

Social (in)security at the beginning of the XXI Century
The Argentine elderly and a decade of increasing exclusion

Carlos O. Grushka*

1. Introduction

In this paper we discuss the loss of social protection for the elderly population in Argentina that took place during the last decade, as much in the contributory pension programs as in the social assistance programs. The social security system in Argentina had a very early development within the region. Nevertheless, during the 1980s its traditional dominant role in social policy was decreasing, as revenues to the system fell increasingly short and would not cover the benefits expected by the population (Feldman et al, 1986). After several reforms to the parameters of the system, deeper structural reforms introduced a mixed regime in 1994, which offered affiliated workers the option of contributing to individual retirement accounts. The transition costs of the loss in revenue to the system created by this option, as well as subsequent measures taken are among the alleged factors that increased Argentina's vulnerability to the fiscal crisis that reached a crescendo at the end of 2001. During the unfolding of the crisis the level exclusion from the social security system was the greatest ever observed since its expansion (Cetrangolo and Grushka, 2004).

Public expenditure on pensions in 1980 represented about 5.2% of the GDP. By 1995 this had reached 8.4% of GDP, and declined to 7.9% in 2000. As a portion of consolidated public expenditure, spending on social security grew significantly during the 1980s and 1990s. During the same period spending on social security as a portion of total social spending did not change significantly (Grushka, 2002).

This paper has three additional sections. In Section 2, we evaluate several indicators of social security coverage, analyze the recent changes in coverage, and discuss some of the numerous challenges to designing and managing a financially viable system to close the important gaps of coverage. Besides, we explore some international comparisons. In Section 3 we consider measurement difficulties and levels of poverty among the elderly, we discuss the contribution of social security to total household income, and we present some international comparisons that help to place the importance of social security as a poverty prevention instrument in Argentina in perspective. In Section 4, we exploit a newly available data set from a survey on old-age welfare and income coping strategies of the elderly, designed and

* Head of Statistics and Social Security Research, Supervision of Pension Funds, Argentina. The author is solely responsible for the opinions expressed in this paper, which may not reflect those of the institution. The author thanks Truman Packard and Abigail Barr for their valuable comments. E-mail: cgrushka@safjp.gov.ar

collected with support of the World Bank (ETEAP, 2003). We use the data to investigate who among the elderly are covered by social security; compare those without coverage with individuals and households with different types of formal cover; identify the determinants of individual coverage; and estimate individual and aggregate contributions. Section 5, concludes this paper with a summary of the main findings and the challenges ahead.

2. Social Security Coverage

The primary target of the social security systems consists of protecting the population of the old-age risk. In addition, they generally protect the risks of survivorship (for spouse and young children) and disability. This way, "coverage" is a concept that talks about the reach of a program or system with respect to certain objective population. Thus, when 100% of this population is covered we speak of "universal coverage", a stated goal in most of the social security policies and the implemented social security reforms around the world.¹

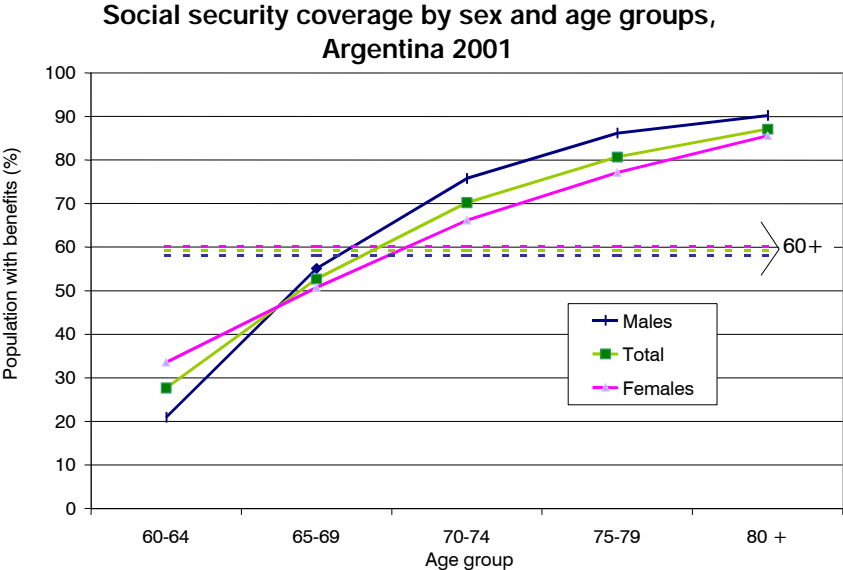
From this general statement, the most precise definition of coverage is not free of complications. The protection can be offered within the framework of a contributory scheme (financed with its own specific resources) or non-contributory (financed from general taxes). A contributory scheme tends to move away from the principle of universality because benefits correspond only to contributors, that is to workers who contribute at least for a certain period. An additional fact to consider is that, in general, there is an important correlation between the degree of formality of the labor force and the extension of coverage of the contributory schemes.

Consequently some questions arise with respect to whom (individual or families) are indeed protected, and how they are protected. In general, there are little divergences regarding the coverage of the disability and death risks. In both cases the protection consists of replacing, at least partially, the income of the workers from the moment that the damage takes place. Thus, coverage consists of a defined benefit as proportion of the wage on which contributions were based. This benefit is received by the worker since the determination of its disability, or by the family group since the death of the covered worker. The old-age protection is more complex because usually it does not depend on the situation at the moment of reaching a given age but on the "labor history" as a whole. The substitution of income only takes place if the required age is reached and, simultaneously, sufficient years of contribution are accumulated. Nevertheless, to avoid gaps from the goal of universality, governments have generally implemented programs that grant benefits at "advanced ages" and/or "non-contributory" pensions.

¹ For a more detailed discussion of this topic see Gill et al (2004), Chapter 5.

The indicator of coverage more commonly used is the proportion of people older than a given age who perceive some social security benefit, retirement and/or survivorship pension (beneficiaries/population). The traditional source of data usually combined specific registries with census data, but a better alternative is the use of specific questions in the census and/or surveys, which allow analysis for different sub-groups (age, sex, jurisdictions, educative level, and marital status).

According to the 2001 National Census (INDEC, 2004), 59% of the population 60 and over had social security coverage, with a clear trend to increase with age and reaching 87% for population 80 and over (Graph 1).



There are four reasons for the growing coverage with age:

- At younger ages is more frequent the option to stay in the labor market without retiring.
- There are some specific benefits available at older ages: some of the non-contributory benefits and a ‘*Prestación por edad avanzada*’ in the national regime.
- Survivorship benefits become more frequent at advanced ages when mortality is higher and widowhood more frequent, especially among women.
- A cohort effect, since the current aged faced more flexible requirements at the moment when they had to retire.

Nevertheless, it is possible to indicate at least three limitations of this gross indicator:

- a) The value changes significantly with the selected age of cut; considering the population 65 and over (instead of 60+) the proportion with social security coverage would go up to 70% (from 59%).
- b) The people who still develop labor activities, receiving an income from their employment are considered without coverage.
- c) It ignores that in many cases (especially in the case of women), coverage might be available through the spouse's income (wage or retirement). This would be conceptually equivalent to evaluate household (couple's) coverage instead of coverage of the individual.

Taking care of these limitations, and given that 65 is the age required for males to get the right to retire, a better alternative is to select the population 65 and over². Besides, other indicators are considered. On a compatible definition with the previous one (beneficiaries/population), it is possible to analyze coverage by household, counting as covered all persons who, directly or indirectly (through the spouse), receive a retirement or a pension. Additionally, if the permanence in the labor market is taken to be a voluntary choice, then a third indicator of coverage arises, including all people that receive an income from social security or from labor, directly or indirectly (through the spouse). Obviously, in this case coverage increase, with the serious limitation that the permanence in the labor market might be due to the impossibility to obtain retirement benefits.

Unfortunately, given that database for the Census is not available, the alternative indicators cannot be estimated. However, the analysis can be carried out using a different data source: the urban survey 'EPH'.

Table 1

Alternative definitions for social security coverage
All urban centers EPH, 2nd semester 2004
Percentage of population 65 and over

Definition	Males	Females	Total
Individual coverage	73,2	64,3	67,8
Household coverage (own or through the spouse)	74,2	81,8	78,8
SS or labor market coverage	84,0	85,5	84,9

² There are significant differences between the population aged 60-64 compared to those aged 65 and over, based on ETEEP 2003: social security coverage is clearly lower (28% vs. 71%), a higher proportion remains employed (36% vs. 12%), the proportion female is lower (56% vs. 64%), widowhood is smaller (18% vs. 48%), the average household size is larger (3.3 vs. 2.6), a lower proportion lives in AMBA (38% vs. 44%), and the proportion with incomplete primary school is lower (33% vs. 45%).

In Table 1 we show that, for population 65 and over, individual social security coverage was 68%, it reached 79% when considering household coverage, and 85% when including not only social security but labor market coverage. Coverage was higher for males than for females in the first case, but the differential becomes the opposite when considering the household, and it almost disappears when including coverage from the labor market. An important limitation of this data source (and of the Census) is that it does not allow to distinguish between different type of benefits (retirement or pensions, contributory or not)³.

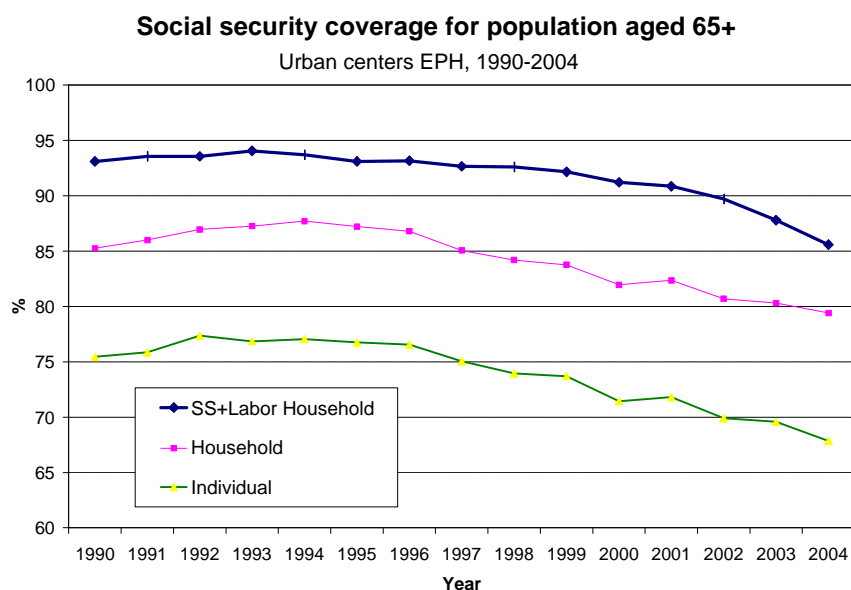
If the measurement of coverage levels at a given date is a complex task, its pursuit across time is still more difficult, considering the multiplicity of conceptual, legal, institutional and socioeconomic changes that take place simultaneously. According to the adopted definitions, it is possible to compare some indicators available for the last decade in Argentina.

The new social security system, established by Law 24241 (effective since 1994), included a parametric reform that increased the requirements of age and years with contributions to accede to the retirement (SAFJP, 1998). Thus, the goal of greater fiscal solvency generated a trade-off with a smaller social security coverage (Grushka, 2001).

As a natural consequence, given the lack of expansion of non-contributory coverage, social security coverage decreased significantly: The proportion of population with social security benefit (retirement or pension), for those aged 65 and above, decreased from 77% in 1994 to 68% a decade later. The fall was more significant for men than for women and especially affected the age group 65 to 70; it was greater for single, intermediate for married, and insignificant for widows. The levels of coverage fell especially for those who completed secondary studies (Cetrangolo and Grushka, 2004).

Conclusions do not vary when comparing the alternative definitions of coverage, with drops of around ten percentage points in all cases. (Graph 2)

³ This limitation is surmounted by the ETEEP and will be considered in section 4.



Source: Annex Table 1.

This fall in coverage raises concern, especially if it is considered together with the worsening situation at active ages, a topic already developed by several authors (Beccaria et al, 2003; Beccaria and Galin, 2002; Roca and Moreno, 1999; SAFJP, 2004; SSS, 2003).

The projections that estimate future beneficiaries based on the current levels of contributions and the legal requirements show a clear trend to an increasing exclusion (Rofman et al, 1997; Grushka, 2002; MTEySS, 2005). It is necessary to emphasize that the loss of social security coverage will be definitely associated to increasing demands by vast social sectors to implement some type of alternative benefits. Different scenarios have been already evaluated: a universal benefit to all people aged 65 and over (Bertranou et al, 2003), benefits to workers who only had a limited participation in the formal market and to those who reaches an advanced age without having registered participation (Grushka, 2004). Although fiscal difficulties must be taken care of, the cost of extending coverage with a basic benefit (equivalent to a basic basket or individual poverty line) would not surpass (in the medium term) values equivalent to 1% of the GDP.

2.1. Non-Contributory Pensions

There is increasing concern with the necessity to extend social security coverage among the elderly population excluded from the contributory programs. The tax-financed programs (non-contributory pensions, or PNC) constitute a clear alternative to be evaluated. With this objective we describe and analyze different aspects from the Argentine case.

The PNC program evolved, like other social protection programs, in a disorganized way, granting different types of pensions for the elderly, the disabled, the mothers of 7 or more children, the Falklands war veterans, and the relatives of the political victims who “disappeared” during the military government. There are also special pensions granted by the national legislative body (*‘graciables’*), and other pensions granted by special laws. This program is developed in a context of the social policy that presents an important fragmentation between government levels (nation, provinces and municipalities), and between institutions of the national government (Bertranou and Grushka, 2002).

The PNC program represents approximately 3% of the social security consolidated expenditure or 0.2% of the GDP. In March 2004, there were 340 thousands beneficiaries, although including health-care provided for the familiar group, coverage reaches to 460 thousand people. The average benefit was \$198, less than 50% of benefits in the contributory system (Grushka and Bertranou, 2004).

The effectiveness against poverty could be greater if there were better filters and the regime of pensions granted by the legislators is reformed (or eliminated). In addition, the program must adapt to diverse proposals to modify the social security system, evaluating the convenience of unifying the welfare pensions with the proposed schemes of universal benefit.

2.2. *International comparisons*

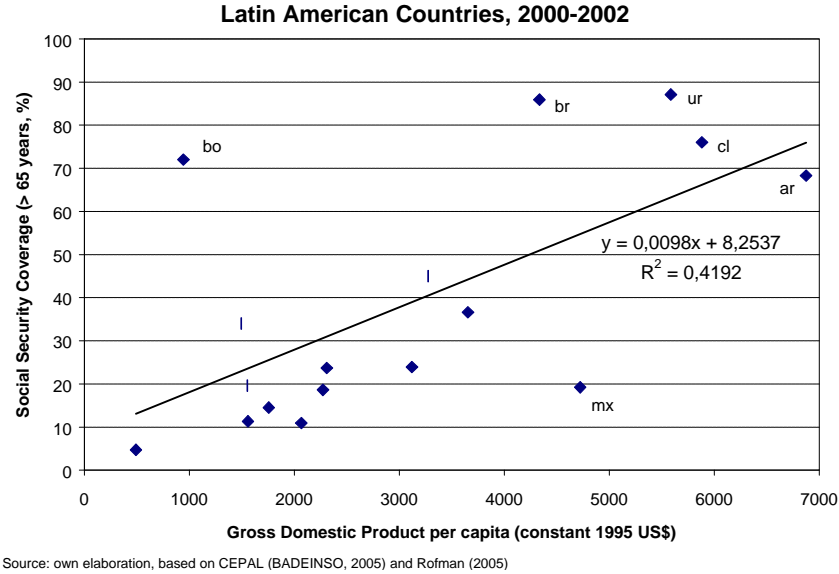
The levels of social security coverage for the elderly in Argentina are relatively high when compared to other countries in Latin America. Gill, et al (2004) show that, in a selection of ten Latin American countries, Argentina has the highest proportion of pension recipients among the population aged 65 and over.⁴ Rofman (2005) includes seven additional countries in the analysis and show that Argentina is only surpassed in coverage of the elderly by Uruguay and Brazil, and by Chile and Bolivia if non-contributory benefits are also taken into account. What is particularly worrying about the coverage of pension benefits in Argentina is that, despite these relatively high levels, there has been a notably downward trend in last decade. This sharp fall in coverage has not been seen in any other Latin American country.

Besides the stricter requirements established in the reformed contributory system, the tax-financed, non-contributory pension programs in Argentina have not been expanded to compensate the decline in coverage and, by the year 2000, non-contributory pension beneficiaries represented only 0.9% of

⁴ Based on National household surveys by the end of the Century, and compared to Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Peru and Venezuela (Gill et al, 2004), Chapter 5.

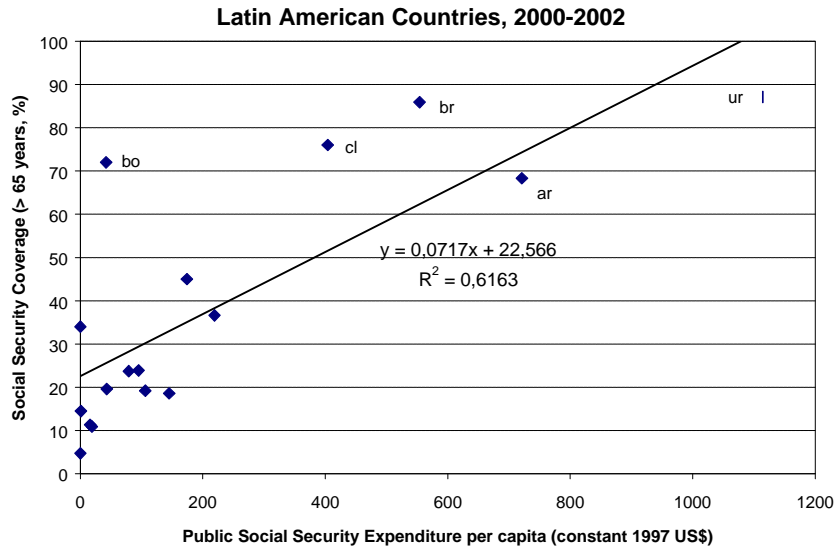
the total population. In contrast, the number of non-contributory pensions beneficiaries in Brazil (including rural pensions), Chile, Costa Rica and Uruguay represented between 1.8% and 3.5% of the total population. In terms of all social security beneficiaries, the non-contributory pensions represented close to 10% in Argentina and Uruguay, 23% in Chile, and more than 30% in Brazil and Costa Rica (Bertranou et al, 2004). Bolivia and Ecuador also have very significant non-contributory pensions (Rofman, 2005).⁵

The level of social security coverage among the elderly is positively associated to national income in Latin America. A growth of US\$ 100 in GDP per capita implies, on average, a growth of 1 percentage covered. Given the relative low association ($R^2 = 0.42$, Graph 5), it is essential to examine the outliers: on one side, with relatively low coverage, Mexico (with a significant informal sector) and, on the other, Bolivia (see footnote 10) and Brazil (with a noteworthy plan of rural pensions). Argentina, with the highest GDP per capita, appears to offer a relative low SSC, due to very strict requirements in the contributory system and a limited non-contributory system.

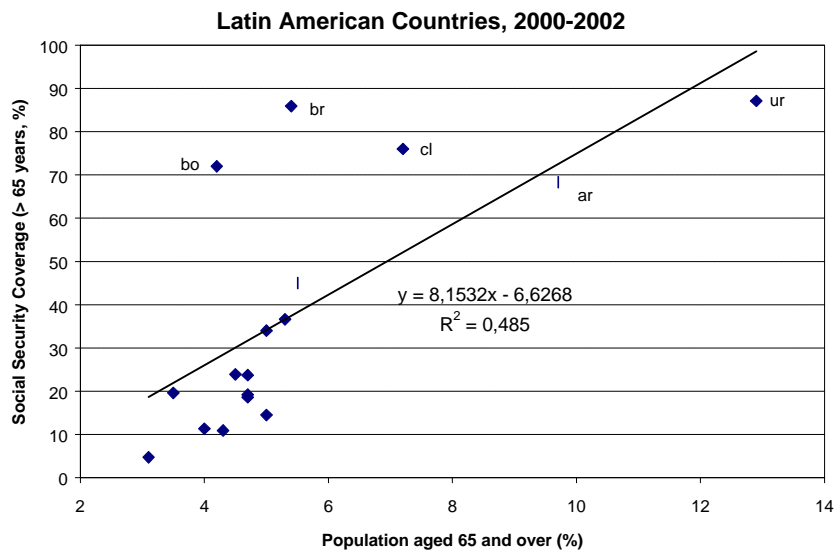


The levels of coverage show a higher association with social security expenditure ($R^2=0.62$, Graph 6). In this case, the specific funding of non-contributory pensions in Bolivia appears not to be considered, while the relatively good performance of Brazil and Chile might be due, at least partially, to the contributions of the private sector.

⁵ By considering specific (non-contributory) programs we allowed for significant increments of SSC in Bolivia (from 15% to 72%), in Chile (from 64% to 76%), and in Ecuador (from 15% to 34%). In the rest of the countries, only an aggregate indicator of SSC was available.



It is worth mentioning that social security expenditure per capita is closely related with the proportion of population aged over 65 ($R^2=0.88$, not shown). Thus, SSC is also positively associated with the proportion of population aged over 65 (Graph 7). Once again, the aforementioned exceptions of Bolivia and Brazil (and Chile to a lesser extent) stand up as important outliers.



The levels of SSC in Latin America are highly influenced by structural factors such as the different levels of economic development and stages of demographic transition, but also by the specific social security policies adopted.

3. Poverty among the elderly

The traditional methods of measuring poverty among the elderly have serious limitations. The proportion poor among those aged over 65 is usually lower than in the population of other ages, measured by 'unmet basic needs' (NBI, structural poverty) or by income (current poverty). Nevertheless, the analysis by ages can be somewhat deceptive since poverty is defined for households, not individually, and those elderly who live in poor households are considered poor. The levels of poverty by age are very conditioned by the composition of the households (Sana and Pantelides, 1999).

Since poor households are more prolific and the elderly live in smaller households, their standard of life is less affected by the standard of other members that cohabit. While on average there is 3.6 people by household for the population universe, it descends to 2.4 if we considered only households with heads older than 65 (National Census of Population, 2001).

Several authors (Pantelides and Muller, 1994; Kazzman, 1996; Sana and Pantelides, 1999) pointed out that three of the five indicators of NBI (schooling of children, crowding, economic dependence of at least 4 members) are not appropriate to measure the standard of life in the old age. The reason for this is the high proportion of non-applicable cases (almost 80% of people 60 and over lived in households with less than 4 members, and more than 90% did not cohabit with children in school age). Thus, most of the elderly considered poor according to NBI have only one of the remaining two NBI (precarious housing or absence of toilet).

According to the last National Census (INDEC, 2001), the proportion with NBI was 18% in the total population and only 13% among the elderly. The indicator of NBI by province showed significant differentials, with Formosa reaching 29% and six other provinces (out of a total of 24) having values over 24%, while the Capital Federal had less than 5% of their elderly living in households with NBI.

Given its structural character, the indicator of NBI tends to register the result of the past history of the elderly more than its present reality. Thus, poverty in the old age becomes significantly larger if the level of monetary income (poverty line, PL) is also taken into account.

Another alternative developed in INDEC to measure poverty from the 2001 Census (where data on income is not available) is to establish an index of household material deprivation (IPMH). The methodology follows an integrated approach (Mitnik, 1999) and the IPMH is based on several questions on the quality of housing (materials in floors or ceilings, presence of toilet), and on

current resources (estimated from employment and schooling by age and sex of all members in the household).

While 46% of the total population lived in households with deprivations, the proportion among the elderly (65 and over) was 27%. Taking into account the different components, 13% had only scarcity of current resources, 8% only insufficient housing quality, and 6% lacked both, current resources and sufficient housing quality. The indicators of IPMH also are available by province and show significant differentials, with Formosa reaching 66% and six other provinces having values over 50%. (INDEC, 2005).

The measurement of poverty among the elderly by PL (when data of income is directly available) also presents important biases. Although the basic food basket (used to measure extreme poverty) is reduced by using the coefficients of equivalent adult (0.64 for females and 0.82 for males older than 60), the multiplier that relates total consumption with food consumption (the inverse of the Engel coefficient) is applied uniformly to all households.

This methodology ignores the existence of scale economies and the possible differential impact that comes from increased health costs at more advanced ages, as shown with data from the *Encuesta Nacional de Gastos de los Hogares*, carried out by INDEC in 1996/97. The proportion of total expenditure in consuming food and drinks averaged 34%, but it grew up from 30% in one-person households to 37% for households with five and more members. On the contrary, the proportion spent across the same categories declined from 19% to 10% in housing and from 11% to 7% in health. It is worth mentioning that the elderly (65+) constituted 45% in one-person households while they just represented 17% in households with five and more members.

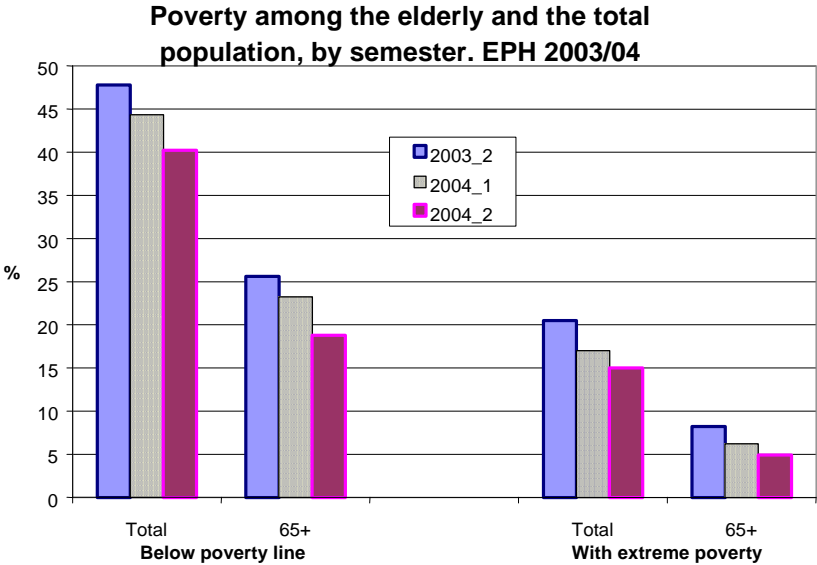
Using a unique Engel coefficient tends to underestimate the PL for households with fewer members than the average household in the reference population. Thus, given that the elderly live in households of fewer members and spend more on health care, the use of PL tends to underestimate poverty among the elderly.

Nevertheless, data of income is not available in the Argentine census but urban household surveys constitute a good alternative to attempt to measure poverty. Thus, the following estimates are based on the three last waves of the EPH (semesters 2003- 2004).⁶

Poverty in urban centers of Argentina is clearly less frequent among the elderly: by the end of 2004 it was 19%, compared to 40% among the total population. The conclusion is similar when considering extreme poverty: 5% among the elderly compared to 15% among the total population.

⁶ The choice to work with semesters instead of quarters is based on the need to include a larger number of cases to reduce confidence intervals.

The levels are clearly declining after having reached historical records with the crisis and the high inflation during 2002. (Graph 3)



Social security benefits (contributory or not) play a very important role in reducing poverty. According to estimates from EPH, in the absence of social security benefits, poverty would reach more than 50% of the elderly or, in other words, social security is responsible for a reduction in poverty among the elderly of around 30 percentage points or 60%.

In the same way, in the absence of social security benefits, extreme poverty would reach close to 30% of the elderly, and thus they are responsible for a reduction of 25 percentage points or 80%.

Although missing data and some problems of data quality may limit confidence in the exact size of the impact, the conclusions are validated given the expected trend and the similarity of results based on the same survey in three different semesters, as shown in the following table.

Table 2

Impact of SS benefits on poverty in urban agglomerates

Population 65+	Semester	Without SS benefits	Total income	Reduction	
				Absolute	Relative
% below poverty line	Second 2003	58,4	25,8	32,6	56%
	First 2004	54,7	23,2	31,5	58%
	Second 2004	50,4	18,8	31,6	63%
% with extreme poverty	Second 2003	36,4	8,4	28,1	77%
	First 2004	32,5	6,2	26,2	81%
	Second 2004	28,5	4,9	23,6	83%

Source: own elaboration based on EPH (INDEC).

Poverty among the elderly is less frequent than among other age groups in Argentina, using a more structural index (NBI), based on current income (PL) or on an integrated approach (IPMH). Using PL, the same phenomenon takes place in most Latin American countries, 11 out of 15 (CEPAL, 2000 and Guzman, 2002) or 10 out of 18 (Bourguignon et al, 2004). However, poverty is as frequent among the elderly as for the total population in Bolivia, Colombia, El Salvador, Jamaica, and Mexico; and it is more frequent in Costa Rica, Dominican Republic, and Ecuador (Bourguignon et al, 2004).

The incidence of poverty among the elderly is strongly related to national income per capita (also associated with relatively mature social security systems as Argentina, Brazil, Chile, and Uruguay), and the levels of social security coverage (del Popolo, 2001 and CEPAL, 2002). Among the elderly, social security benefits constitute a significant proportion of total income: from 65% in Uruguay to 87% in Argentina and 89% in Brazil (Rofman, 2005).⁷ Thus, the social security extension (coverage) and depth (level of benefits) contribute to explain not only the incidence of poverty among the elderly, but the differential between this group and the total population as well (CELADE, 2003).

4. A detailed analysis of social security coverage

Although ETEEP is not a valid instrument for measuring poverty or the impact of pensions on poverty for the reasons explained earlier, the survey was designed to focus on a particular type of intertemporal savings/insurance decision and thus, it contains variables that cannot be found in other data sets.⁸

⁷ Leaving aside the extreme case of Peru, with 52%.

⁸ The survey was carried out by TNS-Gallup Argentina and The World Bank, from October to December 2003. It covered urban centers with more than 500,000 inhabitants (excluding Patagonia), and a total of 3,014 people aged 60 and over were

The ETEEP also provides some significant clues when trying to establish the reasons behind those who are not receiving a social security benefit. Two alternatives are usually offered: (1) they chose some other strategy for securing their wellbeing in old age, (2) they were not in a position to make contributions to a pension system when working and are for some reason ineligible for a non-contributory pension now. Which of these dominates affects how policy makers should view low and declining coverage and its relationship to poverty.

4.1. Exclusion from Coverage

According to ETEEP, the elderly without any type of benefit constituted 29% of the population aged 65 and over. The excluded from coverage are relatively young, averaging 71 years compared to a mean age of 75 for those receiving any type of benefit; women are predominant (67% vs. 63%), 22% keep working (compared to just 8%) and 8.5% have private health coverage (compared to 9.3%). On average, the excluded have one year less of schooling (5.5 vs. 6.6), live in households of larger membership (2.9 vs. 2.5) and lower income (\$310 vs. \$444).

Another significant finding is that those excluded from coverage averaged less years of work (23 vs. 27) but the main difference appears when considering years with social security contributions (10 vs. 19).

Three other variables also tend to show that the lack of social security coverage is not due to a choice of alternative strategies for securing wellbeing in old age. Those excluded from coverage averaged less ownership of their house (73% vs. 79%), less access to sewerage (49% vs. 61%), and less long-term investments (6% vs. 8%).

These indicators and a comparison by type of benefit are shown in Table 3.

Table 3

interviewed, representing approximately a population of 3 million elderly in Argentina. Besides some problems of missing or inconsistent data, another limitation comes from the way that the sample was designed: by selecting one elderly person per household, small-size households (widows) are overrepresented.

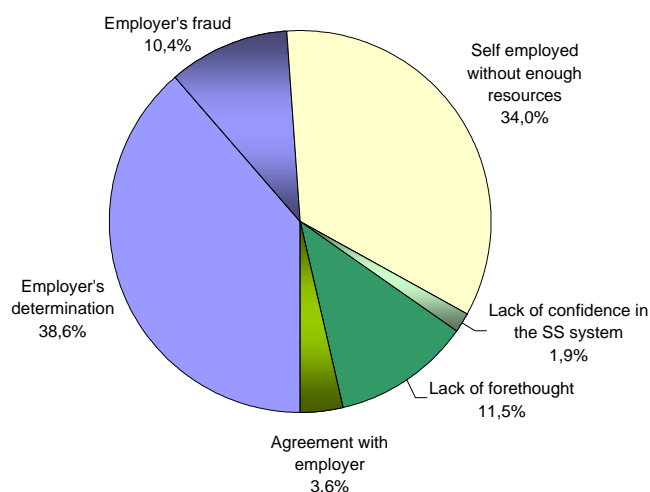
ETEEP 2003: Population aged 65 and over by type of SS benefit

	Retirement	Disability	Survivor-ship	Contributory	Non contributory	With any benefit	No benefit	Total
	1	2	3	4 = 1+2+3	5	6 = 4+5	7	8 = 6+7
Weighted cases	843	98	543	1.484	140	1.644	665	2.309
Distribution (%)	36,5	4,2	23,5	64,3	6,1	71,2	28,8	100,0
Mean age	75,1	72,1	75,3	75,0	75,3	75,0	71,3	74,0
Proportion female (%)	44,0	34,4	95,6	62,3	69,6	62,2	67,2	64,1
Private health coverage (%)	12,5	8,5	5,8	9,8	5,1	9,3	8,5	9,1
Employed (%)	9,4	4,0	6,6	8,0	5,9	7,8	22,1	11,9
Inactive (%)	86,8	96,0	92,6	89,5	91,0	89,7	69,6	83,9
Unemployed (%)	3,8	0,0	0,8	2,5	3,1	2,5	8,3	4,2
Mean years of schooling	7,9	6,6	5,3	6,9	4,0	6,6	5,5	6,3
Household size	2,41	2,75	2,55	2,48	2,76	2,51	2,93	2,63
Mean household income	549	443	348	468	209	444	310	406
Working years	37,1	30,8	11,8	27,5	24,9	27,3	22,8	26,0
Contributing years	31,0	23,9	3,4	20,4	5,0	19,1	9,9	18,9
Own house (%)	84,9	80,3	73,5	80,4	61,7	78,8	72,7	77,0
Sewerage in the block (%)	66,2	57,4	60,8	63,6	37,5	61,4	49,4	58,1
Long-term investments (%)	10,4	7,3	5,5	8,5	1,5	8,0	6,4	7,5

Note: The category 'with any benefit' includes 20 cases (less than 1%) with unspecified type of benefit.

The ETEEP also included a question making reference to the main reason for the lack of social security contributions (Graph 4). Although a substantial portion of answers was missing, almost half of the respondents chose to blame their employers, who they reported forced an informal labor relationship or fraudulently retained contributions instead of remitting payment to the social security system. Over a third of the respondents reported themselves as self-employed without enough resources to pay and just 17% made some kind of choice (mainly due to lack of forethought, agreement with their employers or lack of confidence in the social security system).

Main reasons for the lack of SS contributions



Source: own elaboration based on ETEEP, 803 respondents (35%).

4.2. Determinants of coverage

Besides individual and household characteristics of those included or excluded from social security coverage (SSC), it is useful to consider the way that each variable has an impact on coverage and the separate or combined power to determine it.⁹

SSC averages 71% with significant variations according to sex (69% females vs. 73% males), age group (from 51% between 65 and 70 to 85% for 80 and older), region (from 69% in the Metropolitan AMBA to 75% in Cuyo), schooling (from 67% incomplete primary to 80% complete secondary), marital status (58% married vs. 80% not married), and household size (from 81% in one-person to 52% in those larger than 7).

Two additional variables tend to show that those who are not receiving a pension did not choose different strategies for securing their wellbeing in old age; on the contrary, SSC is larger for those who own the house where they live (73% vs. 66%) and for those with sewerage in the block (76% vs. 65%). Only 8% of the respondents reported having done some type of investment for their old age, and SSC is also larger for them (75% vs. 71%).

The reported labor histories allow the evaluation of five additional characteristics:

- SSC grows with the number of years worked, from less than 60% for those with less than 20 years to more than 70% for those with more than 20 years.

⁹ For detailed results see Annex Table 2.

- The differential becomes larger, as expected, when comparing the number of years with contributions to social security (coverage grows from 65% to 85%) although there are many cases with missing data.
- Employees (74%) have larger SSC than self-employed (65%) but lower than employers (82%).
- SSC grows with the size of employer, from 62% for 5 or less, to 79% between 6 and 39, to 85% for 40 or larger.
- Considering sectors of activity, workers in construction clearly show the lowest SSC (53%).

The basic model to estimate the combined effects will be a logistic regression. The dependent variable is the odds ratio of being covered (through any type of retirement or pension) as a function of sex, age, region, marital status, schooling, household size, number of years worked and of years with social security contributions, prevailing type of activity and size of employer.¹⁰

To be specific: the model would be

$$\log(P(x)/(1-P(x))) = a + b_1x_1 + b_2x_2 + \dots + b_kx_k$$

where $P(x)$ is the probability of being covered and $x = (x_1, \dots, x_k)$, the values of k explanatory (continuous or categorical) variables with details as follows:

Sex: dummy variable with female as reference

Age: 5-year age groups (until 80+) with 70-74 as reference

Region: 5-level categorical variable with 'Pampeana' as reference

Marital status: dummy variable with married (or in union) as reference

Schooling: 3-level categorical variable with complete primary school as reference

Household size: discrete scaled variable

Number of years worked: 10-year groups with 20-29 as reference (and an additional level including 'unknown' or missing cases)

Number of years with social security contributions: 10-year groups with 20-29 as reference (and an additional level including 'unknown' or missing cases)

Type of worker: a 4-level categorical variable (including 'unknown' or missing cases), with 'employees' as reference, employers and self-employed.

Sector of activity: 5-level categorical variable with 'manufacturing' as reference and an additional level including 'unknown' or missing cases.

¹⁰ Although continuous variables might be more attractive from an econometric viewpoint, given the reduced number of cases and, in many opportunities, the significant proportion with missing or unknown data, we chose to work with categorical variables that allowed for simpler ways to handle them.

Size of firm: a 4-level categorical variable (including 'unknown' or missing cases), with '40 and more employees' as reference, 1-5 and 6-39.

The multivariate model should be carefully considered since some important variables (such as sex or schooling) may lose statistical significance due to a high correlation with other variables (such as marital status or contributing years, respectively).

Results shown in Annex Table 3 confirm the importance of age groups, keep the regional negative influence of AMBA (somewhat surprisingly), underline widowhood as an important source of coverage, show the dominance of years with contribution on working years, and demonstrate the relevance of 'size of firm' as well as having worked in the construction sector.

Taking into account the previous findings and the fact that 'years with contribution' is not really an independent variable since it also reflects the access to contributory benefits, an alternative more stylized model was adopted, including the most relevant variables and adding three new ones: ownership of the house, access to sewerage and long-term investments.

The model shown in Table 4 emphasizes the main predictors of having SSC: older males (or widows), with complete primary school, living outside AMBA in smaller households with sewerage in the block, who own the property and worked in firms with 40 or more employees, in sectors different from construction.

After controlling for the other variables (especially widowhood), males are 45% more likely than females to have SSC, while those aged over 70 are four times more likely than the younger (65-69). In this model widowhood may complement age through distinguishing the oldest-old. Each additional person in the household decreases 10% the odds of having SSC. Living in AMBA decreases the odds of SSC, probably due to the smaller impact of non-contributory pensions. Each additional year of work increases 2.4% the odds of having SSC. Work in larger firms increases the odds four times while the construction sector decreases it three times.

Finally, ownership of the house and access to sewerage tend to increase the likelihood of having SSC, as well as having invested for old age (although it is not significant). These findings privilege the idea that the lack of SSC is not due to a choice of alternative strategies for securing wellbeing in old age. Instead, difficulties in making contributions to a pension system when working, and problems in design of the non-contributory system remain as possible explanations.

Table 4

Odds ratio of receiving any SS benefit

Simplified model

Variables in the Equation	Category	B	Exp(B)	Sig.
Sex	Female		ref.	
	Male	0,373	1,453	*
Age group	70+		ref.	
	65-69	-1,283	0,277	**
Marital status	Not widow/er		ref.	
	Widow/er	1,862	6,437	**
Household size (persons)		-0,090	0,914	**
Schooling	Complete primary +		ref.	
	Incomplete primary	-0,419	0,657	**
Region	Other		ref.	
	AMBA	-0,557	0,573	**
Working experience (years)		0,023	1,024	**
Size of firm	<40 or unknown		ref.	
	40+	1,309	3,702	**
Main sector	Not in construction		ref.	
	Construction	-1,096	0,334	**
House owner	No		ref.	
	Yes	0,495	1,641	**
Sewerage in the block	Not available		ref.	
	Available	0,356	1,427	**
Investments for old age	No		ref.	
	Yes	0,006	1,006	
Constant		-0,190	0,827	

** : Significant at 99% confidence

Model Summary			df	Sig.
	Chi-square	588,3	12,0	0,000
	-2 Log likelihood	2036,8		
	Cox & Snell R Square	0,2355		
	Nagelkerke R Square	0,3373		

SSC includes very different types of benefits that might have very different determinants. For example, widowhood usually gives right to a survivorship (or a non-contributory) pension, independently of other individual characteristics or working experience. Thus, it is very interesting to verify the different effects that the variables previously used to explain SSC have on the contributory retirement pension (CRP). This topic could not be researched with EPH data given that the lack of specific questions such as those included in ETEEP.

In the detailed model shown in Annex Table 4, the sign of the coefficients are very similar to those determining SSC, except for widowhood. The size of effects determining access to CRP become less significant for age groups, region, marital status and sector of activity, while there is a gain of significance for schooling and working years.

The more stylized model shown in Table 5 emphasizes the main predictors of having a CRP: older males, with complete primary school, who own their house, have access to sewerage and worked in firms with 40 or more employees, in sectors different from construction.

After controlling for the other variables, males are 60% more likely than females to have CRP, while those aged over 70 are three times more likely than the younger (65-69). Each additional person in the household decreases 10% the odds of having CRP. Completing primary school increase two times the likelihood of having CRP, while living in AMBA becomes insignificant. Each additional year of work increases 6% the odds of having CRP. Work in larger firms increases the odds four times while the construction sector decreases it two times. Finally, ownership of the house and access to sewerage increase the likelihood of having CRP, as well as having invested for old age (although it is not significant).

These findings also privilege the explanation of difficulties in making contributions to a pension system when working, rather than a choice of other strategies for securing wellbeing in old age.

Table 5

Odds ratio of receiving a contributory retirement pension

Simplified model

Variables in the Equation	Category	B	Exp(B)	Sig.
Sex	Female		ref.	
	Male	0,477	1,612	**
Age group	70+		ref.	
	65-69	-1,243	0,288	**
Marital status	Not widow/er		ref.	
	Widow/er	-0,076	0,926	
Household size	(persons)	-0,092	0,912	**
Schooling	Complete primary +		ref.	
	Incomplete primary	-0,813	0,443	**
Region	Other		ref.	
	AMBA	-0,158	0,854	
Working experience	(years)	0,055	1,056	**
Size of firm	<40 or unknown		ref.	
	40+	1,351	3,860	**
Main sector	Not in construction		ref.	
	Construction	-0,850	0,427	**
House owner	No		ref.	
	Yes	0,769	2,159	**
Sewerage in the block	Not available		ref.	
	Available	0,380	1,462	**
Investments for old age	No		ref.	
	Yes	0,006	1,006	
Constant		-2,434	0,088	**

** : Significant at 99% confidence

Model Summary			df	Sig.
	Chi-square	853,7	12,0	0,000
	-2 Log likelihood	2020,6		
	Cox & Snell R Square	0,3228		
	Nagelkerke R Square	0,4417		

Another way to analyze the different type of benefits is through the use of a multinomial logit model $\log (P(B_i) / (P(WB))) = a + b_1x_1 + b_2x_2 + \dots + b_kx_k$

where $P(B_i)$ is the probability of receiving a benefit of type i , $P(WB)$ is the probability of not receiving any type of benefit, and $x = (x_1, \dots, x_k)$, the values of k categorical explanatory variables.

The model shown in Table 5 estimates the effect of each independent variable, comparing beneficiaries of contributory retirement pensions (CRP), contributory survivorship pensions (CSP) and non-contributory pensions (NCP) to those without benefit (WB) as a baseline category.

All the considered variables (sex, age, widowhood, household size, schooling, region, working experience, size of firm, main sector of activity, house ownership, and access to sewerage), except for long-term investments, are significant determinants of CRP compared to WB.

As expected, widowhood has the more sizable effect to determine CSP, although age, sex (in this case females over males), and access to sewerage are also highly significant while region and house ownership are slightly less significant.

In the case of NCP the significant variables are age and one-person households (and widowhood), as expected since there are specific benefits for the surviving spouse and for people older than 70). AMBA appears as a region where is more difficult to get a NCP, probably due to the way that this type of pensions are assigned (see section 2.1 and Grushka and Bertranou, 2004). Working experience (especially not in the construction sector) contributes in getting a NCP, while the three indicators of relative affluence (house ownership, access to sewerage and long-term investments) have the expected negative sign (odds ratio below 1) although they are not statistically significant.

Table 6

Estimated parameters in logit model for type of benefit, using 'without benefit' as baseline category. Population 65 and over, ETEEP, 2003

Variable	Category	N	Marginal %	P _{CRP} / P _{WB}		P _{CSF} / P _{WB}		P _{NCP} / P _{WB}	
				exp(b)	sig.	exp(b)	sig.	exp(b)	sig.
Sex	Female	1.480	64,1			ref			
	Male	829	35,9	1,99	**	0,22	**	1,16	
Age group	70+	1.624	70,3			ref			
	65-69	685	29,7	0,20	**	0,37	**	0,25	**
Widowhood	Not widow/er	1.196	51,8			ref			
	Widow/er	1.113	48,2	2,50	**	35,89	**	1,56	*
Household size	3+	632	27,4			ref			
	1	869	37,6	1,51	*	1,25		1,88	**
	2	808	35,0	1,46	**	1,20		0,95	
Schooling	Complete primary +	1.260	54,6			ref			
	Incomplete primary	1.049	45,4	0,46	**	0,86		1,28	
Region	Other	1.293	56,0			ref			
	AMBA	1.016	44,0	0,63	**	0,73	*	0,42	**
Working years	<30 or unknown	1.182	51,2			ref			
	30+	1.127	48,8	5,68	**	0,72		1,64	*
Size of firm	<40 or unknown	1.773	76,8			ref			
	40+	536	23,2	5,36	**	1,46		1,32	
Main sector	Not in construction	2.213	95,9			ref			
	Construction	96	4,1	0,36	**	1,13		0,26	*
House owner	No	530	23,0			ref			
	Yes	1.779	77,0	2,22	**	1,52	*	0,85	
Sewerage in the block	No	968	41,9			ref			
	Yes	1.341	58,1	1,65	**	1,57	**	0,78	
Investments for old age	No	2.135	92,5			ref			
	Yes	174	7,5	1,08		0,80		0,86	
	Intercept			2,36	*	0,35		0,03	**
Valid		2.309	100,0						
Missing		0							
Total		2.309							
Subpopulation	824								

* : Significant at 95%
 ** : Significant at 99% confidence
 a The dependent variable has only one value observed in 575 (69,8%) subpopulations.
 b For Model Fitting Information see Annex Table 5.

5. Conclusions

The measurement of poverty among the elderly has serious limitations. However, the elderly are less poor than the rest of the population in Argentina and in most of Latin America. Social security benefits (contributory or not) play a very important role in reducing poverty. The direct impact was measured for Argentina but it also proved to be significant to explain differentials across age groups and Latin American countries.

The topic of social security coverage (SSC) requires an in-depth conceptual discussion as well as significant efforts to measure it and to analyze its determinants. The level of SSC in Argentina is relatively high in the Latin American context, but the trend during the last decade is particularly

worrying and the performance in terms of GDP and social security expenditure is somewhat frustrating.

SSC show significant differentials by age, sex, region, schooling, marital status and household size. Regarding the individuals working history, the number of years worked proved to be not as important as the number of years with social security contributions, the size of the firm and the sector of activity.

The econometric analysis confirmed the importance of age as determinant of SSC. There are four underlying reasons: the option to remain working (for the youngest), specific benefits available at older ages, growing mortality (and survivorship benefits), and a cohort effect (the older faced less strict requirements when they reached the age of retirement).

Besides, the AMBA region kept a negative influence (somewhat surprisingly), widowhood proved to be an important source of SSC, years with contribution showed a dominance over working years, and 'size of firm' as well as having worked in the construction sector demonstrated to be relevant. Household size is less significant and sex, as well as schooling, lose their significance in the aggregate comparison.

Instead, the main predictors of having a contributory retirement pension are: age (70 and older), sex (males), complete primary school, and having worked in firms with 40 or more employees, in sectors different from construction.

These findings mostly confirmed previous expectations although it is the first time that many of the effects could be estimated for Argentina. Besides, the type of data collected with a specific survey as ETEEP provided significant clues in terms of understanding the reasons behind the lack of SSC. Those excluded from SSC showed slightly less years of work, less ownership of their houses, less access to sewerage, and less long-term investments, although significant fewer years of contributions to SS. Thus, the lack of SSC in Argentina can be mainly attributed to difficulties in contributing to the pension system when working, and problems in design of the non-contributory system rather than a choice of alternative strategies for securing wellbeing in old age.

The challenge ahead is to find a way to expand social security coverage taking into account the fiscal limitations and the social needs as well.

7. Bibliography

Beccaria, L., Altimir, O. and González Rozada, M. (2003) "Economía laboral y políticas de empleo" (manuscript), BID.

- Beccaria, L. and Galin, P. (2002) Regulaciones laborales en Argentina. Evaluación y propuestas, Fundación OSDE-CIEPP, Buenos Aires.
- Bertranou, F., van Ginneken, W. and Solorio, C. (2004) "The impact of tax-financed pensions on poverty reduction in Latin America: Evidence from Argentina, Brazil, Chile, Costa Rica and Uruguay". *International Social Security Review* 57(4). Blackwell Publishing Ltd., ISSA.
- Bertranou, F., Rofman, R. and Grushka, C. (2003) "From reform to crisis: Argentina pensions system". *International Social Security Review* 56(2):103-114. Blackwell Publishing Ltd., ISSA.
- Bertranou, F. and Grushka, C. (2002) "The non-contributory pension programme in Argentina: Assessing the impact on poverty reduction". Extension of Social Security ESS Paper 5. Social Security Policy and Development Branch. ILO, Geneva.
- Bourguignon, F., M. Cicowiez, J.J. Dethier, L. Gasparini, and P. Pestieau (2004) What Impact Would a Minimum Pension Have on Old Age Poverty? Evidence from Latin America. Paper presented at the Keeping the Promise of Old Age Security Conference, Bogota, Colombia, June.
- CELADE (2003) Seguridad Económica de las Personas Mayores en América Latina y el Caribe. Capítulo II del Documento sobre Situación de las Personas Mayores en América latina y el Caribe. Conferencia Regional Intergubernamental sobre Envejecimiento, CEPAL November.
- CEPAL (2005) Base de Estadísticas e Indicadores Sociales (BADEINSO) <http://www.eclac.cl/badeinso>
- CEPAL (2004) Boletín Demográfico 73. Santiago, Chile.
- CEPAL (2002) Panorama social de América Latina 2000-2001. Santiago, Chile.
- CEPAL (2000) Panorama social de América Latina 1999-2000. Santiago, Chile.
- Cetrangolo, O. and Grushka, C. (2004) "Sistema previsional Argentino: crisis, reforma y crisis de la reforma". Serie Financiamiento del Desarrollo, 151. ECLAC, United Nations. Chile.
- del Popolo, Fabiana (2001) "Características sociodemográficas y socioeconómicas de las personas de edad en América Latina". Serie Población y Desarrollo, 19. ECLAC, United Nations. Chile.
- Feldman, J., Golbert, L. and Isuani, E. (1986) "Maduración y crisis del sistema previsional argentino". Boletín Informativo Techint 240, Buenos Aires.
- Gill, I.S., Packard, T. and Yermo, J. (2004) Keeping the Promise of Social Security in Latin America. Stanford University Press and The World Bank, Washington, D.C.
- Grushka, Carlos (2001) "La cobertura previsional en Argentina a fines del siglo XX". *Socialis - Revista Latinoamericana de Política Social*, 4, May.
- Grushka, Carlos (2002) Proyecciones previsionales de largo plazo. Argentina, 2000-2050. Serie Estudios Especiales N°14. SAFJP, Buenos Aires.
- Grushka, Carlos (2004) "Perspectivas del sistema previsional argentino y evaluación de políticas para expandir la cobertura". Nota técnica de discusión de pensiones 001/2004. Inter American Development Bank, Washington D.C.
- Grushka, C. and Bertranou, F. (2004) "Beneficios sociales y pobreza en Argentina: reexaminando el programa de Pensiones No Contributivas". Paper presented at I Congreso de la Asociación Latinoamericana de Población (ALAP), Caxambu, Brasil, September (manuscript).
- Guzmán, José Miguel (2002) "Envejecimiento y desarrollo en América Latina y el Caribe". Serie Población y Desarrollo, 28. ECLAC, United Nations. Chile.
- INDEC (2005) Censo Nacional de Población, Hogares y Vivienda 2001. Serie 5. Grupos poblacionales N°1 Adultos mayores; forthcoming.
- Kaztman, R. (1996) "Virtudes y limitaciones de los mapas censales de carencias críticas". *Revista de la CEPAL*, 58, April.
- Mitnik, Oscar (1999) "Notas Docentes sobre distribución de ingreso y pobreza". Programa de Postgrado en Economía, ILADES/Georgetown University.

- MTEySS (2005) *Prospectiva de la Previsión Social: Valuación financiera actuarial del SIJP 2005/2050*. Ministerio de Trabajo, Empleo y Seguridad Social, Buenos Aires.
- Roca, E. and J.M. Moreno (1999) “Desprotección Social y Exclusión de la Seguridad Social”. XIII Congreso Nacional de Derecho del Trabajo y de la Seguridad Social, Bariloche, Argentina. April.
- Rofman, R. (2005) “Social Security Coverage in Latin America” Social Protection Discussion Paper 0523. The World Bank.
- Rofman, R.; G. Stirparo and P. Lattes (1997) *Proyecciones del Sistema Integrado de Jubilaciones y Pensiones 1995-2050*. Estudio Especial 12, Superintendencia de AFJP, Buenos Aires.
- SAFJP (1998) *El Sistema Previsional Argentino*. Buenos Aires: Superintendencia de Administradoras de Fondos de Jubilaciones y Pensiones, Buenos Aires.
- SAFJP (2004) *El Régimen de Capitalización a diez años de la Reforma Previsional*. Superintendencia de AFJP, Buenos Aires.
- Sana, M. and Pantelides, E. (1999) “La Pobreza entre los Ancianos. Lo que dicen los datos a la luz de las limitaciones de la medición”. *Desarrollo Económico*, Vol.38, 152 (January-March).
- SSS (2003) *Libro blanco de la previsión social*. Secretaría de Seguridad Social, Ministerio de Trabajo, Empleo y Seguridad Social, Buenos Aires.

Annex Table 1

Social security coverage in Argentina Population aged 65+ (%), urban centers, 1990-2004

Year	Individual	Household	SS+Labor Household
1990	75,5	85,3	93,1
1991	75,9	86,0	93,6
1992	77,4	87,0	93,6
1993	76,9	87,3	94,1
1994	77,1	87,7	93,7
1995	76,8	87,2	93,1
1996	76,6	86,8	93,2
1997	75,1	85,1	92,7
1998	74,0	84,2	92,6
1999	73,7	83,8	92,2
2000	71,5	82,0	91,2
2001	71,8	82,4	90,9
2002	69,9	80,7	89,7
2003	69,6	80,3	87,8
2004	67,8	79,4	85,6

Note: Values for each year correspond to the average between the surveys of May and October or of the first and second Semesters.

Source: own elaboration based on EPH, INDEC.

Annex Table 2

SS coverage according to different variables

Population aged 65 and over, Argentine urban centers, ETEEP 2003

Variables	Category	Cover age (%)	N	Variables	Category	Cover age (%)	N	
Total		71,2	2.309					
Sex	Female	69,8	1.480		0	68,8	418	
	Male	73,7	829		1-9	59,4	178	
Age group	65-69	51,8	685	Working years	10-19	51,4	217	
	70-74	73,9	677		20-29	70,4	250	
	75-79	81,0	490		30+	78,2	1.127	
	80+	85,8	456		Unk. / missing	69,1	119	
Region	AMBA	69,0	1.016	Contributing years	0	67,8	440	
	CUYO	76,1	117		1-9	60,8	142	
	NEA	72,9	200		10-19	59,8	220	
	NOA	74,1	241		20-29	78,3	224	
	Pampeana	72,1	735		30+	94,7	604	
				Unk. / missing	56,0	678		
Marital status	Married	58,8	829	Size of firm	1-5	62,2	765	
	In union	56,4	77		6-39	78,6	387	
	Separated	41,3	77		40+	85,3	536	
	Divorced	69,3	28		Unk. / missing	65,5	621	
	Widow/er	84,7	1.113					
	Unmarried	62,8	149		Type of worker	Employee	73,9	1.317
Unknown	72,6	36	Self-employed	65,3		513		
			Employer	81,8		27		
Schooling	Incomplete primary	66,7	1.049	Unk. / missing		69,3	452	
	Complete primary	73,1	922	Manuf industry		Manuf industry	74,5	506
	Complete secondary	80,1	338		Primary	74,1	157	
			Services		75,3	377		
Household size	1	81,1	632	Main sector	Construction	53,1	96	
	2	68,9	869		Public adm.	70,2	671	
	3	63,6	306		Unk. / missing	68,7	502	
	4	70,1	157		Sewerage	Yes	75,5	1.341
	5	68,3	141	No		65,2	968	
	6	74,1	110	Ownership		Own house	72,8	1.779
	7	55,2	45			No	65,7	530
	8+	52,0	49					

Notes:

Manuf industry: Manufacturing industry.

Primary: includes agriculture, cattle ranch, hunting, forestry and fishing, mines and extraction of crude oil and natural gas.

Services: includes provision of electricity, gas and water, retail and wholesale trade, hotels and restaurants, transport, storage, telecommunications and travel agencies, financial and real estate activities.

Construction: includes construction and reparation of buildings.

Public adm.: includes public administration, defense, education, health and other services.

Unk. / missing: includes unknown and missing cases.

Annex Table 3

Dependent variable: SS coverage

Detailed model

Variables in the Equation	Category	B	Exp(B)	Sig.
Sex	Female	ref.		
	Male	-0,239	0,787	
Age group	70-74	ref.		
	65-69	-1,077	0,341	**
	75-79	0,567	1,763	**
	80+	0,711	2,036	**
Region	Pampeana	ref.		
	AMBA	-0,427	0,652	**
	CUYO	0,437	1,549	
	NEA	0,147	1,159	
	NOA	0,577	1,780	**
Marital status	Married	ref.		
	In union	0,223	1,249	
	Separated	-0,582	0,559	
	Divorced	1,081	2,947	*
	Widow/er	2,151	8,597	**
	Unmarried	0,242	1,274	
	Unknown	1,616	5,033	**
Schooling	Complete primary	ref.		
	Incomplete primary	-0,259	0,772	
	Complete secondary	-0,082	0,921	
Household size		-0,086	0,918	*
Working years	20-29	ref.		
	0	-1,141	0,319	
	1-9	-0,640	0,527	*
	10-19	-0,911	0,402	**
	30+	-0,082	0,921	
	Unknown	-0,472	0,624	
Contributing years	20-29	ref.		
	0	-1,099	0,333	
	1-9	-0,914	0,401	**
	10-19	-0,780	0,458	**
	30+	1,790	5,991	**
	Unknown	-1,304	0,271	**
Size of firm	1-5	ref.		
	6-39	0,592	1,808	**
	40+	1,035	2,816	**
	Unknown	-0,322	0,725	
Type of worker	Employee	ref.		
	Self-employed	0,061	1,063	
	Employer	0,867	2,379	
	Unknown	0,910	2,484	
Main sector	Manuf industry	ref.		
	Primary	0,325	1,384	
	Services	0,129	1,138	
	Construction	-0,649	0,522	*
	Public adm.	0,023	1,023	
Unknown	0,141	1,151		
Constant		1,183	3,263	**

* : Significant at 95%

** : Significant at 99% confidence

Model Summary

-2 Log likelihood	1836,5
Cox & Snell R Square	0,3332
Nagelkerke R Square	0,4766

Annex Table 4

Odds of receiving a contributory retirement pension

Detailed model

Variables in the Equation	Category	B	Exp(B)	Sig.	
Sex	Female	ref.			
	Male	-0,011	0,989		
Age group	70-74	ref.			
	65-69	-1,359	0,257	**	
	75-79	0,333	1,395		
	80+	0,797	2,219	**	
Region	Pampeana	ref.			
	AMBA	-0,210	0,811		
	CUYO	-0,522	0,593		
	NEA	0,234	1,264		
	NOA	-0,380	0,684		
Marital status	Married	ref.			
	In union	-0,480	0,619		
	Separated	-0,662	0,516		
	Divorced	-0,907	0,404		
	Widow/er	0,004	1,004		
	Unmarried	-0,177	0,838		
	Unknown	-0,170	0,844		
Schooling	Complete primary	ref.			
	Incomplete primary	-0,528	0,590	**	
	Complete secondary	0,389	1,476		
Household size		-0,074	0,929		
Working years	20-29	ref.			
	0	-4,136	0,016	**	
	1-9	-1,633	0,195	**	
	10-19	-0,760	0,468	*	
	30+	0,417	1,517		
	Unknown	-0,088	0,915		
Contributing years	20-29	ref.			
	0	-0,342	0,711		
	1-9	-2,384	0,092	**	
	10-19	-1,346	0,260	**	
	30+	1,163	3,199	**	
	Unknown	-2,138	0,118	**	
Size of firm	1-5	ref.			
	6-39	0,478	1,613	*	
	40+	0,794	2,212	**	
	Unknown	-0,139	0,870		
Type of worker	Employee	ref.			
	Self-employed	-0,196	0,822		
	Employer	-0,111	0,895		
	Unknown	0,726	2,068		
Main sector	Manuf industry	ref.			
	Primary	-0,117	0,889		
	Services	0,092	1,096		
	Construction	-0,544	0,580		
	Public adm.	-0,205	0,815		
	Unknown	-0,221	0,802		
Constant		0,902	2,465	*	
Model Summary		Chi-square	1521,9	df	Sig.
		-2 Log likelihood	1508,9	38	0,000
		Cox & Snell R Square	0,4827		
		Nagelkerke R Square	0,6604		

* : Significant at 95%

** : Significant at 99% confidence

Annex Table 5

Model Fitting Information in multinomial logit model from Table 6				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	4.454,8			
Final	2.600,1	1.854,6	39	0E+00
Pseudo R-Square				
Cox and Snell	0,552			
Nagelkerke	0,602			
McFadden	0,321			
Likelihood Ratio Tests				
Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	2600,1	0,0	0	,
Sex	2699,2	99,1	3	2E-21
Age	2759,8	159,7	3	2E-34
Widowhood	3040,6	440,5	3	4E-95
Household size	2617,3	17,2	6	9E-03
Schooling	2649,8	49,6	3	1E-10
AMBA	2624,9	24,8	3	2E-05
Working years	2862,5	262,3	3	1E-56
Size of firm	2739,6	139,4	3	5E-30
Construction	2618,9	18,8	3	3E-04
House ownership	2636,2	36,1	3	7E-08
Sewerage in the block	2628,1	28,0	3	4E-06
Investments for old age	2601,4	1,2	3	7E-01
<p>The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.</p> <p>a This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.</p>				