needed to qualify for a pension and to guarantee a minimum pension for those whose individual savings accounts cannot provide them with this minimum.

A. Coverage of pension systems

The percentage of the national population that is able to enjoy a retirement pension is an indicator of the level of protection provided by the institutions that offer this type of benefit. Figure 1 shows the approximate distribution of the economically active population among the main retirement systems during 2004. The majority, 63 per cent, lack institutional coverage, while the members of the Mexican Social Security Institute (IMSS) account for 30 per cent of the economically active population, and the remainder, approximately 7 per cent, are covered by the Government Workers' Social Security and Services Institute (ISSSTE), other governmental institutions, and various Stat

for workers earning three times the minimum wage, declining to 11.72 per cent for workers earning 25 times the minimum wage.

If the 5 per cent for the housing sub-account is deducted from the above percentages, the amounts remaining specifically for retirement are 12 per cent for workers earning the minimum wage, 9.250 per cent for workers earning twice the minimum wage, and 8.33 per cent for workers earning three times the minimum wage, declining to 6.72 per cent for workers earning 25 times the minimum wage.

In Chile, the percentage is a flat 10 per cent and is contributed only by the workers themselves.

Figure 3. Percentages of contributio

cent that is common among the group of AFOREs that handle some 60 per cent of the current portfolio, the sum of 25.7 centavos (ratio of 1.67 to 6.5) is deducted from each peso deposited, so that 74.3 centavos go into the individual account. At a 5 per cent real rate of return per annum, it would take 74 months (six years and two months) for the peso to regain the purchasing power it had at the time it was first deposited, which gives an idea of the true cost of such commissions, even though they represent a relatively small percentage. Commissions based on account balances, as the name suggests, are charged annually based on the balance in the individual account.

TABLE 1. VARIABLE COMMISSIONS AND COMMISSIONS BASED ON ACCOUNT BALANCES TO BE COLLECTED BY PENSION FUND MANAGERS (AFOREs) IN 2005 AND 2014

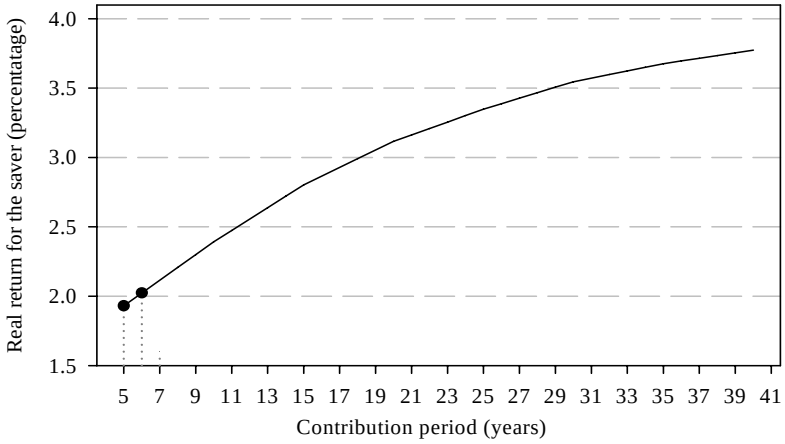
AFORE	*Commission (percentage)*	
	2005	*2014*
A. Variable		
Inbursa	0.50	0.50
Actinver	1.03	1.03
Invercap	1.03	1.03
Azteca	1.10	1.10
IXE	1.10	1.10
Metlife	1.23	1.23
XXI	1.30	1.30
Banorte Generali	1.40	1.40
HSBC	1.60	1.60
Principal	1.60	1.60
Santander Mexicano	1.60	1.60
Profuturo GNP	1.67	1.67
Bancomer	1.68	1.68
ING	1.68	1.68
Banamex	1.70	1.70
B. Based on account balance		
Azteca	0.15	0.15
Actinver	0.20	0.20
Invercap	0.20	0.20
XXI	0.20	0.20
Metlife	0.25	0.20
IXE	0.35	0.26
Principal	0.35	0.30
HSBC	0.40	0.25
Banorte Generali	0.50	0.30
Inbursa	0.50	0.50
Profuturo GNP	0.60	0.50
Santander Mexicano	0.70	0.15

Source: CONSAR (2005)

obtain the average rate of return shown in figure 5. The values set out are an estimate of the likely returns that might accrue to savers who make contributions to their accounts during the contribution periods shown.

Figure 5. Estimated equivalent rate of return on deposits in an individual account, for different contribution periods

(With 5 per cent real return on funds annually and variable commission of 1.67 per cent)



return on savings. This disadvantage is in addition to others that stem from the informality of the labour market and the instability of employment.

The National Commission for the Retirement Savings System (CONSAR) has been producing statistics on historical returns virtually from the time the system was established on 30 September 1997[3] up to June 2005. These statistics highlight the difference of 5.56 per cent between the rate of return (7.65 per cent) obtained by the pension fund investment companies (SIEFOREs) and the net return for workers (2.09 per cent), a margin that favours the pension fund management companies. Through June 2005, this margin is 2.7 times the average return received by workers (see figure 6). By way of a benchmark, the system's technical rate was set from the inception at 3.5 per cent; thus the net return to date is approximately 60 per cent of that rate.

C. CHARACTERISTICS OF THE POPULATION CONTRIBUTING TO SOCIAL SECURITY

Having commented on the main rules governing the operation of the system of individual accounts, we shall now provide information about the population to which these rules apply. The characteristics of that population and its behaviour in the formal labour market, as expressed through its social security contributions, define both current results and medium-term projections.

Contribution densities

It was noted earlier that the amount of savings in individual accounts depends basically on the following factors: (i) the amount of regular contributions; (ii) the contribution period; and (iii) the rate of return. The amount of contribution is determined by the worker's wages. The contribution period will depend on the length of active employment and whether employment is in the formal or informal sector. Unfortunately, for one important concept associated with the contribution period, which is the contribution density, statistics for Mexico are not available. The contribution density refers to the period of time during which contributions are made to social security as a proportion of the total time worked.

With regard to the contribution density and its importance for the future of individual accounts, one key benchmark is the survey of the working population conducted by the Sub-secretariat for Social Welfare of the Government of Chile in 2002. According to the survey, the contribution density, which had been presumed to be 80 per cent on average, was actually 52.4 per cent overall, 59.8 per cent for men and 43.7 per cent for women. The survey also highlighted the need to obtain more detailed basic information from individuals rather than make calculations based on individuals assumed to be representative of the community.

Drawing on the Chilean data as a framework for analysing the situation in Mexico, and in the absence of specific data for that country, the following indicators have been selected to compare the situation of the two countries. These indicators, which have been selected for their likely impact on the level of activity and employment status of the working population, refer to the period 2000-2003 and the average for 2001-2003, and are taken from documents issued by the Economic Commission for Latin America and the Caribbean (ECLAC, 2005).

From the figures in the far right column of table 2, it is clear that Chile's performance is better than Mexico's in terms of GDP growth, per capita GDP growth, inflation level (measured by variations in Consumer's Price Index - CPI), and visible under-employment. Therefore, applying the results from the Chilean survey to the case of

The results obtained cannot be seen as indicative of the real situation in Mexico but rather as highlighting the significant effect that different contribution densities may have on the system of individual accounts, the aim being to encourage special studies on the subject. The situation would of course need to be analysed by sex. The present paper accordingly endeavours to quantify the most significant differences in the results between men and women.

TABLE 2. COMPARISON BETWEEN CHILE AND MEXICO: SELECTED VARIABLES
(*Percentage*)

Variable	Country	*2000*	*2001*	*2002*	*2003*	*Average for 2001 - 2003*	*Ratio of Chile/Mexico averages*
GDP growth	Chile	4.50	3.50	2.00	3.30	2.93	5.50
	Mexico	6.70	-0.30	0.70	1.20	0.53	
Per capita GDP growth	Chile	3.20	2.30	0.90	2.20	1.80	4.00
	Mexico	5.10	-1.80	-0.70	-0.20	-0.90	
CPI variations (average annual rates)	Chile	3.80	3.60	2.50	2.80	2.97	0.56
	Mexico	9.50	6.40	5.10	4.50	5.33	
Visible under-employment rate (average annual rate)[a]	Chile	5.40	6.40	5.60	5.90	5.97	0.57
	Mexico	11.70	11.10	10.00	10.50	10.53	

Source: ECLAC (2005a and 2005b).
[a] Refers to percentages of the economically active population in urban areas.

We shall now look at the contribution densities obtained directly by processing information from the First Social Welfare Survey of Chile database, entitled Employment History and Social Security 2002 (Secretariat for Social Welfare of the Government of Chile, 2002).

Figure 7 shows the distribution of female workers in Chile according to the contribution density. The left vertical axis indicates the percentage of working women at each level of contribution density. The right vertical axis indicates the cumulative percentages. Generally speaking, the values on the left side of the figure occur more frequently (indicative of lower rates). As for the cumulative values, 36.3 per cent of women have a contribution density up to 25 per cent, 57.5 per cent have a contribution density up to 50 per cent, and 75.4 per cent a contribution density up to 75 per cent.

The same comparison yields different results for men, for whom the values on the right side of the figure are the most frequent, indicating higher contribution densities. That conclusion is confirmed by the aggregate values: 24.9 per cent of men have a contribution density up to 25 per cent, 40.3 per cent a contribution density up to 50 per cent, and 61 per cent a contribution density up to 75 per cent (figure 8).

The figures also show a relatively high percentage of men and women with a zero contribution density. In applying this scheme to Mexico, that group has been eliminated and the results adjusted proportionally for both sexes so that the sum of the remaining values is 100 per cent. The

rationale for this is that, in this specific case, we are dealing with the pool of IMSS affiliates who work in the formal sector and whose contribution density will always be greater than zero as they need to contribute at least one day to be registered with the institute. The adjusted values are shown in figure 9. What is most noteworthy in this direct comparison between men and women is that relatively more women are towards the left of the horizontal axis (low contribution densities) and more men are towards the right.

Figure 7. Percentage distribution of workers by contribution density, women (Chile)

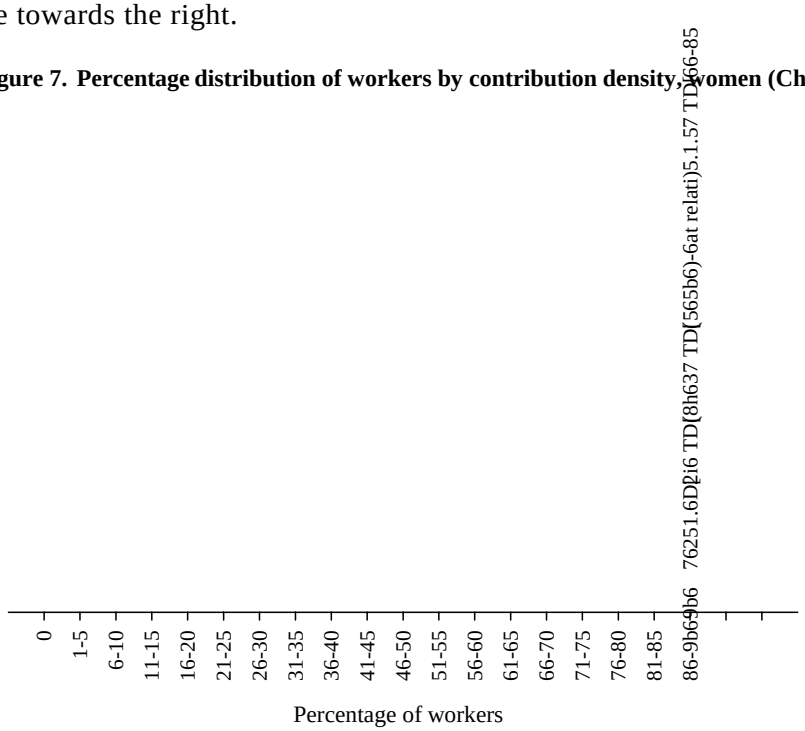


Figure 9. Percentage distribution of workers by contribution density,

The predominance of workers with low earning power is one of the major limitations of the system. Although the social contribution made by the Federal Government, which is proportionally greater for those who earn less, partially compensates for this limitation, it is still difficult for most workers to accumulate sufficient capital for an adequate pension. This is due to factors determined by the labour market such as low wages and intermittent formal employment, over which workers have little real control.

Since they have no real influence over their employment situation, one might think that workers would be more responsible and save for their retirement by increasing the 1.125 per cent of their salary they currently contribute, but that option clashes with the practical difficulty of doing so for the great majority earning a minimal subsistence-level income.

Those factors underscore the risks and limitations of a funded benefit system under conditions of scarce capital.

D. MODEL FOR SIMULATING EXPECTED RESULTS OF THE SYSTEM

With a view to estimating the foreseeable results for the system, a model was developed which takes into account gender, income level (1 to 5 times the minimum wage), the different contribution densities (1 to 5, 6 to 10, ... 96 to 100) and the resulting contribution periods, as well as the rate of return relative to the contribution periods.

For each sex and wage level, the model calculates the following:

1. number of workers who have not had the minimum number of contribution years during their reported working life to qualify for a pension, even after reaching the required age (65 years);

2. estimated cost of supplementary assistance for workers who do not qualify for a pension, at 50 per cent of the minimum wage;

3. number of workers who do not qualify for a pension but who fulfil the requirements for obtaining health-care benefits;

4. number of workers who do not achieve the minimum pension, and the estimated cost to the State to provide a supplement in such cases; and

5. number of workers having a pension equal to or greater than the minimum.

The model was applied to the 9.9 million workers (60 per cent men, 40 per cent women) currently contributing at levels 1 to 5 times the minimum wage, who represent 79 per cent of the participants in the system. Given the uncertainty over whether income from the housing subsidy would actually be available (it could be used for the purchase of real estate), this kind of subsidy was excluded from the model. Additional costs arising out of any widow’s or orphan’s benefit were not taken into account.

The model incorporates the following assumptions:

The age structure of the workers is normally distributed with a mean age of 42 years for both men and women. Although statistics on the age distribution of current workers are not available, this average age can be considered a reasonable working estimate, given that IMSS is an

institution that has existed for more than 55 years and whose affiliates could easily be around that average age.

The mortality tables used for the system assume that 91 per cent of women and 85 per cent of men will survive to age 65 (retirement age), for a total of 8.7 million workers (87.3 per cent of the current population at that wage level).

Wages remain the same over 40 years of working life (no salary increase).

There is entitlement to pension after contributing for 1,250 weeks (24 years).

There is entitlement to health-care benefits after contributing for 750 weeks (14.4 years).

The rate of return on assets in an individual's account varies according to the contribution period (see data in figure 4).

A supplement of 50 per cent of the minimum pension is assumed for individuals who have not contributed for at least 1,250 weeks (as part of supplementary benefits not currently paid under any head).

The contribution densities calculated from the First Social Welfare Survey of Chile (2002) are assumed to apply to Mexico.

E. EXPECTED RESULTS

The results shown below relate to a number of workers equal to the number currently insured by IMSS (in the range of one to five times the minimum wage) and whose retirement pension depends exclusively on their individual savings. They show detailed figures for a closed group, which is analysed by way of example. Should we wish to calculate the results for a specific period, a more complex exercise would need to be undertaken with an open group, in which the workers retiring or leaving the group permanently for some other reason are replaced, in order to keep the number of insured persons at a pre-established level.

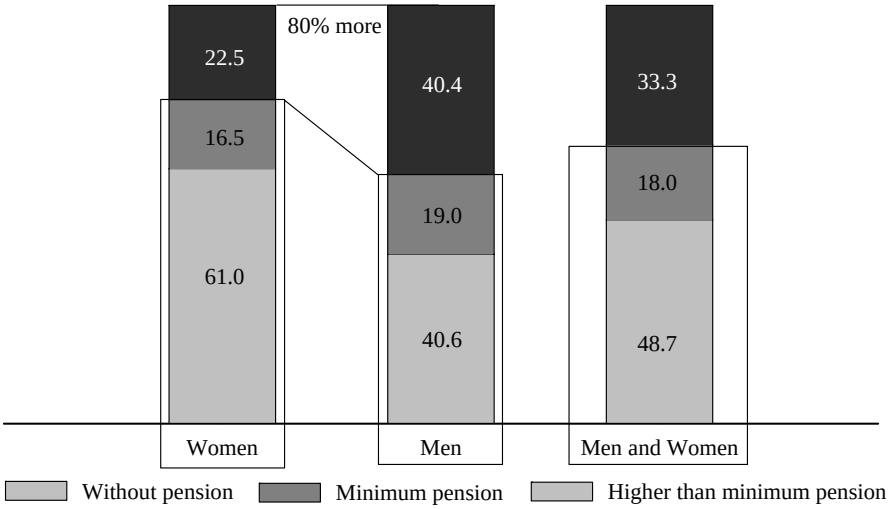
Demographic results by sex and pension level

Figure 11 shows the results obtained for the pool of 8.7 million workers — those who survive to age 65 out of the 9.9 million who currently contribute in the range of one to five times the minimum wage — based on the likely situation of their individual savings.

The results show that, among women, 61 per cent would not be entitled to a pension, 16.5 per cent would find themselves obliged to receive the guaranteed minimum pension, and only 22.5 per cent would receive a pension higher than the minimum. In sum, 77.5 per cent— approximately 2.7 million women—would not have achieved a sufficiently high level of savings for retirement.

As for the male workers, 40.6 per cent would not qualify for a pension, 19 per cent would have to apply for the minimum pension and the remaining 40.4 per cent (practically the same percentage as those who would not qualify for a pension) would exceed the minimum pension. In sum, 59.6 per cent—approximately 3.1 million men—would not have achieved a sufficiently high level of savings for retirement.

Figure 11. Expected results of the individual account system by sex
(Percentage)



Source: Author's calculations based on the First Social Welfare Survey of Chile, Subsecretariat for Social Welfare of the Government of Chile (2002).

In the comparison between the sexes, women are at a notable disadvantage. There are proportionally more women who would not have a pension and fewer who would have a pension equal to or higher than the minimum.

In the aggregate, 67 per cent of men and women would not have achieved a sufficiently high level of savings for retirement (approximately 5.8 million workers). nlfar ortigs fo(o)-1.1(2)-9er wh0nkers)wh04 h

Figure 12. Evolution of

Taking into account the two types of subsidy, the overall percentage needed would be 20.6 per cent. In absolute terms, the overall amount is equivalent to 17.7 billion pesos, which represents

While the necessary support is modest as a percentage of GDP, it should be recalled that this support refers to only one generation of workers, those currently employed. Furthermore, the subsidies do appear high in relation to the annual earnings of workers at the lower wage levels.

Figure 16. Proportion of annual earnings req

Measures will be necessary to ensure financing for health care for future pensioners and for those who, while not qualifying for a pension, receive health care benefits.

A critical and in-depth review is also needed with a view to amending the rules of the current retirement savings system with respect to eligibility, commissions and contribution rates, among others elements, since the predictable results in the current economic and social environment are not very encouraging in terms of offering an adequate pension to savers, particularly because of the manifest inequality suffered by women. A fundamental part of such a review involves collecting information similar to that found in the Social Welfare Survey of the Government of Chile.

NOTES

[1] If, during a working life of 40 years contributions are paid during a period equivalent to 24 years, then the contribution density is expressed as the ratio of 24 to 40, or 60 per cent.

[2] Investment companies specializing in pension funds whose exclusive aim is to invest the funds in the individual accounts of workers who are members of an AFORE.

[3] The reforms to the IMSS Act were adopted in 1995 but did not come into force until July 1997.

[4] The replacement rate indicates the extent to which the pension replaces the wage that the worker received when actively employed. If the pension is equal to the wage, then the replacement rate is 100 per cent.

[5] Although the data for the poverty line determined by ECLAC correspond to 2002, the same ratio is used for 2005, since the real minimum wage remained practically unchanged during that period.

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