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The impact of a minimum pension on old age poverty and its budgetary cost. Evidence from Latin America*

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Abstract

This paper examines the impact on old age poverty and the fiscal cost of universal minimum old age pensions in Latin America using recent household survey data for 18 countries. Alleviating old age poverty requires different approach from other age groups and a minimum pension is likely to be the only alternative available. First we measure old age poverty rates for all countries. Second we discuss the design of minimum pensions schemes, means-tested or not, as well as the disincentive effects that they are expected to have on the economic and social behavior of households including labor supply, saving and family solidarity. Third we use the household surveys to simulate the fiscal cost and the impact on poverty rates of alternative minimum pension schemes in the 18 countries. We show that a universal minimum pension would substantially reduce poverty among the elderly except in Argentina, Brazil, Chile and Uruguay where minimum pension systems already exist and poverty rates are low. Such schemes have much to be commended in terms of incentives, spillover effects and administrative simplicity but have a high fiscal cost. The latter is a function of the age at which benefits are awarded, the prevailing longevity, the generosity of benefits, the efficacy of means testing, and naturally the fiscal capacity of the country.

JEL Classification: D190, D310, H300, I380, 0150
Keywords: Old age poverty, income transfer, pension systems, family income, fiscal policies, human development.

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Impacto de una pensión mínima en la población de tercera edad y sus costos presupuestales. Evidencia para Latinoamérica

Resumen

Este artículo examina el impacto sobre la pobreza y el costo fiscal de una pensión mínima universal para la población anciana en Latinoamerica usando datos de encuesta de hogares en 18 países. La asistencia a la pobreza de la población anciana necesita de una aproximación diferente a la de otros grupos de edad y la pensión mínima puede ser una opción alternativa viable. En primer lugar se mide la tasa de pobreza en la población de ancianos. En segundo lugar se discute el diseño de un esquema de pensión mínima, con y sin eligibilidad de la asistencia, asi como el efecto desincentivo que se espera sobre el comportamiento social y económico de las familias, incluyendo la oferta laboral ahorros y solidaridad familiar. Tercero, se utilizan las encuestas de hogares para simular el costo fiscal y el impacto sobre las tasas de probreza de un esquema de pensión mínima en los 18 países. El artículo muestra que una pensión mínima universal reduciría ampliamente la pobreza en la población anciana, excepto en Argentina, Brazil, Chile y Uruguay, en donde la pensión mínima ya existe y las tasas de pobreza son bajas. Este tipo de esquemas generan varios comentarios en relación con los incentivos, los efectos de dispersión y simplicidad adminsitrativa, pero tienen altos costos fiscales. Los costos fiscales son función de la edad en la cual los beneficios son asignados, la alta longevidad, la generosidad de los beneficios, la eficacia del mecanismo de eligibilidad y la capacidad fiscal del país.

Clasificación JEL: D190, D310, H300, I380, 0150.

Palabras clave: Pobreza en la vejez, transferencia de ingreso, sistema de pensiones, ingreso familiar, política fiscal, desarrollo humano.

1 Introduction

Alleviating old-age poverty requires different approach from other age groups. Since policies that go through labor and output markets and educational and training programs are ineffective, the only available instrument to alleviate old age poverty is a transfer of real income (possibly through price subsidies). In most developed countries, pension systems-which generally consist of a balanced combination of pay-as-you-go and funded schemes-include minimum pension schemes and are strongly redistributive, yielding a sizeable difference between poverty rates before and after transfer.[1] By contrast, in developing countries with pension systems, one observes that they have a limited potential to solve old-age poverty because of the low coverage of those systems. Coverage rates are below 30% in half Latin American countries. They range from around 10% of the labor force in Peru and Bolivia to about 60% in Chile. These figures are for 2006 and are based on the number of contributors (Mesa-Lago, 2004a; Rofman et al., 2008). As to the coverage of the elderly, the rates are extremely low in most Latin American countries. They range from 5% in Honduras to 85% in Uruguay. They are about 60% higher than 60% in the traditional four, Argentina, Brazil, Chile and Uruguay (ABCU, hereafter) plus Costa Rica and Bolivia.

More efficient solution consists of lump-sum transfers financed by tax receipts. These are pensions aimed at providing a replacement income to old persons under the poverty line and are of two types (Willmore, 2001; Holzmann et al., 2009).[2] The first type of minimum pension covers unconditionally all the elderly. Benefits are the same for everyone regardless of income, assets or work history. This distinguishes it from means-tested pensions which do not provide benefits (or provides reduced benefits) to those who have other income or assets, and from the minimum pension guarantee for which beneficiaries must have a history of contributions. In the OECD, only one country (New Zealand) provides a universal pension to its aged population with the objective to lift old persons above the poverty line. In low and middle income countries, only four countries have such universal minimum pension

[1] Public old age pension systems are generally considered to have two objectives: income replacement and poverty prevention. Contributory schemes (also called earnings-related or insurance-based schemes) are used for the first objective. To fulfill the second objective, one relies on noncontributory schemes providing minimum rate benefits (also called social pension). Both separation and combination of these objectives have merits. By separating the two functions, one hopes that the only distortions will arise from the redistributive pillar and that the contributory pillar will carry no deadweight loss. By combining them, it is hoped that workers will perceive the contributions they have to pay as an insurance premium and not as a tax. How payroll taxes are perceived is an open and unresolved question (See on this point, Gill et al., 2005). Another advantage of merging the two functions is to make the whole system more politically sustainable. This view prevails in Continental European countries which follow the Bismarckian tradition (Casamatta et al., 2000). Empirically and theoretically, there appears to be a positive relationship between the generosity of a pension system and its contributory nature.

[2] It should be noted that reduced contributory pensions are also called "minimum pension schemes". These are aimed at workers who have had some work career but could not accumulate enough pension rights to reach a certain minimum level. These workers are entitled to a minimum pension that is not subject to any condition, except age condition and sometimes family structure.

arrangements: Mauritius, Namibia, Botswana and Bolivia (On Mauritius, see Willmore, 2003). They are easy to administer and do not require information on the income of assets of the beneficiaries. They offer a pension which is relatively low and, with the exception of Mauritius, not high enough to lift its beneficiaries above the poverty line.

The second type of minimum pension is also universal but subject to means-testing. This welfare pension can be completed by housing subsidy or the possibility of being admitted in a public nursing home.[3] A number of developing countries have universal means-tested schemes although the means test applies to the household and not to the individual. The most famous examples are rural Brazil and South Africa. The South African minimum pension is quite generous in terms of level (about one-third of per capita income) and the number of beneficiaries is high reaching 88% of the covered population. The pension is paid to men aged 65 and women aged 60 and over. It is funded through general taxation. The Brazilian minimum pension, for which the eligibility age is 60 for men and 55 for women, corresponds to the minimum wage (Beltrão et al., 2004). It is also worth mentioning Mexico City (Federal District) and its program of transfers for food expenses to the elderly living in poor areas. A few studies examine the incidence of minimum pension schemes. Barrientos et al. (2003) studies the effect of social pensions on the poverty rate of elderly people in rural Brazil and South Africa and computes poverty rates and poverty gaps with and without means-tested minimum pension. He shows that, in both countries, the non-contributory pension reduces both the rate of poverty and the poverty gap. Rivera-Marques et al. (2004) study the incidence of Mexico City's safety net for the elderly and show that the program reduces poverty and inequality but that its performance in terms of poverty reduction is weaker as soon as the eligibility rules are relaxed (no means test and extension to non-poor areas). Other recent analysis of universal means-tested pension schemes (which are discussed below) include Carvalho and Evangelista (2001), Bertrand et al. (2003) and Duflo (2003).

In Latin America, five countries-Argentina, Brazil, Chile, Costa Rica and Uruguay-have non-contributory pensions (Bertranou et al., 2004). These programs generally have a social assistance character. In that they are targeted at the poor and disabled who have no contributory capacity. In Brazil and Costa Rica, part of the social assistance pension benefits is financed by cross-subsidies from social insurance programs. In terms of coverage, Chile, Uruguay and Costa Rica offer the greatest coverage but, in absolute terms, Brazil has a social assistance program with more than 2 million beneficiaries and, if the rural pensions program is included, the number of beneficiaries exceeds 8 million. Table 1 gives the main features of Latin American pension policies. For more details, see, e.g., Holzmann et al. (2009) and Mesa-Lago (2004a). Even with high rate of coverage poverty will only be eradicated if benefits are high enough and the family structure is not too burdensome.

[3]There is also an age condition and, in some cases, conditions of citizenship or legal residency.

Table 1. Pension Policies in Latin American Countries

	Type of pension system	Coverage rate of the labor force	Year of pension reform	Coverage rate of the elderly
Argentina	mixed	24	1994	75
Bolivia	private	11	1997	90
Brazil	public	-	-	85
Chile	private	58	1981	80
Colombia	pub/priv	24	1994	25
Costa Rica	mixed	48	2001	60
Dominican Republic	private	-	2003	10
Ecuador	mixed	21	2004	31
Salvador	private	19	1998	15
Guatemala	public	-	-	15
Honduras	public	-	-	5
Mexico	private	30	1997	20
Nicaragua	private	16	2004	-
Panama	public	-	-	40
Paraguay	public	-	-	15
Peru	pub/priv	11	1993	25
Uruguay	mixed	60	1996	85
Venezuela	public	-	-	30

Source: Mesa-Lago (2004b) and Rofman et al. (2008) for last column.

2 Evidence on poverty in old age

At the international level, surprisingly little evidence is available on poverty in old age. For example, in its statistical publications, the World Bank does not report poverty rates for all age groups (World Bank, 2005). Data on child poverty are published separately but not data on poverty in old age. Only recently have there been efforts to publish internationally comparable indicators of welfare from an age-specific perspective for rich and poor countries (see for example HelpAge International (2004) and Kakwani et al. (2004)).

In developed countries, the old age poverty rates are generally not much lower than those for the total population but this is a relatively recent trend. A few decades ago, the average income of the elderly was substantially lower than that of other age groups and their rate of poverty much higher (Förster et al., 2003). In developing countries, patterns are different and there is no obvious trend. As far as Latin America is concerned, the poverty headcount for the elderly is clearly lower than for the population average in the cases of ABCU and to a lesser extent in Nicaragua and Panama. It is higher in the other countries as shown in figures 1 and 2 below.[4] These four countries, Argentina,

[4]In this and the following figures, households are defined as follows: NEHH is a household with no elderly members. EHH is a household with at least one elderly member. EHH house-

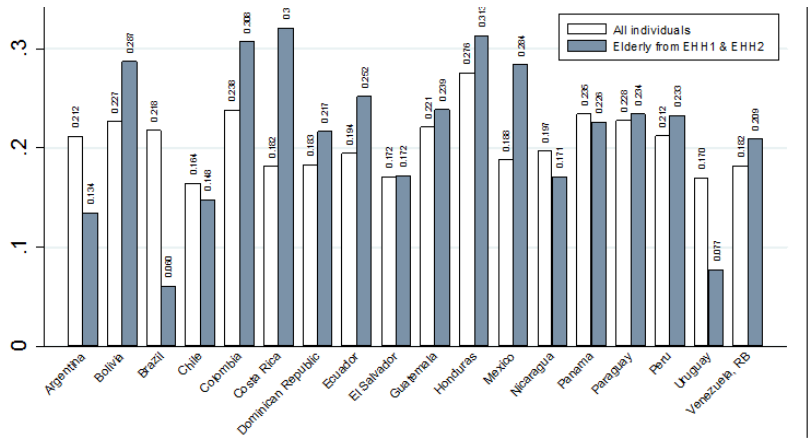

Figure 1. Poverty headcount ratio by country
Note: Poverty line = 50% of median per capita income. Household incomes were equivalized using the OECD equivalency scale adjusted household size [$= 1+(\#$ of adults $- 1) \times 0.5 + \#$ of children $\times 0.3$]. An adult was a household member aged 18 years or more, a child was a houshold member aged less than 18 years at the time of the survey, elderly are households member aged 60 years or more.

Brazil, Chile and Uruguay, which are among the richest in our sample, will often behave differently from the rest.

Poverty in old age can still be observed even in countries –for instance in the OECD– that have generous transfers for the elderly including targeted minimum pensions. This seems puzzling at first sight since the pension is universal and its level is above the poverty line (generally half the median income). There are at least three reasons for this apparent puzzle: family composition (if the other family members do not have any resource. the equivalent income of each member can be below the poverty line); take-up issue (when the pension is means-tested some individuals can be reluctant to claim it) and finally, given that it is subject to a means-test, some elderly people prefer to keep their assets even if these assets don't generate much income.

2.1 Old age poverty rates under current policies

Figure 1 presents the poverty ratio for the persons older than 60 and for the whole population in Latin America. The poverty ratio is based on a poverty

holds are divided into two subsets, namely EHH1 (elderly living alone by themselves) and EHH2 (consisting of both elderly and non-elderly members).

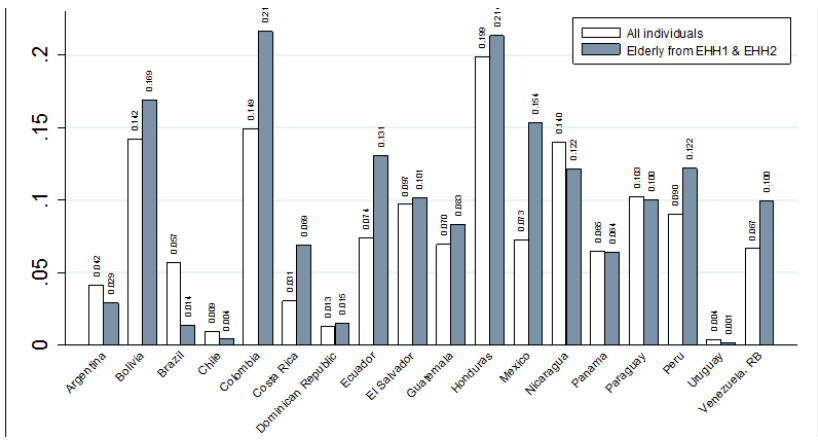

Figure 2. Poverty headcount ratio by country
Note: Poverty line = $ 2 a day. Household incomes were equivalized using the OECD equivalency scale adjusted household size [$= 1 + (\#$ of adults $- 1) \times 0.5 + \#$ of children $\times 0.3$]. An adult was a household member aged 18 years or more, a child was a houshold member aged less than 18 years at the time of the survey, elderly are households member aged 60 years or more.

line equal to half the median income of the household. Figure 2 present the poverty ratio using a different definition of the poverty line, namely a poverty line equal to $2 a day. The equivalence scale we use is the OECD scale that is equal to $0.5 + 0.5 \times$ number of adults $+0.3\times$ number of children (up to age 16).[5]

With the poverty rate calculated with the OECD scale and a poverty line equal to half the median income, Brazil, Chile, Uruguay, Argentina (and to a lesser extent Nicaragua) have low poverty rates comparable to most OECD countries (below 11%).[6] These four countries are often associated as having the same "mature" treatment of old age. It is worth noting that they do not all belong to the richest Latin American countries as one can see on table 5 in the

[5]In the appendix we present poverty rates for the population aged $65+$ instead of $60+$ and for per capita income instead of equivalized income.

[6]These figures for Latin America can be compared with those for Africa where the percentage of households with elderly living alone is small. Elderly with children also represent a small percentage (about 1% in Uganda, Burundi, Ghana, Guinea, Kenya, Malawi). However, households headed by the elderly are more frequent, ranging between 12 to 27 percent. The incidence of poverty among elderly persons is generally higher than on average, and higher than among the non-elderly in 11 of the 15 countries for which data are available. The exceptions are Burundi, Madagascar, Mozambique and Uganda (Kakwani et al., 2004).

appendix. Mexico and Venezuela are richer than Brazil and Argentina. For the other 14 countries the poverty rates are quite higher and in most cases higher than for the rest of the population. With the US$2 a day poverty threshold the poverty rates in ABCU become negligible ($< 3\%$), still lower in old age than in the whole population. In Nicaragua as well the poverty rate of the elderly is lower than that of the rest of the population, but both are high.

We draw three main conclusions from the comparison of old age poverty in these Latin American countries. First, poverty rates are consistently lower for the elderly than for the whole population in Argentina, Uruguay, Brazil and Chile.[7] Second, in the other countries, the situation is heterogeneous and depends on the poverty line chosen. Using half the median income, Bolivia, Colombia, Costa Rica, Honduras and Mexico have comparable overall levels of poverty in old age and the elderly are poorer than the rest of the population. Finally, the difference between old age and overall poverty rates is not very high for all countries with limited pension systems.

Old age poverty is computed here using household surveys. As pointed out by Angus (1997), when household per capita income (or expenditure) is used as the main welfare indicator, the assumption made about the way in which resources are shared in the family to which an elderly belongs affects the quality of the estimates. The assumptions made by statistical agencies can by themselves bias estimates against old age poverty. As an example Deaton and Paxson (1998, p. 243) mention that the "fact" that there is less poverty among the elderly in the United States depends on the assumption in the official counts that the elderly need less than adults younger than 60.

Two major issues complicate the problem of measuring poverty in old age. First, the elderly may often be living in households that are not that poor even though they themselves are not receiving any pension so that the often used implicit assumption of fair sharing might be invalid.[8] Second, the measurement of poverty in old age needs to be sensitive to the potential impact of economies of scale in household consumption on the perceived well-being of the aged. Typically households with many children are deemed to be among the poorest if one does not adjust for economies of scale. Then pensioner households or households headed by widows, etc are not very highly represented among the poor.[9] To illustrate the importance of equivalence scales,

[7] Interestingly, this is not the case in Costa Rica which has a non-contributory pension scheme but with the least generous average benefit of the 5 Latin countries with social assistance pensions (Bertranou et al., 2004).

[8] Traditionally equal sharing is assumed, with possibly a downward adjustment for children. Yet there is ample evidence to suggest that this is not the case. In the real world, we observe a wide range of situations ranging from the idyllic image of a family all devoted to the care of its elderly members to the more depressing representation of elderly being kept in the closet. The later situation has recently received a lot of attention in India where widows who represent a large fraction of the elderly (55% of women aged 60 and above are widowed-see Jensen (2003)) and often do not receive an equal share within the household (Dreze and Srinivasan, 1997). There is also the case of the Tanzanian "witches" studied by Miguel (2005) who shows how harshly unproductive members of a family can be treated by the others.

[9] Economies of scale resulting from living together and sharing goods such as housing, means of transportation, etc vary across countries, years and income levels. The extent of scale economies depend on the allocation between private and public goods in the household's con-

consider a society in which the elderly on average belong to family units of size 2 whereas the size of households without elderly is 5. Their aggregate income is respectively 5 and 10. Without scale economies, the elderly income is 2.5 and that of individuals living in households without elderly is 2. Using a standard equivalence scale (i.e., the square root of family size), these figures become 3.5 and 4.4. In other words, thanks to the economies of scale, the welfare of the non-elderly families can be higher than that of families with elderly.

In that respect it is interesting to analyze the structure of our elderly households. As it appears in table 6 in the appendix, Uruguay is the country where there are the largest fraction (0.54) of elderly households in which elderly individuals live on their own. In most OECD countries this fraction is even higher. At the other extreme we have Nicaragua with only 10% of elderly households consisting of only elderly individuals. In many countries children (16-) live in elderly households. In figure 3 we distinguish elderly households with and without non-elderly for poverty based on half the median income. These two subsets are denoted EHH2 and EHH1 respectively. It appears that poverty is relatively higher in the first group in Argentina, Brazil, Uruguay and in El Salvador. In all the other countries poverty is higher in households made of only elderly individuals.

In a number of cases the differences are huge showing the (assumed) role of family solidarity and the importance of the selected equivalence scale. To explore this point, as a thought experiment, we have posited that al the elderly individuals would live on their own. More precisely, we have assumed that the elderly living with younger family members would split and live separately on their own resources. The outcome of such a split is given in figures 4 and 5. Here again we see that Argentina, Brazil and Uruguay behave differently from the rest. In these countries poverty is lower for elderly living on their own than for younger individuals.

In this exercise we have used the pivotal age of 60 to define old age. The definition of what constitutes "old age" needs to be defined in relationship to longevity. Mortality has been rapidly declining over the last 50 years but there are great variations across countries and over time. All things being equal, average income and poverty levels for individuals above 60 are clearly

sumption basket, an allocation which is endogenous depending on prices and income. Household size, age and gender of household members may also influence the amount of resources needed to attain a certain level of well-being. The consumption needs of children are usually thought as being quite lower than that of adults. To go from household's resources to individual well-being, the concept of equivalent household scale is used. For example, the OECD currently uses an equivalence scale equal to $0.5 + 0.5 \times$ (number of adults) $+0.3\times$ (number of children). A household consisting of two adults and three children would need to spend 2.4 times as much as a single adult to be equally as well off as a single adult. By contrast, in the absence of economies of scale and with the same needs for both children and adults, this family would need 5 time as much as a single adult to reach the same welfare. An alternative equivalence scale formula is simply to take the square root of the family size (which, in our example, would give an equivalent size of 2.2, i.e., close to that of the OECD). Lanjouw et al. (2004) examine the incidence of scale economies on the poverty rate of the elderly in selected transition economies. They show that, without scale economies, poverty in old age is relatively low but that it increases with scale economies and rapidly become more important than in younger age groups.

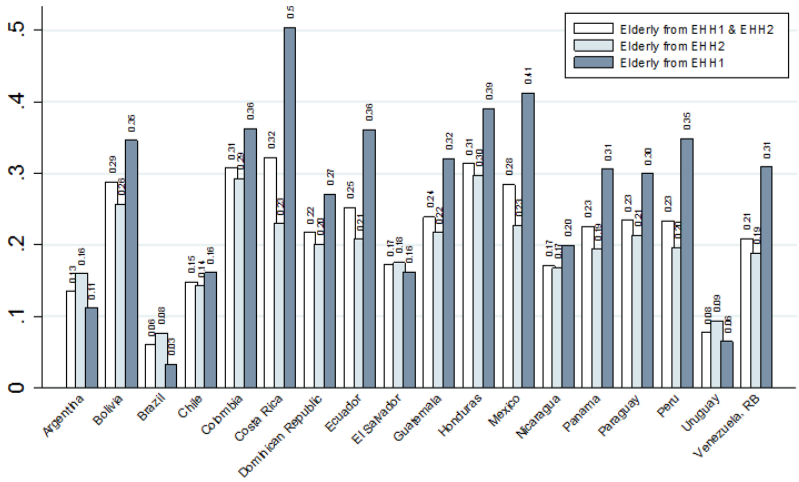

Figure 3. Poverty headcount ratio by country
Note: Poverty line = 50% of median per capita income. OECD equivalency scale adjusted houshold size poverty headcount ratios for the population and its subgroups estimated using the same poverty line. Elderly are households members aged 60 years or more.

different if life expectancy is 78, as in developed countries, or 46 as in African countries. If the same cut-off age is chosen for all countries (say 60 or 65), there is a serious selection bias in the group of people above 60 for countries where longevity is 46. However the comparison between rich and poor countries may be seriously flawed because the main reason why life expectancy at birth is low in poor countries is child mortality.

Another difficulty comes from the relation between the pivotal age and the retirement age (i.e., the mandatory age at which workers have to stop working and/or the age at which retirees start benefiting from a pension). The rate of labor participation, formal or informal, above 60 varies significantly across countries and this depends in larger part on existing social security schemes. This is the reason why the appendix reports results for the alternative cut-off age of 65. Table 7 compares the poverty rates for elderly 60+ versus elderly 65+. In most countries poverty is slightly higher with 65+ except in ABCU, Bolivia, Ecuador and Panama.

2.2 *Poverty Rates without Transfers*

Table 2 compares poverty rates (headcount ratios based on a 0.5 median income poverty line) in those 18 Latin American countries for the elderly. The

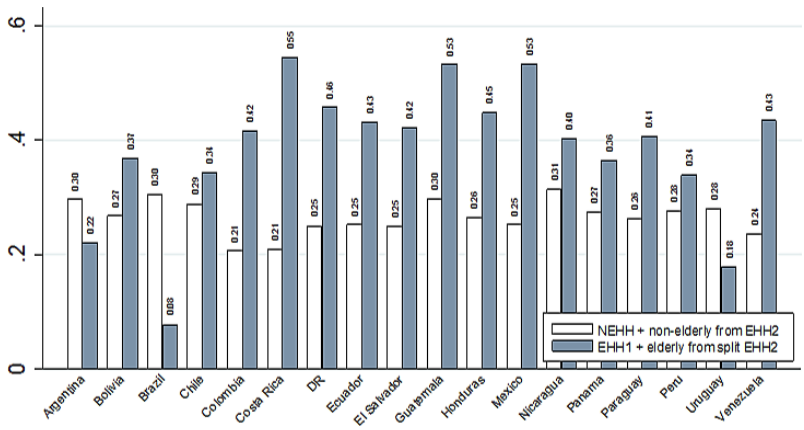

Figure 4. Poverty headcount ratio by country. Artificially split households
Note: Poverty line = 50% of median per capita income. OECD equivalency scale adjusted household size. The poverty line is the same as that in the original population without the artificial splits.

first columns show the poverty rates under the actual situation and the second set of columns the poverty rates without transfers. Computations are shown for both the elderly and the whole population.

One observes that the incidence of social transfers is clear particularly when the post transfer poverty rate is low: Argentina's poverty rate falls from around 55 to 13 percent. Brazil's rate falls from 52 to 6% and Uruguay's rate from 51 to 8%. In general, however, the reduction in poverty rates is less important than in OECD countries for an obvious reason: with rare exceptions there are no pension systems in Latin American particularly aimed at reducing poverty among old people.

2.3 Simulating the impact of minimum pensions

This section presents the results of a micro-simulation exercise consisting in introducing a minimum pension in 18 Latin American countries, we follow Atkinson et al. (2002). We are concerned by two questions: how much minimum pension schemes would cost and how much poverty would they permit eradicating in Latin American countries. Answer to both questions clearly depends on the particular design of the minimum pension that is selected. We present here 2 possible schemes given a target minimum income of z. Let y denote the non public pension income of elderly and p their current public

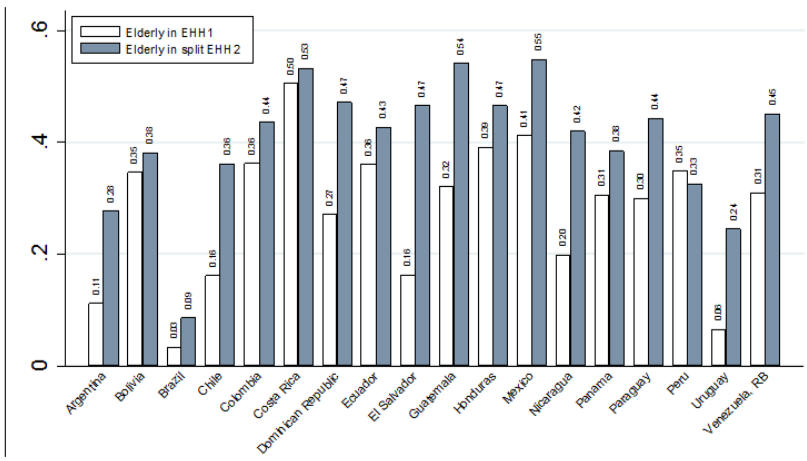

Figure 5. Poverty headcount ratio by country. Elderly living alone vs. elderly in artificially split houses
Note: Poverty line = 50% of median per capita income. OECD equivalency scale adjusted household size. The poverty line is the same as that in the original population without the artificial splits.

pensions plus social transfers. In other words private pensions, if any, are part of y. Furthermore, we take z as equal to the poverty line.

1) Unconditional topping-up: Elderly transfer guaranteeing poverty line income to all individuals aged x or more:

$$T = Max(0.z - p) \qquad if Age > x$$

2) Conditional topping-up: Elderly means-tested transfer guaranteeing poverty line income

$$T = Max(0.z - p - y) \qquad if Age > x$$

The first scheme thus implies a uniform minimum pension and the second a variable one, which depends on households' resources. We briefly discuss the importance of the key parameters of these formulas.

Age. For contributory pensions, the eligibility age is part of the financial constraint conceived individually or collectively. But in the case of noncontributory pensions there is some arbitrariness to determine at what age a person without any resource and any employment history suddenly is entitled to

Table 2. Poverty headcount ratios in the absence of current pension transfers

Country	All HH's	All HH's, in absence of current transfers	Elderly individuals	Elderly individuals in absence of current transfers
Argentina	0.21	0.33	0.13	0.55
Bolivia	0.23	0.31	0.29	0.52
Brazil	0.22	0.33	0.06	0.52
Chile	0.16	0.23	0.15	0.39
Colombia	0.24	0.29	0.31	0.47
Costa Rica	0.18	0.22	0.32	0.48
DR	0.18	0.27	0.22	0.41
Ecuador	0.19	0.25	0.25	0.39
El Salvador	0.17	0.29	0.17	0.43
Guatemala	0.22	0.3	0.24	0.35
Honduras	0.28	0.39	0.31	0.52
Mexico	0.19	0.24	0.28	0.43
Nicaragua	0.2	0.25	0.17	0.29
Panama	0.23	0.34	0.23	0.51
Paraguay	0.23	0.3	0.23	0.41
Peru	0.21	0.24	0.23	0.3
Uruguay	0.17	0.33	0.08	0.51
Venezuela	0.18	0.24	0.21	0.38

Note: OECD adjusted HH sizes are used in calculating the poverty headcount ratios. The poverty line is half of the national median per capita income.

a transfer. The eligibility age should be determined by the capacity of the pensioner to work or not. It should thus be a function of health and of longevity. Given the level of benefits, the length of the entitlement-i.e., the difference between life expectancy and the age chosen-is what matters for the revenue constraint. Traditionally the retirement age tends to be lower for women than for men even though lately one witnesses harmonization (always towards the higher age) driven by gender equality and budget constraint considerations. We report simulation results for two definitions of "old age": 60 and older and 65 and older (in the appendix).

Means Test. Since the objective is to reduce poverty in old age, the only meaningful choice is between an unconditional minimum pension and a conditional (i.e., means-tested) pension. A minimum pension guarantee which covers only workers with some minimal career would exclude too many people. An unconditional pension has a number of advantages: it is administratively simpler; it implies less disincentives to work and save; and it carries less stigma. It is however costlier though there is the possibility of taxing those who do not really need it but this then creates some unwanted administrative costs: testing means or taxing those who don't need the pension are formally

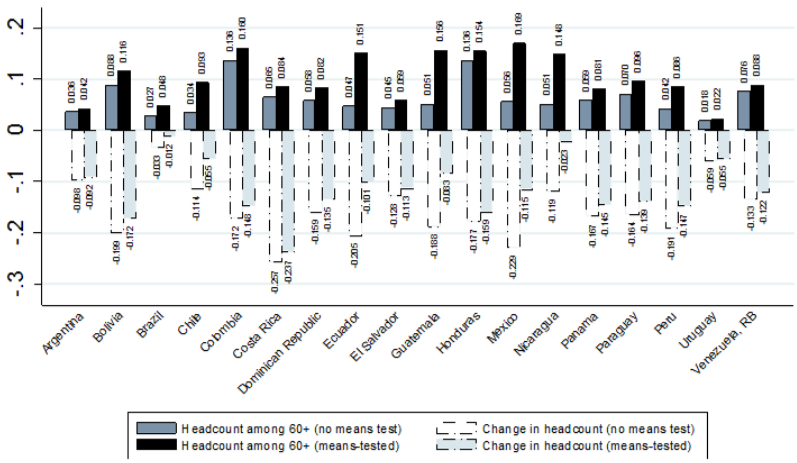

Figure 6. Poverty headcount ratio by country. After top-up transfer (with change in poverty headcount ratio)
Note: Poverty line = 50% of median per capita income. OECD equivalency scale adjusted household size. The poverty line after top-up transfers were estimated using the pre-transfer poverty line.

similar. Therefore, a priori, an unconditional pension would cost more than a conditional one but would be more attractive. The choice boils down to questions of financial feasibility and, above all, political support. If there are strong revenue constraints, it might be desirable to introduce other types of conditionality. For example, in Mexico, the uniform pension is offered in the Federal District to those known to be the poorest. In Brazil, the uniform pension (which is means tested) is restricted to rural areas.

Level of Benefits. It is reasonable to set the level of benefits as a function of an indicator of poverty such as the minimum wage or the poverty line. The benefit could be in cash or in nature. When there is a risk that the pension would not reach the elderly and when the pension is likely to be very small. it might be preferable to provide benefits such as food or health stamps than cash. Here we have decided to take the poverty threshold as a benefit target.

Fiscal Cost. To approximate the cost of providing a minimum pension, we use the revenue constraint

$$tEY = ET$$

where t is the contribution rate; Y the individual income; and T the level of minimum pension. We use the operator E as a short for the sum over all the individuals concerned. The feasibility of our minimum pension scheme will

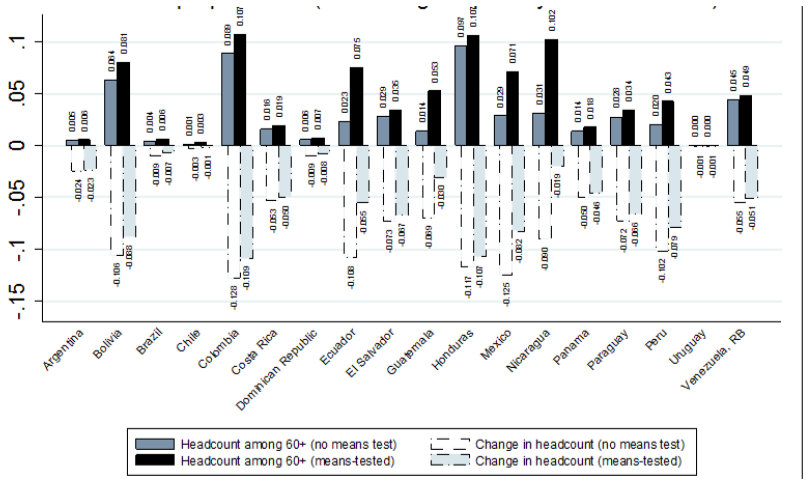

Figure 7. Poverty headcount ratio. After top-up transfer (with change in poverty headcount ratio)
Note: Poverty line = $2 a day. OECD equivalency scale adjusted household size.

clearly depend on the level of t, that is the fraction of mean income that is needed to finance it.

3 Incentive effects of minimum pensions

Minimum pensions are expected to have disincentive effects on individual decisions and on the economic and social behavior of households. These incentive effects will not be taken into account. To do so we would need behavioral microsimulations, which are out of the scope of this paper. Let us however mention the various behavioral reactions one can expect from minimum pensions schemes.

Retirement Decision. In developed countries low rates of activity among elderly workers and low effective age of retirement threaten the financial viability of social security systems by generating, in conjunction with increasing longevity, high dependency ratios (Gruber and Wise, 1999). The availability of a minimum pension at an early age is a factor explaining early retirement. For developing countries, a low rate of labor participation in old age is less of an issue. The problem can be avoided by choosing an entitlement age that is not too low. Comparing means-tested and unconditional minimum pension schemes. the former one will induce retirement earlier than the latter to the extent that it includes an earnings test.

Prodigality Effect. In the presence of a minimum pension, some individuals who would otherwise have saved for retirement could be tempted to reach retirement without any resources trusting that they are entitled to some minimal protection. These individuals, labeled "rational prodigals" in the literature, have to be induced to save by making the minimum pension less attractive. However by doing so in a world of asymmetric information, one penalizes people who really depend on the minimum pension because they are unable to accumulate enough resources for retirement. The prodigality argument was introduced by Hayek (1960, p. 286) who advocated an old age pension whose raison d'être "is not that people should be coerced to do what is in their individual interest but that by neglecting to make provisions, they would become a charge to the public. Up to this point the justification for the whole apparatus of 'social security' can probably be accepted by the most consistent defenders of liberty".[10]

Mobility. The incidence of a minimum rate pension when workers are mobile is ambiguous. From the tax competition literature. we know that it will attract low income retirees from less generous neighboring countries. This will have the effect of pushing down these pensions and of resulting in what is often called a race to the bottom. At the same time, the insurance of obtaining a minimum pension regardless of one's career can induce mobility within a country.

Longevity. As already mentioned, dependency ratios are lower in developing countries because longevity is lower. which limits the fiscal cost of a minimum pension, but the trend in developing countries is toward an increase in dependency ratios as a result of increased longevity and declining fertility (Wolfensohn and Bourguignon, 2004, p. 26). The cost of minimum pension programs will thus increase. At the same time, minimum pensions would induce by themselves an increase in longevity since they would provide the elderly with better food and health care. Even in societies where transfers like these minimum pensions are "confiscated" by other members of the extended family, there are incentives to keep the beneficiaries alive and well as long as possible.

Weakening Family Ties. In developing countries, elderly people often live within a rather extended family and, in the absence of pensions, they rely on younger generations to provide them food and care. These types of arrangements have been studied by sociologists, anthropologists and more recently by economists (Barrientos et al., 2003). The mechanisms underlying these family arrangements range from pure altruism to cooperative or strategic exchange, to social pressure. One hypothesis-known as the old age security hypothesis-linking social security with fertility and family solidarity goes as follows: in the absence of social security, parents depend on their children to give them care and attention in their old age and, thus, tend to have many children. As societies develop, social security institutions appear, and chil-

[10] Along the same lines, it is worth pointing out that a minimum pension can affect financial risk taking. In countries with individualized accounts and retirement money invested in the stock market, middle and low income workers may have a strong incentive to choose a portfolio with high risk and high return profiles as they can always be bailed out.

dren are much less needed as sources of support in old age: fertility falls and family links distend.

Since we are interested to find out what impact a minimum pension would have on poverty in old age, the relevant question is how the additional resource represented by this transfer would be used by the elderly living in an extended household. The key issue is whether or not they will benefit, at least in part, from their pension. Some family structures in Africa and in Asia care for the elderly but restrict their needs to the minimum.[11] In such situations a minimum pension would, *de facto*, be confiscated away from the elderly and miss its intended objective.

Spillover Effects. In general one expects a more equitable allocation of resources within the extended family to result from transfers of this type with various consequences. The case of South Africa is interesting in this regard. Women turning 60 and men turning 65 become eligible for a pension roughly equal to twice the per capita income of black Africans in South Africa. This cash transfer had a double effect. First, it resulted in a drop in labor supply of prime-age individuals living with these elderly, particularly when the pensioner is a woman (Bertrand, Mullainathan and Miller 2003). See also Jakubowicz (2004) for the case of rural Brazil. Second it resulted in improved health of the granddaughters when the grandmother is the beneficiary (Duflo, 2003). These results show the type of 'arbitrage' that can be observed in an extended family. The role played by women is also striking. These minimum pensions have positive spillovers for other members of the extended family. Carvalho and Evangelista (2001) has studied the effect on labor outcomes and school enrollment of children residing with the beneficiaries of the pensions awarded to rural workers in Brazil. They show that these old age benefits foster school enrollment and decrease child labor participation; they also show that the intensity of these effects depends on the gender of the beneficiaries and of the children concerned.

4 Simulation results for 18 latin american countries

We now turn to the results of our "mechanical" (as opposed to behavioral) microsimulations using household survey data for 18 Latin America countries for the latest available year. The surveys give us the disposable income (resources) and the family structure for aged people. We use two alternatives definitions of old age: 60 and 65 (the latter in the appendix). The disposable income is the sum of all the resources available in the family unit to which the elderly person(s) belong(s) divided by the equivalence scale. The simulation consists in introducing a minimum pension equal to the poverty rate. This pension is given to all elderly granted they do not receive any other transfers from the government. If they do, the new pension is adjusted accordingly. We consider two scheme depending on whether or not the minimum pension is means tested, the means being the resources of the elderly concerned.

[11] See footnote 9, Dreze and Srinivasan (1997) and Miguel (2005).

In the simulations, we use two specifications for the minimum pension US$2 a day or 50% of median income. We are interested in measuring the impact on the poverty rate and the fiscal cost of this minimum pension. Clearly since the minimum pension is aimed at reaching the poverty line, if all elderly would live by themselves, poverty in old age would disappear. Poverty will only remain because a majority of elderly live with younger family members with whom they share all the available resources. Consequently results will depend on the equivalence scale and on the structure of the family where the elderly people live.

The results are presented in figures 8 and 9 for the two levels of poverty. These figures show the decrease in poverty rates due to the two types of schemes. Not surprisingly the decline in poverty is higher when there is no means test. In that case, some elderly end up with an income higher than the poverty line and this can be shared among all the members of the households. Let us repeat that if all elderly were living on their own, poverty would disappear under the two schemes.

5 The cost of the two schemes

It might be useful to relate the cost of our minimum pension scheme to the concept of poverty gap, that is the amount relative to the poverty line that has to be transferred to the poor families to bring their incomes up to the poverty threshold. In other words the poverty gap give the relative amount of resources that one needs to eradicate poverty. If we measure the poverty gap for the population of elderly and if we assume that all the elderly live alone, the poverty gap and the cost of a minimum pension with means testing would coincide.[12]

Figures 8 and 9 give the cost of the minimum pension expressed here as a fraction of personal income.[13] The cost is high when the poverty line (and thus the minimum pension) is based on 50% of median income-which is also the minimum pension scheme that is the most efficient at lowering poverty. The highest cost is for Ecuador and Mexico. It is naturally higher when there is no means test. The cost depends on the share of old persons in the total population; on the average income of old households relative to the median; and on the presence or not of transfers (the minimum pension policy will be more expensive if there are no transfers to start with).

[12]Table 7 in the appendix, presents the poverty gap index for the whole population and for the population of elderly. The poverty gap index is the ratio of the difference between the poverty level and the actual non pension income of the poor over the poverty line. The relative cost of the means test scheme is the ratio of the difference between the poverty line and the actual non pension income over the average income.

[13]To express the fiscal cost as a share of GDP the figures would need to be multiplied by a factor of 0.5 to 0.7.

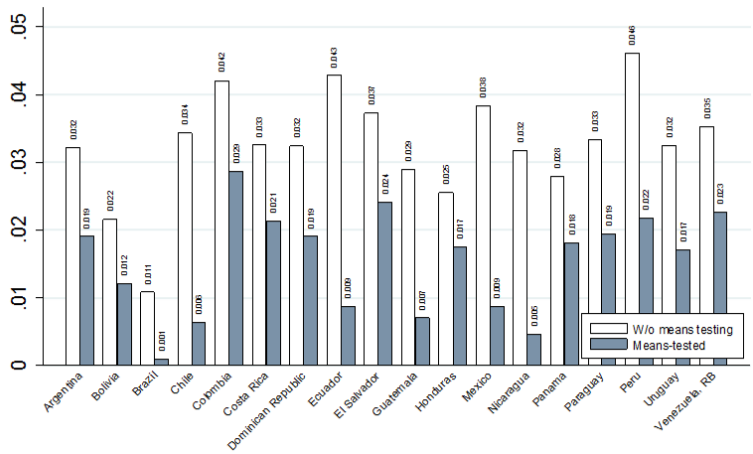

Figure 8. Cost of minimum pension program by country
Note: Poverty line = 50% of median per capita income. Cost is expressed as top-up pensions summed across HH's as a percentage of incomes summed across all HH's in the country.

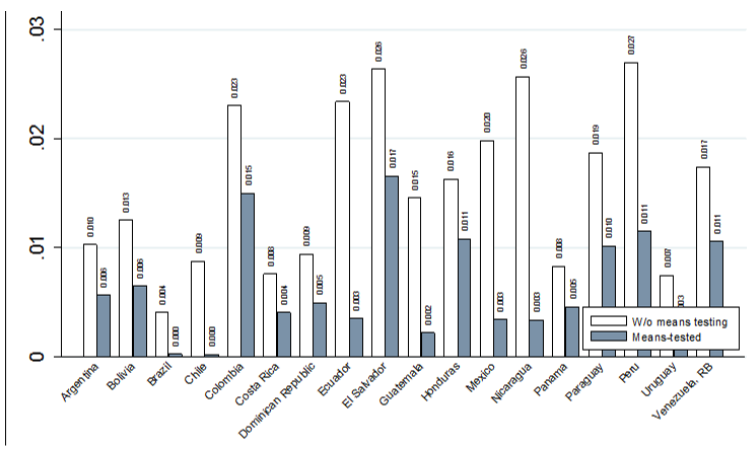

Figure 9. Cost of minimum pension program by country
Note: Poverty line = $2 a day. Cost is expressed as top-up pensions summed across HH's as a percentage of incomes summed across all HH's in the country.

6 Conclusions

The keystone idea of this paper is that societies are rightfully judged on the way they treat their elderly and particularly their poor elderly and that the best way to alleviate poverty in old age is through a scheme of basic pensions. We applied this idea to a set of 18 Latin American countries. The main conclusion we draw is that minimum pensions lead to a very substantial reduction in poverty and that in general their cost is reasonable. Not surprisingly both the effect and the cost of such a scheme drastically vary with the type of poverty threshold chosen. Relative to half the median income a US$2 a day pension costs less. This is particularly true in richer countries where a $2 a day pension seems negligible.

Tables 3 and 4 summarize some of the key results. With half the median income the relative reduction ranges from 17% in Colombia to 75% in Costa Rica. The absolute reduction ranges from 2% in Brazil to 24% in Costa Rica. As to the relative cost, it ranges from 0.1% in Brazil to 2.9% in Columbia. Columbia is a particular case. The minimum pension there costs a lot and yet it has a very small effect, both relative (0.168) and absolute (0.05). This puzzling result is due to the family structure: we should remember that if all elderly would live on themselves poverty would disappear. Poverty remains because the minimum pension is diluted among non-elderly household members.

With a $2 a day the absolute reduction in poverty ranges from a negligible amount in Chile and Uruguay to 11% in Columbia. The relative reduction ranges from 16% in Nicaragua to 80% in Argentina. Not surprisingly the cost is lower. It is negligible in Brazil, Chile and reaches a maximum of 1.5% in Columbia.

Finally, let us address two key questions. Are those schemes financially affordable and politically sustainable? The affordability depends on which threshold we choose, $2 a day or half the median income, and on the level of national income. As a rule of thumb we would say that countries with national income above the Latin American average could and should opt for a minimum pension equal to half the median income. For the others, a $2 a day pension is reasonable. It is interesting to consider the countries that are relatively richer than the other: ABCU, Mexico and Venezuela. It is clear that a minimum pension equal to half the median income seems to be more desirable in these latter two countries where the rate of poverty is higher and the reduction (12% in both countries) substantial.

If we turn to the poorest countries, Bolivia, Honduras, Nicaragua and Paraguay, a $2 minimum pension will have clear effects but with a cost ranging from 1.1% to 0.3%, which seems affordable. It is worth noticing that Bolivia that has a quasi universal pension scheme keeps a quite high poverty rate among elderly. This naturally comes from the fact that the existing scheme provides benefits that are quite below the poverty line based on $2 a day.

The final question is that of political sustainability. Even if such pension scheme is adopted there is always the risk to see it progressively eroded because of lack of political will. Elderly people particularly in developing coun-

Table 3. Summary of results: Poverty reduction among the elderly with means-tested minimum pensions Poverty line = 0.5 of the national median per capita income

Country	Current poverty headcount ratio	Absolute reduction in poverty headcount ratio	Relative reduction in poverty headcount ratio	Relative cost of program, elderly >= 60 years	Relative cost of program, elderly >= 65 years
Argentina	0.13	0.09	0.685	0.019	0.012
Bolivia	0.29	0.17	0.597	0.012	0.007
Brazil	0.06	0.01	0.198	0.001	0
Chile	0.15	0.05	0.369	0.006	0.005
Colombia	0.31	0.15	0.48	0.029	0.02
Costa Rica	0.32	0.24	0.738	0.021	0.016
DR	0.22	0.13	0.621	0.019	0.014
Ecuador	0.25	0.1	0.402	0.009	0.007
El Salvador	0.17	0.11	0.656	0.024	0.018
Guatemala	0.24	0.08	0.347	0.007	0.005
Honduras	0.31	0.16	0.508	0.017	0.013
Mexico	0.28	0.12	0.405	0.009	0.007
Nicaragua	0.17	0.02	0.133	0.005	0.003
Panama	0.23	0.15	0.643	0.018	0.013
Paraguay	0.23	0.14	0.591	0.019	0.014
Peru	0.23	0.15	0.633	0.022	0.016
Uruguay	0.08	0.05	0.709	0.017	0.011
Venezuela	0.21	0.12	0.581	0.023	0.016

Note: OECD adjusted HH sizes are used in calculating the poverty headcount ratios.

tries do not have a big political weight. Relative to OECD countries their demographic importance is small. To the extent that the majority of elderly live with their children they cannot express their concerns truly independently. For these reasons it is important to give the minimum pension scheme a constitutional status and a frame that makes it adjust to social or economic changing parameters. For example the age at which the pension is made available could vary with longevity. Benefits should not be absolute but be linked to national income growth. One can imagine that with high inflation and depreciation of the US currency a $2 a day pension quickly loses its attractiveness.

The exercise conducted in our paper could cover a number of other specifications pertaining to the age of entitlement (60 or 65 for men and women), the nature of transfers (cash or in kind), the conditionality (schooling of grandchildren). It is very likely that the results would not change much and that priority should be given to the issue of implementation.

Table 4. Summary of results: Poverty reduction among the elderly with means-tested minimum pensions Poverty line = $2 a day

Country	Current poverty headcount ratio	Absolute reduction in poverty headcount ratio	Relative reduction in poverty headcount ratio	Relative cost of program, elderly >= 60 years	Relative cost of program, elderly >= 65 years
Argentina	0.03	0.02	0.796	0.006	0.004
Bolivia	0.17	0.09	0.523	0.006	0.003
Brazil	0.01	0.01	0.526	0	0
Chile	0	0	0.348	0	0
Colombia	0.22	0.11	0.504	0.015	0.011
Costa Rica	0.07	0.05	0.72	0.004	0.003
DR	0.02	0.01	0.514	0.005	0.004
Ecuador	0.13	0.06	0.423	0.003	0.003
El Salvador	0.1	0.07	0.658	0.017	0.013
Guatemala	0.08	0.03	0.365	0.002	0.002
Honduras	0.21	0.11	0.5	0.011	0.008
Mexico	0.15	0.08	0.536	0.003	0.003
Nicaragua	0.12	0.02	0.16	0.003	0.002
Panama	0.06	0.05	0.722	0.005	0.003
Paraguay	0.1	0.07	0.661	0.01	0.008
Peru	0.12	0.08	0.648	0.011	0.008
Uruguay	0	0	0.679	0.003	0.002
Venezuela	0.1	0.05	0.51	0.011	0.008

Note: OECD adjusted HH sizes are used in calculating the poverty headcount ratios.

Appendix

Table 5. Income and poverty levels

Country	Survey year	GNI per capita, Atlas method (current US$)	Average per capita income	Median per capita income	Life expectancy at birth (years)	Poverty headcount, all HH's
Argentina	2006	5,140	344	229	75	0.21
Bolivia	2007	1,220	239	132	66	0.23
Brazil	2006	4,820	337	186	72	0.22
Chile	2006	6,890	464	272	78	0.16
Colombia	2004	2,500	156	85	72	0.24
Costa Rica	2006	5,030	340	216	79	0.18
DR	2006	3,390	278	165	72	0.18
Ecuador	2006	2,920	263	154	75	0.19
El Salvador	2006	2,980	221	152	71	0.17
Guatemala	2006	2,250	208	124	70	0.22
Honduras	2007	1,590	175	96	70	0.28
Mexico	2002	6,000	244	151	74	0.19
Nicaragua	2005	890	151	92	72	0.2
Panama	2006	4,940	303	175	75	0.23
Paraguay	2005	1,240	253	148	71	0.23
Peru	2006	2,930	222	144	73	0.21
Uruguay	2007	6,620	410	276	76	0.17
Venezuela	2006	6,120	239,675	172,852	73	0.18

Note: OECD adjusted HH sizes are used in calculating the poverty headcount ratios. The poverty line is 0.5 of the national median per capita income.

Table 6. Household size and structures

Country	Mean no. of HH members	Fraction of HH's with at least one elderly person in HH	HH consisting of elderly living alone (as a fraction of elderly households)
Argentina	3.4	0.32	0.46
Bolivia	4.05	0.24	0.31
Brazil	3.18	0.23	0.32
Chile	3.65	0.39	0.3
Colombia	4.04	0.3	0.17
Costa Rica	3.74	0.25	0.31
DR	3.74	0.27	0.21
Ecuador	4.22	0.33	0.29
El Salvador	4.18	0.31	0.21
Guatemala	5.02	0.25	0.19
Honduras	4.62	0.27	0.15
Mexico	4.2	0.25	0.27
Nicaragua	5.32	0.28	0.1
Panama	3.79	0.3	0.29
Paraguay	4.3	0.29	0.24
Peru	4.5	0.32	0.24
Uruguay	2.91	0.41	0.54
Venezuela	4.3	0.26	0.17

Note: Elderly are HH members aged $>=$ 60 years. Column 1 is the mean number of HH members in ALL households. Column 2 is #EHH / #AHH. Column 3 is #EHH1 / #EHH.

Table 7. Poverty headcount ratios with (1) unadjusted household size (2) elderly aged 65 years and older

Country	All HH's, OECD adjusted	All HH's, unadjusted	Among elderly aged >= 60 years, OECD adjusted	Among the elderly aged >= 60 years, unadjusted	Among elderly aged >= 65 years, OECD adjusted
Argentina	0.21	0.24	0.13	0.11	0.12
Bolivia	0.23	0.24	0.29	0.19	0.26
Brazil	0.22	0.25	0.06	0.06	0.05
Chile	0.16	0.18	0.15	0.11	0.15
Colombia	0.24	0.24	0.31	0.29	0.33
Costa Rica	0.18	0.2	0.32	0.25	0.36
DR	0.18	0.2	0.22	0.17	0.22
Ecuador	0.19	0.21	0.25	0.21	0.27
El Salvador	0.17	0.19	0.17	0.14	0.19
Guatemala	0.22	0.24	0.24	0.19	0.26
Honduras	0.28	0.28	0.31	0.26	0.32
Mexico	0.19	0.21	0.28	0.25	0.3
Nicaragua	0.2	0.22	0.17	0.15	0.17
Panama	0.23	0.25	0.23	0.19	0.24
Paraguay	0.23	0.24	0.23	0.17	0.26
Peru	0.21	0.22	0.23	0.17	0.25
Uruguay	0.17	0.21	0.08	0.05	0.07
Venezuela	0.18	0.2	0.21	0.18	0.23

Note: Elderly are HH members aged >= 60 years. Column 1 is the mean number of HH members in ALL households. Column 2 is #EHH / #AHH. Column 3 is #EHH1 / #EHH.

Table 8. Household size and structures

Country	All individuals	Elderly individuals
Argentina	0.09	0.06
Bolivia	0.1	0.12
Brazil	0.09	0.02
Chile	0.05	0.04
Colombia	0.20	0.21
Costa Rica	0.07	0.15
DR	0.06	0.07
Ecuador	0.07	0.12
El Salvador	0.06	0.06
Guatemala	0.08	0.09
Honduras	0.15	0.16
Mexico	0.08	0.15
Nicaragua	0.07	0.05
Panama	0.11	0.11
Paraguay	0.09	0.09
Peru	0.08	0.1
Uruguay	0.05	0.02
Venezuela	0.08	0.11

Note: OECD adjusted HH sizes with a poverty line of 0.5 of the national median per capita OECD adjusted income. Elderly are HH members aged >= 60 years.

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