prepared for the NBER Project on Social Security Conference, mimeo.

Schmidt-Hebbel, K., Luis Servean and Andres Solimano (1995) 'Saving and Investment: Paradigms, Puzzles, Policies', mimeo, World Bank

Solís Soberón, F. (1995) 'Descripción del Sistema de Ahorro para el Retiro', Documento de Trabajo No. 3, CONSAR, Septiembre.

Villagómez, A. (1993) 'Los determinantes del Ahorro en México: Una Reseña de la Investigación Empírica', *Economía Mexicana*, Vol. II, No.2

World Bank (1994) 'Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth', Oxford University Press.