DEMOGRAPHIC DIVIDENDS AND RETIREMENT PENSIONS IN MEXICO

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Introduction

Changes in population age structure in Mexico are yielding a higher proportion of population in working ages known as the demographic window. This opening of this window will keep on for the next two decades and then will close into a permanent aged structure. Such demographic process is combined with social and economic planning within the demographic dividends framework. Mechanisms that intervene in it are diverse, complex and interrelated. To construct the first dividend it is necessary that across the years in which a lower ratio of demographic dependency predominates, savings and economic investments are developed to allow economic sustainability and well-being for the whole population. If this infrastructure keeps sustainability in the long term, it turns into the second dividend (Lee, Freemason, Thousand, 2001; Freemason, 2005). One of the principal instruments in the formation of both dividends should be social security, especially retirement pensions (Turra and Queiroz, 2005).

Mandatory contributions to social security from employees, employers and the State for pensions financing should become savings in the economic sense. In the first place such savings offer a financial protection for people retiring from work. But one must stress that in addition to financial assumptions, these resources will have to contribute to the construction of lasting social and economic bases. Under a demographic structure that shows lower ratios of dependency, substantial part of income can be invested while pension costs are still low. Thus financial accumulation offers the chance to in the construction of social and economic infrastructure characterized as demographic dividends. There are two important elements. One is retirement pensions that guarantee economic security for the elderly and. The other is health systems that take care of the aged population. However, during the period of time in which demographic dynamics are showing lower dependency ratios, instead of an accumulation of resources and infrastructure, social security is undergoing a financial crisis mainly due to a persistent actuarial unbalance between contributions and benefits (Valencia, 2004).

Only about 40 % of economically active population (EAP) is entitled to social security. It is mostly that urban salaried labor force working for a well organized employer, either a private company or a public institution. White and blue collar workers in private companies are about 80 % of those covered by social security, mainly through the Mexican Institute for Social Security (IMSS by its acronym in Spanish). The rest are public servants covered by federal, state and other government institutions (Valencia, 2005). From its creation in 1943 IMSS has been the largest social security agency in Mexico. This paper is a first approach reporting on the roll of IMSS in regard to retirement pensions as an instrument for the formation of demographic dividends. A key element is that in 1997 IMSS carried out a reform shifting its defined benefits pay-as-you-go financial system to defined contributions in privately managed individual accounts. The assumptions were that this reform will eliminate actuarial imbalance, stop the increase of public debt because of pensions, and create domestic savings to boost economic outputs and employment.

This paper has three main targets. First there is an analysis of how benefits and contributions have evolved from 1944 to 1997. The aim is to depict the levels of savings and expenses created under the pensions system in regard to age structures and under the optics of the generation and functioning of the first demographic dividend. Second, following demographic and social security trends a diagnosis of the prospectives for a first dividend is projected up to the year 2024. Third, there is an evaluation of the possibilities of the second dividend. In an attempt to coincide with the political and government timing of the country, processes and transformations are considered in six-year presidential administrations known as *sexenios*.

Sources of data

The principal sources of information are: General Censuses of Population and Housing (several years), Population Projections prepared by CONAPO (2002), Statistical Reports from IMSS (several years), Reports on Activities of the IMSS (several years) and the IMSS's Actuarial Valuation on Retirement, Disability and Life (2004). Since there are some years with incomplete statistics, lacking information is estimated using rates of growth by means of polynomial functions and actuarial methods. Assumptions for prospective studies deserve special attention.

The development of five central variables are analyzed. The first one is the entire population by groups of age. The other four categories are about the population covered by IMSS. The first one of the last is covered workers. The second one is the population with a retirement pension. Most of this sector is composed by elderly population that has some type of pension derived from a previous employment. A smaller proportion is for widowhood pensions. The third variable concerns the total income from fees and contributions for retirement pensions. The fourth is costs of retirement pensions. For the purposes of this study the difference between the last two variables is an important component of the levels of savings generated by the population during the working years. Differences between income and expenses should be the resources underlying the construction of the social and economic foundations required in the formation of demographic dividends. Starting in 1997 funds accumulating in private individual accounts are regarded as income. Costs of pensions comprise those currently in the payroll when the reform took place, as well as new pensioners who were working at the moment of the reform and choose a pension under the previous law.

Defined benefits and demographic dividends

IMSS was established in 1943, when the index of demographic dependency was as high as 81. Actuarial calculations that would allow a suitable financing of social security were supervised by the advising teams of the International Labor Organization. Actuarial estimations followed the provisions that only the contributing working population would receive medical care. Nevertheless, from the very first Law of the Social Security of 1943 it was established that medical and health services will also be granted to kinship but keeping the same amounts of contribution. This attitude had political motives in the first place but was widely justified by the social benefit that it did carried. Thus IMSS was inaugurated with an actuarial deficit. In 1944 the IMSS began operations with 136,741 members, less than 1.0 % of the entire population and only 2.0 % of the EAP. From 1946 and in the following five *sexenios* coverage ratios did increase and

in 1976 it was 22.3 % of the EAP. In any case EAP without any type of social security remained above 60 % at all times.

In terms of population dynamics during the first decades of IMSS demographic dependency was large and increasing since high fertility was delivering high dependency ratios that reached 104 by 1970. On the other hand, increases in the elderly population were minimal. At that time neither the concept nor the expectation of a coming demographic window and its prospects as demographic dividends were in mind. Population policies focused on reducing fertility and lowering the rates of demographic growth. However demographics of social security institutions have different dynamics, timing and parameters. At the creation of IMSS and its retirement pensions under a definite benefits scheme, the reasonable strategy would have been the economic consolidation drawn on the initial favorable situation of an increasing number of workers and scarce pensions. The first five pensions were granted in 1950, when working population covered amounted to 373,644. The number of pensions grew slowly, in 1976 they did not exceeded 25 for every 1000 workers. In 1952 the cost of pensions was less than 1.0 % of total contributions, in 1958 the figure went up to 5.0 %, in the following two *sexenios* it reached 9.7 % and 16.3 %. This system of pensions of recent creation generated substantial savings. By 1976 the difference between income and expenses amounted to 610 million in US dollars of 2004.

In the 1980's demographic changes might have offered the possibility to establish the demographic dividends due to a largest participation of population in working ages. In 1982 51.4 % of the population had between 15 and 64 years of age, but EAP was 32.2 % of the entire population and only 29.4 % of this percent, that is 9.5 % of total population, were workers covered by IMSS. That is to say that from the beginning of a potential first dividend there was a gap between EAP and those enjoying benefits of social security, as it is seen in Graph 1.

[Graph 1]

In the last two *sexenios* of the 20st Century, from 1988 to 2000, population between 15 and 64 years old registered marked increases while the rest of the population was growing at very low rates. The demographic window was opening. But participation of EAP descended in 1988, while contributors to IMSS increased in 5.5 % compared to 1982. Although in the following years participation of EAP increased, in 1996 it was a 39.1 % of the entire population, it did not show a similar increase in social security contributors. Rather it was an increase in informal employment described by García (1996) as a precarious labour market. Even more, during the first five years of the 1990's and for the first time in the history of IMSS, there was a decrease in the absolute number of contributors. These went from 10.1 million in 1991 to 9.8 million in 1994. That is to say that in the years in which it has predominated a low ratio of dependency and population demanding jobs was increasing, labor markets have not generated enough number of formal employments. Under such circumstances social security lost capacity as an instrument in the construction of demographic dividends.

On the other hand, according to Graph 2 the ratio of pensioners over contributors decreased. It went from 22 in 1980 to 32 in 1988 and to 45 1994 pensioners for every 1000 contributors. This tendency is different to demographic dynamics, since in the 1980's and 1990's there was an average decrease of 7 persons 65 and over for every 100 in the 15 to 64 bracket.

[Graph 2]

Although it is true that the opportunity to settle bases for savings and of economic investments derived from the biggest presence of the population in working ages is being wasted, the demographic window will remain open for another three decades. How much can be profited from that opportunity?

Contrasting contributions and pensions, Graph 3 shows that in the 1982-1988 *sexenio* payment of pensions changed from 25 % to 33 % of contributions. In 1988 this ratio lowered down to 27.2 % immediately after an economic crisis that forced budget cuts. The difference between income and expenses was 788 million US dollars of 2004, equivalent to 1.04 % of entire domestic savings in 1988. However, in the following year, 1989, there was a strong increase in expenditures, up to 53.1 % of total income due to increases in benefits. Further details are discussed later. It is in this year when payment of the minimum pension as percentage of the minimum wage, that on average was 70 %, leveled up to 100 %. Meanwhile contributions did not change and remained 6 % of salary, 2.6 % corresponding to retirement financing. In a lesser extend it was also a result of pension payments that remained unpaid from the previous year. Such elements led to a balance of 462 million US dollars of 2004, equivalent to 0.55 % of the domestic savings. During the following *sexenio*, with the exception of 1993, reductions in the costs of pensions in relation to contributions took place even when during the first five years of the 1990's the number of contributors decreased. The reduction was due to the increase in contributions which between 1991 and 1997 increased from 7.0 % to 8.1 % of the salary. 3.3 % and 3.8 % went to retirement pensions respectively for those same dates. Thus funding incresed up to 1.242 billion US dollars, is equivalent to 1.13 % of domestic savings. In 1996 contributions increased to 8.5 %, 4.0 % for pensions. Costs of pensions kept a trend of increase. They went from 43.74 % to 60.88 % between 1994 and 1996. Consequently savings decreased by a half. In 1996 that came down to 625 million US dollars, barely 0.6 % of domestic savings.

[Graph 3]

It is interesting to highlight two issues. First, the high cost of pensions in a demographic context where dependency ratios are decreasing rapidly. This is a hurdle for the construction of the first dividend, due to the historical unviable ratio contributions/benefits. Second, the different use of resources other than to settle the bases for the demographic dividends.

- During the last decades there was lower coverage of IMSS and consequently lower contributions.

- Contributions from employers are lower than they should because they are deductible for income tax (Ortiz, 1998b).

- There is also a big dodging of contributions payment from employers.

- Contributions are actuarially low with regard to benefits, even when these are insufficient. From 1944 to 1989 contributions remained at 6 % of wages. In 1990 they started a gradual increase to reach 8.5 % in 1996.

- Benefits increased both in money amount and in population coverage without an actuarial compensation. The minimum pension increased from 40 % of the minimum salary between 1950 and 1989, to 100 % in 1995 (Ortiz, 1998b). benefits were extended to other dependents of workers.

- There is a minimum 500 weeks of contribution time to qualify for a retirement pension and the average time of contribution is 20 years. After retirement life expectancy with a pension is 18 years and a survival widow has on average another 12 more years as pensioner.

- The labor union of IMSS employees has negotiated onerous fringe benefits including outrageous retirement privileges such as high amount of pensions granted at an earlier age (Salas, 2005). Resources required to meet the deals are substantial. In 1988 it was 34.1 % of total cost of retirement pensions, percent that raised to 66.7 % by 1993, as shown in Graph 4. This is a fact of greater relevance since it dramatically reduces economic and financial opportunities because an unfair system.

[Graph 4]

- There were remarkable increases in life expectancy, including life expectancies at age 65. In 1943, when IMSS was created E(65) was 11 years for both sexes. In the 1980's E(65) was 15 for men and 17 for women. It implied a considerable increase in the cost of pensions. In addition, enlarging life expectancies are correlated to epidemiological transition demanding costlier medical attention for chronic diseases and disabilities. As has been the case in other social security institutions worldwide, financial and actuarial adjustments were late or non-existent.

After the above bulleted remarks it can be explained why savings within IMSS were very low. From 1980 to 1997 they were no more than 1.5 % of total domestic savings. Looking for the use of social security financial resources we find out that they had other destinations.

- Instead of financial reserves in an actuarial sense, resources were allocated to finance clinics and hospitals, medical training, prevention programs, family planning and also to subsidize other social programs. The 1943 Law of Social Security, provided legal grounds for these actions with the proviso that a financial return should be accounted from these investments.

- Accounting formalities were fulfilled. However, actuarial and financial problems arose when the pensions system and its initial financial surplus were used to subsidy other benefits specifically current expenses for general health care and maternity services. In any case no returns were actually credited from the use of hospital and other medical facilities.

- It can not be avoided to recognize that another part of the resources was wasted in mismanagement, corruption, high administrative costs and the commented elite benefits for union employees of IMSS.

Nevertheless, it is also true that IMSS created quite successfully the largest and best medical system the nation ever known. It is now recognized this was a significant investment in the health system including training of human medical capital that made possible a healthier population. It also allowed the application of medical and social programs that otherwise would not have been tackled in the time, performance and achievements. Such were the cases of family planning and medical attention to poverty zones. Social benefits from these extra activities are obvious but its economic impacts are difficult to identify and to measure. But it is also plain that even when a financial profit had not been generated, it did shaped conditions contributing to economic growth and well-being that form essential part of the demographic dividends.

Beyond a most needed social solidarity, clear financial rules must be followed to guarantee the success of retirement pensions. A disorganized and ill-planned system of pay-as-you-go defined benefits has created obstacles for the formation of a first dividend. Not only there is a lack of financial savings and resources that are not allowing a smooth cash flow for pension payments but also a financial crisis threatening the overall social security operation. A reform was needed and IMSS changed in 1997 to defined contributions in individualized accounts managed in private banks as a way to savings, capital formation, and adequate pensions. As it is seen below none of the above desired characteristics are being achieved.

Retirement system under definite contributions and individual savings

The demographic context under which social security was transformed is of decreasing dependency ratios. Population statistics show that in 1997 there were 66 dependent persons for every 100 adults in the ages 15-64. In the following years ratios decreased. They were 64 in 2000 and 53 in 2006. While the participation of the group of ages 15-64 was increasing, EAP was also increasing, although to a lesser pace. It went from 40.5 % of total population in 2000 to 44.2 % in 2006. However, it was not the same for working people with social security, with tiny increases at the end of the 1990's. During the first five years of the XXIst Century IMSS coverage show stagnation, in about 12 million, as it is seen in Graphs 1 and 2.

Once more, a change in the population pyramid in favor of a higher presence of population in working ages was not translated into an increase of covered workers and contributors to social security. In this sense it is necessary to point out, once again, the existence of a significant lag in the generation of suitable work opportunities, in the formal labor market, with access to the social security. Now circumstances are becoming more critical since even when the economy is showing slight growth, contributing workers are not increasing but decreasing, with lesser numbers in 2001 and 2003 as depicted in Table 1. This fact has a big relevancy, since much has been discussed that a growth of GDI would enhance social security coverage. However, evidence shows otherwise. It seems that the most dynamic economic activities are those requiring less working force. In any case, it is urgent to detect what is preventing progress in terms of formal employment.

[Table 1]

Although social security coverage decreased after the reform, pension funds accumulated notoriously, as it appears in the Table 1. In 1998 they were 5.43 % of total national savings quickly rising to 32.08 % in 2005, already equivalent to 6 % of the GDI. Nevertheless, reviewing

the use of these resources and what has been achieved in the generation and functioning of the first demographic dividend some issues deserve attention.

- First, there is a scarce use of pension funds in productivity activities. Ramírez (2004) comments that funds have been converted mostly into government bonds (82.4 %), then in stocks of large corporations (10.8 %) and a minor proportion has gone to financial institutions (4.4 %). When such a big proportion of funds are concentrated in public finance destined to meet current government expenses, resources actually disappear to become an increasing part of internal debt.

- The smaller proportion of funds invested in the economy are canalized to the biggest corporations. These are high capital companies relying in automatic production and requiring less labor force. Recently they have expanded to invest and do business abroad. It might be true that an international investments portfolio provides security and returns, but in the long run it will be detrimental to internal economic development. Another issue is that these companies are favoring consumption instead of productivity and the domestic market.

- Funds are already in a significant amount in terms of total savings. If these resources could be invested in productive economic activities, they could help in reactivating the economy, increase formal employment and income.

- Under the present individual savings system, there are not possibilities to get a decent retirement pension. Valencia (2204) using data from the National Commission on Savings for Retirement (CONSAR) shows that a worker must invest three or four times its present contribution during 40 years in order to attain enough resources for an acceptable pension.

- Commissions and management costs are very high, eroding funds meant to finance a pension. It is foreseen that two thirds of contributors will not accrue enough money to obtain even the minimum pension (Valencia, 2005). The difference will have to be paid by public resources.

- Consequently, the change of IMSS towards a scheme of defined contributions in individual saving is an expensive and burdensome system whose funds are not allocated to productive savings. That is, the first dividend is not being generated.

- Furthermore, in the past at least a substantial part of resources was invested in the health system but this opportunity has vanished after the reform. The population sector that is suffering the most from budgetary cuts in health care are pensioners and the elderly population.

Current pensions at the time of the reform and the new ones that have the option to be pensioned by the old rules of defined contributions will be covered by the Federal budget. Between 1998 and 2005 pensioners increased from 612 thousand to 993 thousand. Paymenrts grew from 502 million dollars a year to 1 billion 422 million dollars. These figures are crucial since the transition costs from the former to the new systems are being extremely high. Resources required are being subtracted from other fields such as health, education an productive activities to promote domestic markets.

First dividend scenarios

Following CONAPO (2002) projections dependency ratios will keep decreasing during the first part of the 21st Century reaching a bottom figure in 2018. Along with this trend, projections of EAP assume increases to be 44.2 % of the total population in 2006, 47.0 % in 2012 and 48.8 by 2018. On the other hand, assumptions and projections for IMSS are different and discouraging in terms of growth of coverage. Contributors at best had a 0.38 % rate of growth as seen in Graph 1. Again, job informality will prevent workers from joining social security, savings and investments.

Based on the active workpeople reported in 1997, IMSS projections, and a series of assumptions to complete information, funds in individual accounts are estimated to increase between 2006 and 2024. Increases are generated from contributions of workers, employers and the State in calculations with the following assumptions: new workers entering labor force are assumed to have the same salary distribution by age as those in 2004; the minimum wage is the one in 2006; the savings rate of return is 3.37 % and contribution density is 58.6 %.

From the estimated amounts of funds a series of elements can de derived about their relevancy in the construction of the first dividend. First, Graph 5 shows that are large and increasing at a significant pace. By 2012 they will amount to 51 billion 636 million in 1998 US dollars, it will increase to 85 billion 146 million in 2018 and to 125 billion 880 million in 2024. Of course the next question is about what will be the use of such amount of financial resources.

Regarding the pension system as a mechanism for savings, theoretically the following three *sexenios* (2012, 2018 and 2024) still have the opportunity for the formation of the first dividend. Such time will be precisely when the dependency ratios will be at its lowest and funds accumulated will present a big potential for productive investment.

[Graph 5]

However, practice is not following theory since funds are being mostly borrowed by the Federal Government to finance the costs of transition from pay-as-you-go to individual capitalization which is also theoretical. Since government bonds will be paid from general taxes the pension system actually will remain a pay-as-you-go. But for worse, it will be more expensive since commissions and management costs are added. Considerable increases in the number of new pensioners are foreseen. They will go from 1.3 million in 2012 to 1.6 million in 2018 and 2.1million s in 2024. Actuarial projections estimate that the number of these pensioners will peak in 2048 and the last one will survive until 2080. Such numbers imply a huge cost of transition from system to system.

It has been mentioned above that retirement benefits of IMSS employees are conspicuously higher. It turns out that it is a also critical hurdle to attain the first dividend. The December 31, 2004 Actuarial Valuation of Retirement and Pension of IMSS Employees reports a payroll of 373,933 persons, 79.08 % of them hired before July, 1997. The mean age was 43 years and the average time of employment was 17 years. Age distribution in Graph 6 shows that

aconsiderable number will be eligible for a retirement pension just for time of service. The number of retired pensioner will intensify in the coming years.

Feasibility of the second demographic dividend

If the first dividend cannot build up, the second dividend is canceled.

- The moment will come when workers who joined IMSS under the new system of defined contributions in individual accounts start to retire. Government bonds which would have been the main savings instrument will have to be converted into cash.

- Most of the retirees will have accumulated very scarce resources in their individual account. Contributions are low, returns will be non-existent, and funds are subject to inflation and devaluation risks.

- Those that will be entitled to a minimum pension because they have contributed at least 24 years but their fund is insufficient to buy the annuity, receive the complement from public resources. This implies that pensions keep its pay-as-you-go characteristics, but in a more expensive system.

- Since most of the costs are upon public budgets, resources are being diverted from other social and economic priorities that would have an impact on the second dividend such as education and health.

Bibliography

Banco Mundial (1994), *Averting the old Age Crisis: Policies to Protect the Old and Promote Growth*, Washington, Banco Mundial.

Blanco, José (1983), "El desarrollo de la crisis en México, 1970-1976" selección de Rolando Cordera, *Desarrollo y crisis de la economía mexicana*, México, Fondo de Cultura Económica, pp.297-335.

Bloom, David y Jeffrey Williamson (1998), "Demographic Transitions and Economic Miracles in Emerging Asia", *The World Bank Economic Review*, vol. 12, núm. 13, pp. 419-455.

Bloom, David, David Canning y Jaypee Sevilla (2001), "Cumulative Causality, Economic Growth and The Demographic Transition", en Nancy Birdsall, Allen Kelley y Steven Sindings (editores), *Population Matters, Demographic Change, Economic Growth, and Poverty in the Developing World*, Oxford-Nueva York, Oxford University, pp.165-200.

Cabral, Roberto (1983), "Industrialización y política económica", selección de Rolando Cordera, *Desarrollo y crisis de la economía mexicana*, México, Fondo de Cultura Económica, pp.67-100.

Cagan, Phillip (1965), *The Effect of Pension Plans on Aggregate Saving: evidence from a sample survey*, Nueva York, National Bureau of Economic Research-Columbia University.

Camarena, Rosa María (1996), "Retos de la juventud", *DEMOS*, núm. 9, pp. 32-33.

Cárdenas, Enrique (1994), "IV. De la segunda guerra mundial a la flotación de 1948-1949", en Enrique Cárdenas, *La hacienda pública y la política económica 1929-1958*, México, El Colegio de México-Fideicomiso Historia de las Américas-Fondo de Cultura Económica, pp. 90-129.

Comisión Nacional de Seguros y Fianzas (1997), *Hipótesis técnicas para los seguros de pensiones derivados de las Leyes de Seguridad Social*, México, Secretaría de Hacienda y Crédito Público.

CONAPO (2002), *Proyecciones de la población de México 2000-2050*, México, Consejo Nacional de Población.

Feldstein, Martín (1980), "The Effect of Social Security on Saving", *The Geneva Papers on Risk and Insurance*, núm. 15, pp. 4-17.

Fries, JF. (1980), "Aging, Natural Death and the Compression of Morbidity", *New England Journal of Medicine*. vol. 303, núm. 3, pp. 130-135.

García, Brígida (1996), "Las implicaciones del nuevo modelo de desarrollo", *DEMOS*, núm. 9, pp. 15-16.

García, Ricardo (2003), "IMSS: orígenes y decadencia", *COYUNTURA*, núm.115, disponible en www.prd.org.mx/ierd/coy115-16/ (26 de junio de 2006).

Gómez de León, José y Virgilio Partida (2001), "Niveles, tendencias y diferenciales de la mortalidad", en José Gómez de León, y Cecilia, Rabell (coord.), *La población de México, tendencias y perspectivas sociodemográficas hacia el siglo XXI*, México, Consejo Nacional de Población-Fondo de Cultura Económica, pp. 81-108.

Gutiérrez, Francisco Javier (2000), "Los niveles educativos de la población y su distribución en el año 2000", *DEMOS*, núm. 13, pp. 20-21.

Ham, Roberto (2003), *El envejecimiento en México: el siguiente reto de la transición demográfica*, México, El Colegio de la Frontera Norte-Miguel Ángel Porrúa.

_____ (2005), "Sin soluciones la sobrevivencia decorosa de la población mayor", *DEMOS*, núm. 16, pp. 42-43.

_____ (s.f.), "Sostenibilidad económica y social de las pensiones de retiro".

Hernández Laos, Enrique (2004), *Desarrollo demográfico y económico de México,* México, *CONAPO*.

IMSS (1943), *Ley del Seguro Social*, México, Instituto Mexicano del Seguro Social.

_____ (1950), *Memoria de labores 1950*, México, Instituto Mexicano del Seguro Social.

_____ (1951), *Memoria de labores de la H. Asamblea General 1949-50s*, México, Instituto Mexicano del Seguro Social

_____ (1958), *Memoria de labores, estado de ingresos y egresos de 1958, plan de labores de 1959*, México, Instituto Mexicano del Seguro Social.

_____ (1965), *Memoria de labores de 1965: datos estadísticos*, México, Instituto Mexicano del Seguro Social.

_____ (1972), *Memoria estadística 1972*, México, Instituto Mexicano del Seguro Social.

_____ (1982a), *Memoria estadística 1982*, México, Instituto Mexicano del Seguro Social.

_____ (1982b), *Ley del Seguro Social*, México, Instituto Mexicano del Seguro Social.

_____ (1991), *Memoria estadística 1991*, México, Instituto Mexicano del Seguro Social.

_____ (1992), *Ley del Seguro Social*, México, Instituto Mexicano del Seguro Social.

_____ (1995), *Memoria estadística 1995*, México, Instituto Mexicano del Seguro Social.

_____ (2004a), *Valuación actuarial del seguro de invalidez y vida al 31 de diciembre de 2004,* México, Instituto Mexicano del Seguro Social.

_____ (2004b), *Valuación actuarial del régimen de jubilaciones y pensiones de los trabajadores del IMSS al 31 de diciembre de 2004,* México, Instituto Mexicano del Seguro Social.

_____ (2005), *Memoria estadística*, México, Instituto Mexicano del Seguro Social.

INEGI (1940), *VI Censo general de población y vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (1950), *VII Censo general de población y vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (1960), *VIII Censo general de población y vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (1970), *IX Censo general de población y vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (1980), *X Censo general de población y vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (1990), *XI Censo general de población y vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (1995), *I Conteo de población*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

_____ (2000), *XII Censo General de Población y Vivienda*, Aguascalientes, Instituto Nacional de Estadística, Geografía e Informática.

Katona, George (1965), *Private pensions and individual saving*, Michigan, Universidad de Michigan.

Landry, Adolphe (1934), *La Révolution Démographique*, Paris, Librairie du Recuil Sirey.

Lee, Ronald, Andrew Mason y Tim Miller (2001), "Saving, Wealth, and Population" en Nancy Birdsall, Allen C. Kelley y Steven W. Sindings (editores), *Population Matters, Demographic Change, Economic Growth, and Poverty in the Developing World*, Oxford-Nueva York, Oxford University, pp. 137-164.

Mason, Andrew (2005), "Demographic Transition and Demographic Dividends in Developed and Developing Countries" en el congreso *United Nations Experts Group Meeting on Social and Economic Implications of Changing Population Age Structures*, México, 31 de agosto al 2 de septiembre, Population Division.

McCaa, Robert (2001), "El poblamiento de México: de sus orígenes a la revolución", en José Gómez de León, y Cecilia, Rabell (coord.), *La población de México, tendencias y perspectivas sociodemográficas hacia el siglo XXI*, México, Consejo Nacional de Población-Fondo de Cultura Económica, pp. 33-77.

Mejía, Iván y Octavio Mojarro (2005), "Efecto de los cambios en la estructura por edades de la población sobre el ahorro y la inversión en México", en Elena Zuñiga (coord.), *México, ante los desafíos de desarrollo del milenio*, México, Consejo Nacional de Población.

Mesa-Lago, Carmelo (1994), "Lecciones aprendidas y pronóstico futuro", en Carmelo Mesa-Lago, *La reforma de la Seguridad Social y las pensiones en América Latina importancia y evaluación de las alternativas de privatización*, Santiago de Chile, Naciones Unidas-Comisión Económica para América Latina y El Caribe, pp. 45-50.

Mier y Terán Marta y Virgilio Partida (2001), "Niveles, tendencias y diferenciales de la fecundidad en México, 1930-1997", en José Gómez de León, y Cecilia, Rabell (coord.), *La población de México, tendencias y perspectivas sociodemográficas hacia el siglo XXI*, México, Consejo Nacional de Población-Fondo de Cultura Económica, pp.168-203.

Moreno, Javier (1991), *Ley del Seguro Social*, México, Trillas.

Muñoz, Humberto y Ma. Herlinda Suárez (1990), "Decrece la influencia de la educación sobre el empleo", *DEMOS*, núm. 3, pp. 30-31.

Narro, José (1993), "¿Qué es la seguridad social?", en José Narro, *La seguridad social mexicana en los albores del siglo XXI*, México, Fondo de Cultura Económica, pp. 55-65

Notestein, Frank (1945), "Population – The long view", en Theodore W Schultz (comp.), *Food for the World*, Chicago, The University of Chicago Press, pp. 36-57.

OIT (1984), *Introducción a la seguridad social,* Ginebra, Organización Internacional del Trabajo.
Ortiz, Antonio (1998a), "La concepción de la política económica y sus resultados, 1958-1970", en Antonio Ortiz, *El desarrollo estabilizador: reflexiones sobre una época*, México, El Colegio de México-Fideicomiso Historia de las Américas-Fondo de Cultura Económica, pp.40-57.

_____ (1998b), "Las políticas laboral y de seguridad social", en Antonio Ortiz, *El desarrollo estabilizador: reflexiones sobre una época*, México, El Colegio de México-Fideicomiso Historia de las Américas-Fondo de Cultura Económica, pp.235-264.

Oliveira, M. Ariza y M. Eternod (2001), "La fuerza de trabajo en México: un siglo de cambios", en José Gómez de León y Cecilia Rabell (coord.), *La población de México, tendencias y perspectivas sociodemográficas hacia el siglo XXI*, México, Consejo Nacional de Población-Fondo de Cultura Económica, pp.873-923.

Partida, Virgilio (2005), "Transición demográfica, bono demográfico y envejecimiento en México" en el congreso *United Nations Experts Group Meeting on Social and Economic Implications of Changing Population Age Structures*, México, 31 de agosto al 2 de septiembre, Population Division.

Poder ejecutivo Federal (2000), *Primer informe de gobierno*, México, Presidencia de la república.

_____ (2005), *Quinto informe de gobierno*, México, Presidencia de la república.

Ramírez, Berenice (2004), "Reforma de pensiones y contexto económico" en el seminario internacional sobre *Sistemas de pensiones: desafíos y oportunidades*, México, 28 y 29 de noviembre, Comisión de seguridad social de la cámara de diputados, pp. 101-110.

Rendón Teresa y Carlos Salas (1993), "El empleo en México en los ochenta: tendencias y cambios", *Comercio Exterior*, vol. 43, núm. 8, pp. 717-730.

_____ (2000), "La evolución del empleo", en Arturo Alcalde y Graciela Bensusan (coords.), *Trabajo y trabajadores en el México contemporáneo*, México, Porrúa, pp. 25-91.

Solís Fernando y Alejandro Villagómez (1999), "Las pensiones", en Fernando Solís y Alejandro Villagómez (compiladores), *La seguridad social en México*, México, CIDE-CONSAR-Fondo de Cultura Económica, pp. 103-159.

Solís, Leopoldo (2000a), "En busca de un rumbo diferente: intentos de redistribución del ingreso*"*, en Leopoldo Solís, *La realidad económica mexicana: retrovisión y perspectivas*, México, El Colegio Nacional-Fondo de Cultura Económica, pp.367-387.

_____ (2000b), "Los costos del reordenamiento*"*, en Leopoldo Solís, *La realidad económica mexicana: retrovisión y perspectivas*, México, El Colegio Nacional-Fondo de Cultura Económica, pp.388-410.

Turra, Casio y Bernardo Queiroz (2005), "Before it's too late: Demographic Transitions, Labor Supply, and Social Security Problems in Brazil" en el congreso *United Nations Experts Group Meeting on Social and Economic Implications of Changing Population Age Structures*, México, 31 de agosto al 2 de septiembre, Population Division.

Valencia, Alberto (1999), "El valor de los pasivos contingentes" en CONAPO, *Envejecimiento demográfico de México: retos y perspectivas*, México, Consejo Nacional de Población, pp. 191-219.

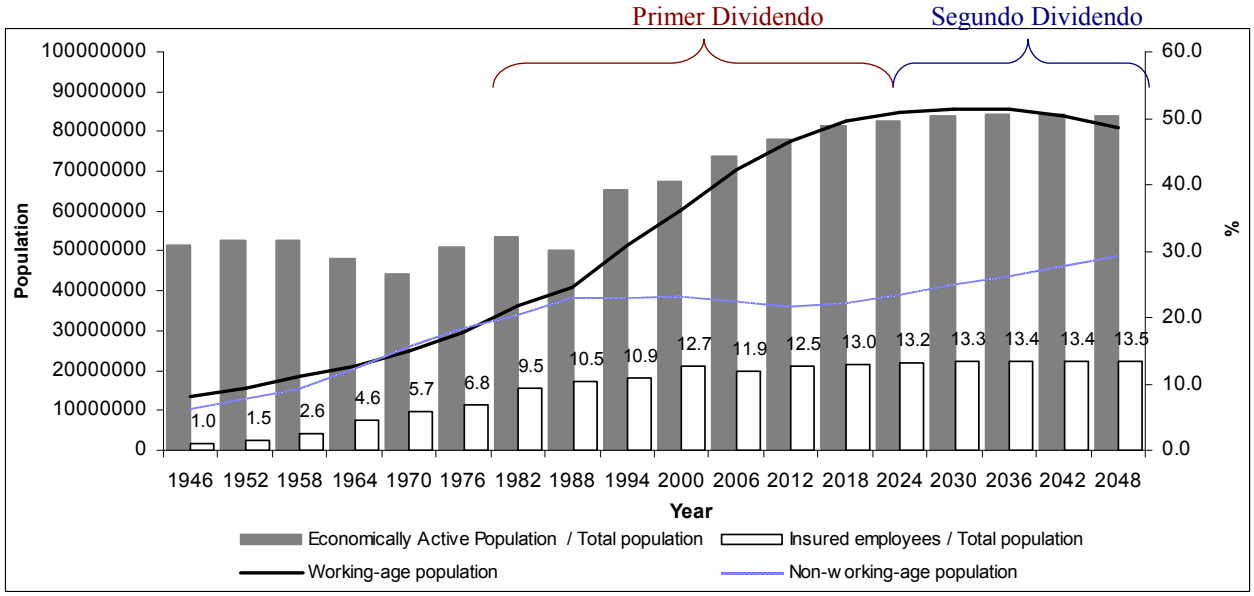
_____ (2004), "Pensiones y seguridad social" en CONAPO, *La situación demográfica de México*, México, CONAPO, pp. 83-90.

_____ (2005), "Seguridad social y envejecimiento de la población en México Análisis del sistema de cuentas individuales para pensiones de retiro" en el congreso *United Nations Experts Group Meeting on Social and Economic Implications of Changing Population Age Structures*, México, 31 de agosto - 2 de septiembre, Population División.

_____ (s.f.), "Evolución del sistema de cuentas individuales para pensiones de retiro".

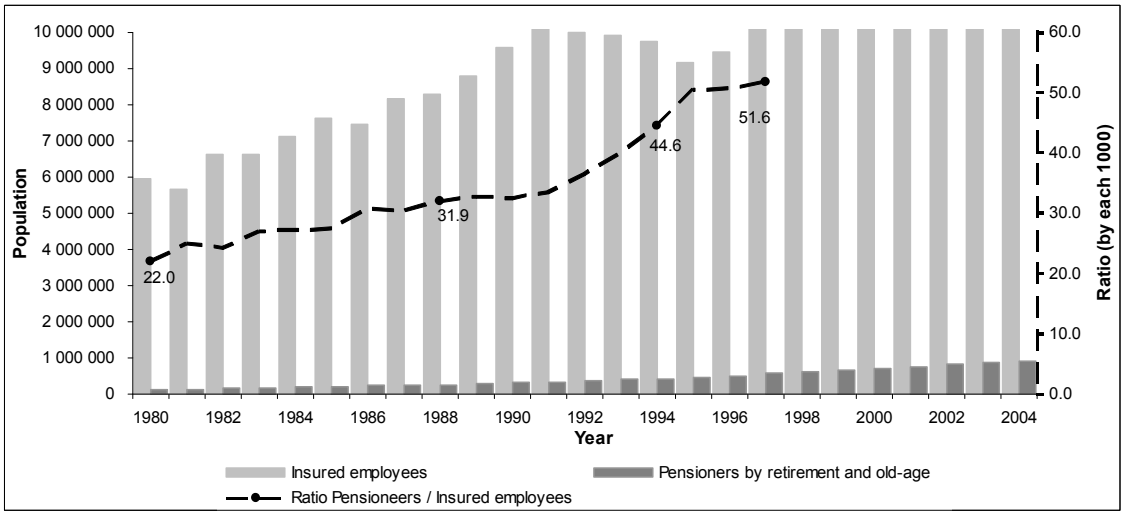
Zavala de Cosío, María Eugenia (2001), “La transición de la fecundidad en México”, en José Gómez de León y Cecilia Rabell (coord.), *La población de México, tendencias y perspectivas sociodemográficas hacia el siglo XXI*, México, Consejo Nacional de Población-Fondo de Cultura Económica, pp.147-167.

Figure 1. México: Population dynamics, 1946-2048.



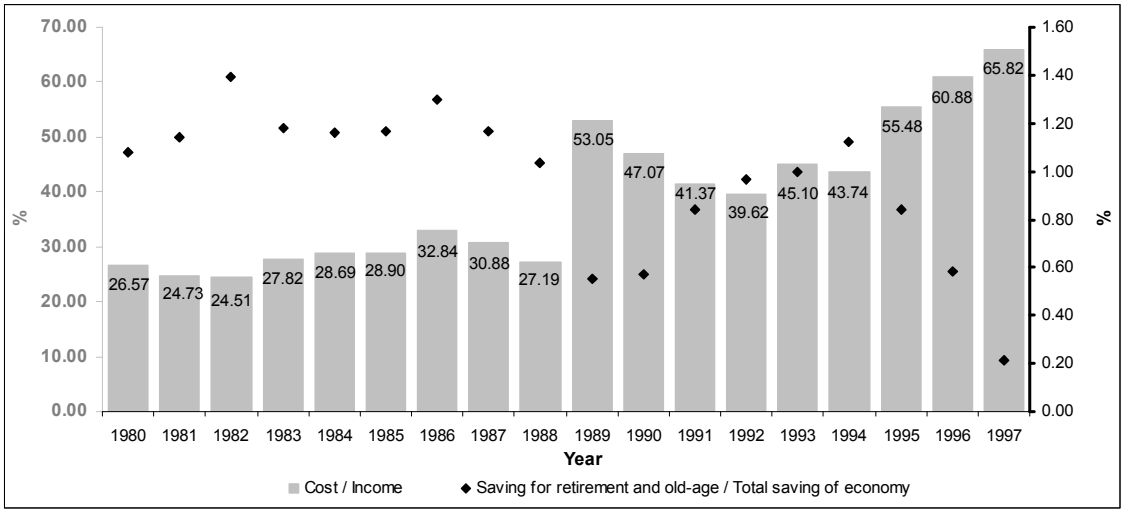
Data: Census of Population and Housing (1940, 1950, 1960, 1970, 1980, 1990 y 2000) Population Projections CONAPO (2002), Actuarial Evaluation of Disability and Life (2004).

Figure .2. IMSS: Pensionados / contributors, 1980-2004. (For each 1000)



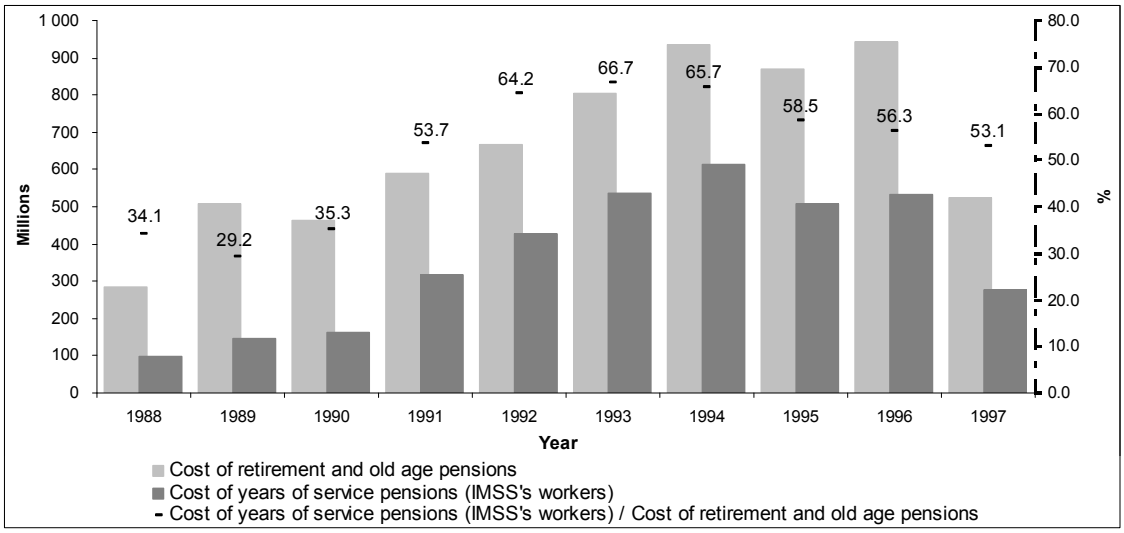
Data: IMSS Statistical Reports (several years), Actuarial Evaluation of Disability and Life (2004).

Figure 3
IMSS: Cost of pensions / contributions, 1980-1997.



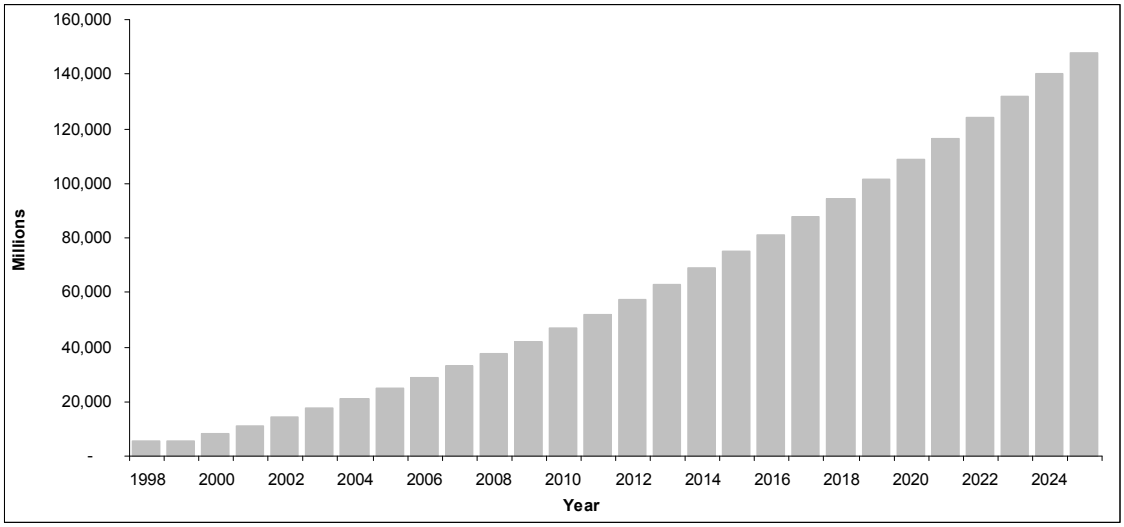
Data: Memorias Estadísticas del IMSS (several years), Memorias de Labores del IMSS (several years) y PRONAFIDE, Quinto Informe de Gobierno (2005)

Figure 4. IMSS: Costs of retirement pensions by years of service, 1988-1997.
(in millions of constant 2004 dollars and percent distribution)



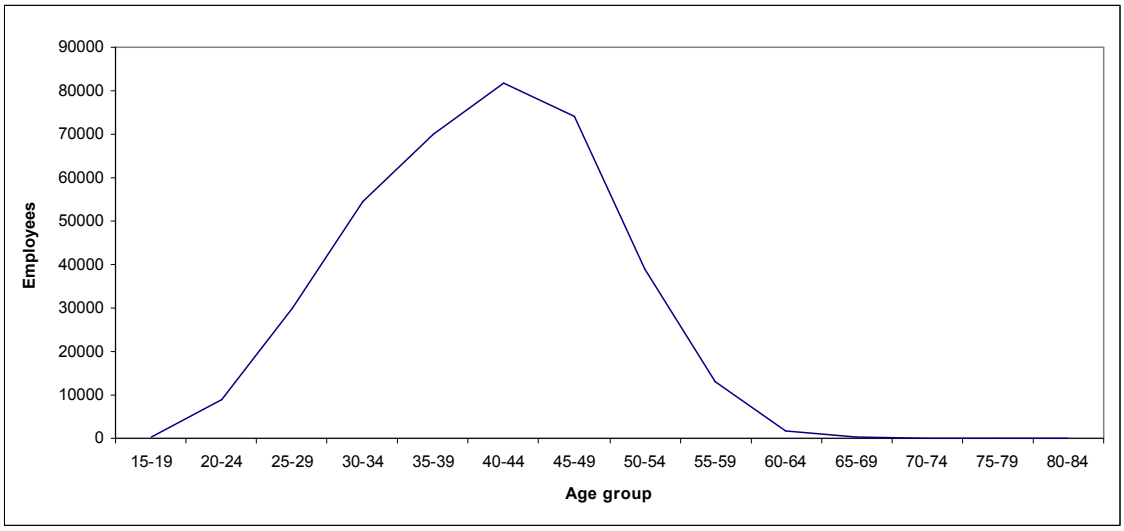
Data: Memorias Estadísticas del IMSS (several years) y Memorias de Labores del IMSS (several years).

Figure 5. IMSS: Funding of retirement pensions, 1998-2024.
(in millions of constant 1998 dollars)



Fuente: CONSAR (2004)

Gráfica 6. IMSS: Age distribution of transition IMSS employees, 2004.



Fuente: Valuación Actuarial del Régimen de Jubilaciones y Pensiones de los Trabajadores del IMSS (2004).

Table1. Covered workers in IMSS, GDI rate of growth, IMSS savings/total savings, 1980-2004.

	Year	IMSS coverage	GDI growth rate	IMSS savings/Total savings
First Demogrphic Dividend	1980	5 963 670	8.5	1.08
	1981	6 650 386	-0.5	1.14
	1982	6 641 893	-3.5	1.39
	1983	6 617 460	3.4	1.18
	1984	7 131 581	2.2	1.16
	1985	7 633 098	-3.1	1.17
	1986	7 452 797	1.7	1.30
	1987	8 165 487	1.3	1.17
	1988	8 307 647	4.1	1.04
	1989	8 790 957	5.2	0.55
	1990	9 589 624	4.2	0.57
	1991	10 069 691	3.5	0.84
	1992	9 995 621	1.9	0.97
	1993	9 909 588	4.5	1.00
	1994	9 754 876	-6.2	1.13
	1995	9 157 137	5.1	0.84
	1996	9 451 680	6.8	0.58
	1997	10 933 550	4.9	0.21
	1998	11 608 140	3.9	5.43
	1999	12 306 781	6.6	9.23
	2000	12 567 116	-0.2	11.79
	2001	12 193 970	0.8	19.48
	2002	12 224 831	1.4	23.82
	2003	12 101 731	4.2	27.12
	2004	12 348 050	3.0	27.59
	2005	12 608 808	1.3	32.08

Data: Valuación actuarial al seguro de invalidez y vida (2004), INEGI, Memorias estadísticas del IMSS (varios años), Memorias de labores del IMSS (varios años), Quinto Informe de Gobierno (2005), CONSAR.