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COMPARING PENSION SCHEMES IN CHILE, SINGAPORE, BRAZIL AND SOUTH AFRICA

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COMPARING PENSION SCHEMES IN CHILE, SINGAPORE, BRAZIL, AND SOUTH AFRICA[1]

The 1990s could well qualify as the decade of global pension reform. A number of countries in Latin America and transition economies radically transformed their pension provision, and moved swiftly in the direction of privately provided individual retirement plans. The blueprint for pension reform in these countries was provided by Chile's 1981 pension reform (Barrientos, 1998). The World Bank has played a key role in supporting and financing this model of pension reform elsewhere in the developing world. At one level, the spread of pension reform can be seen as a response to the accelerated demographic and epidemiological transition in developing countries thrusting the issue of old age support to the forefront of development policy. In fact, pension reform has been embedded within structural adjustment, and has largely constituted a response to fiscal deficits and labour market liberalisation. This has narrowed the potential range of policy responses to demographic change available to developing countries. The paper uses a comparative perspective to draw attention to the variety of pension provision in the developing world. It focuses on pensions within the broader context of old age support.

The issue of how to organise pension provision and old age support in developing countries is increasingly coming to the fore. The World Bank's 1994 report on 'Averting the old age crisis: policies to protect the old <u>and</u> promote growth' raised the profile of ageing as an issue in the context of development policy, but within an unfortunate context of 'crisis' (World Bank, 1994). Although the report recommended developing countries adopt multi-pillar pension systems, the Bank subsequently focused almost exclusively on supporting the introduction of individual retirement saving plans. This was rationalised in terms of significant economic advantages claimed to flow from these plans, including improved work and saving incentives, the strengthening of capital markets, and reduced fiscal deficits. The OECD's 1998 report 'Maintaining Prosperity in an Ageing Society' reflected a more balanced approach to the policy responses needed to accommodate population ageing (OECD, 1998). According to this report, pension reform is needed to accommodate population ageing in the context of a wider 'active ageing' framework. It suggests a more gradual approach to pension reform in developed countries, focusing on raising the economic contribution of the old by extending their economic activity, and supporting interventions which improve their well being.

With the spread of pension reform in the 1990s, and the discussions that have attended it, insufficient attention has been paid to the variety of pension provision in the South. The selection of countries for this comparative study makes this point well. Chile's individual retirement plans have taken a paradigmatic role in pension reform among developing countries. Employees contribute a fraction of their earnings to a retirement account managed by private pension fund managers. These collect the contribution into a fund which is invested in a range of financial assets. At retirement, employees use the balance of their individual accounts to purchase an annuity. To date, pension fund returns have been satisfactory, but administrative costs are also high, and the proportion of the labour force contributing on a regular basis has declined. Singapore's Central Provident Fund provides a different model of old age support. Compulsory payroll contributions are collected into a fund managed by the government, and the individual accounts are credited with a fixed rate of return. Affiliates can use their savings for a range of merit expenditures, including health, housing, and education. The proportion of the labour force contributing on a regular basis is high, and the administration of the fund minimises administrative costs. Individual retirement plans and the provident fund model reflect dominant models of pension provision in Latin America and South Asia respectively.

Less conspicuous, but very important in the context of development policy, are the experiences of pension reform during the 1990s in South Africa and Brazil. In South Africa, the fall of apartheid led to the extension of basic universal pension benefits to Africans. The 'social pension' provides a regular source of income to elders and their households, and is proving to be a powerful instrument of development, by supporting households' economic activity and raising investment in physical and human capital. The 'social pension' has led to a significant improvement in the status of elders within their households. In Brazil, a new Constitution adopted in 1988 extended pension entitlements to elders in rural communities and in informal employment. Implemented in 1993, the 'previdencia social' has provided a significant boost to households' economic activity, and has had an important impact on poverty. The experiences of Brazil and South Africa show that universalising basic pension schemes can have a measurable impact on poverty, the well being of elders, and on economic development.

A comparison of pension schemes in Chile, Singapore, South Africa, and Brazil can yield important lessons for old age support in developing countries. There are, of course,

technical issues of design and implementation which a comparison of this sort can illuminate, but the main concern of this paper is to consider the extent to which the different pension schemes provide a model for old age support in developing countries. The paper begins by explaining what pension schemes do. The following section outlines the main features of pension provision in the selected countries. Separate sections discuss the significance of pension benefits with old age support, the population and risk coverage of pension schemes, and their administrative costs and political sustainability. Another section then considers the implications from the comparative analysis for the future of pensions in the developing world. A final section provides the main conclusions.

WHAT CAN PENSIONS DO?

Pension plans perform three main functions: consumption smoothing, insurance, and redistribution. Differences in pension design reflect differences in the social values and policy priorities of pension designers, and have implications for the extent to which pension plans can perform these functions. In large measure, the current debate on pension design is really about the capacity of pension plans to address specific policy objectives. These issues are explored in this section and provide a foundation for the discussion that follows.

The Main Functions of Pension Plans

Because income varies significantly over the life course of an individual and her household, and this is especially true for the majority who rely on labour earnings as their main source of income, the need arises to shield household consumption from some of the variation in income. In stylised descriptions of the life course during the 'golden age' (see Figure 1), consumption is above income during an initial phase including up to family formation. Then earnings rise with age, and household expenditures decline as children leave home, with the implication that income rises above consumption until retirement. After retirement, households use their accumulated savings to provide the necessary income. In Figure 1, consumption is represented as a constant over the life course.[2] A key function of pension plans is to enable individuals and households to smooth consumption over the life course, by collecting saving during people's working lives and providing retirement income.

FIGURE 1 The 'Golden Age'

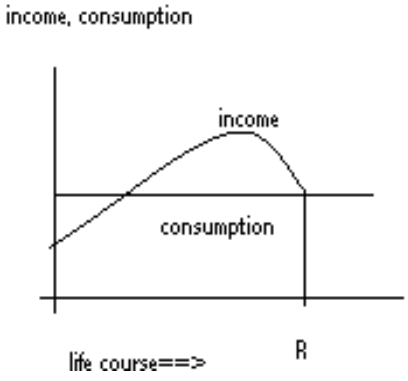
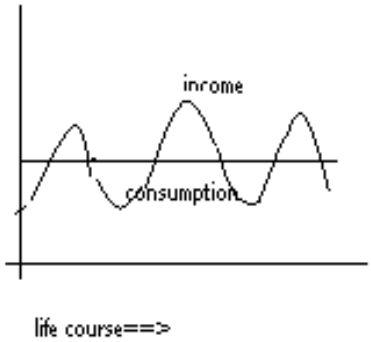


FIGURE 2 The 'Age of Insecurity'



Current economic conditions are very different from those in the 'golden age'. Economic crises, cuts in public programmes, and labour market insecurity ensure that income variation over the life course is much greater (See Figure 2). This is the 'Age of Insecurity' perhaps, and as a consequence, the capacity of households to ensure steady consumption is greatly diminished. It is to be expected that pension plans would need to cope with added pressures in order to smooth consumption in the new conditions.

A second function of pension plans is to provide insurance against a range of contingencies which may otherwise adversely affect household consumption. A key contingency covered by pension plans is longevity risk, the risk that we may outlive our accumulated resources. Uncertainty over the time of death is a primary factor in explaining the establishment of pension plans.[3] Pension plans also insure against short lives, especially through benefits to dependent survivors in the event of the death of the breadwinner. Pension plans also cover risks to the length of the working life, such as sickness, disability, or unemployment. Depending on the detail of pension plan design, other contingencies may be covered. Some pension plans have indexed pension benefits, and therefore protect beneficiaries against inflation risks. Where pension plans calculate benefits with a formula based on some averaging of earnings, they effectively provide insurance against gaps in employment or variations in earnings.[4] The insurance function of pension plans is extremely important (especially in the 'Age of Insecurity'), but the insurance properties of pension plans are little understood, and as a result greatly undervalued (Diamond, 1996).

Pension plans can also perform a redistributive function. They collect contributions from one group and pay benefits to a different group, enabling the pursuit of social norms and policy objectives with regards to the distribution of income in society. Pension plans can redistribute income across generations, for example by transferring income from those in work to those in retirement. They can also redistribute income within generations, for example by skewing entitlements in favour of women, or poorer pensioners.

When focusing on pension outcomes, it is easy to conflate the effects of the insurance and distributive functions. Ex post, insurance redistributes premium income towards those groups affected by the insured contingencies. In travel insurance, for example, premium income will be allocated to those insured who experience cancellations, sickness or loss of luggage. Ex ante insurance results in ex post redistribution (Diamond, 1996). This is different from discretionary redistribution, for example where entitlements are calculated on the basis of a unisex formula purposely benefiting women, who on average live longer than men. In this case, an ex ante redistributive pension formula results in ex post income redistribution. The distinction is important, as we may argue over the desirability and effectiveness of ex ante redistribution, and over the right amount of redistribution, but ex ante insurance is generally agreed to be welfare enhancing.

Pension Plan Design and Functions

Differences in pension plan design reflect different social priorities and norms, as well as judgements concerning the effectiveness of pension plans in performing the functions above. The wide variety of pension plan design in the world demonstrates an equally wide range of views on this (Palacios and Pallarés-Millares, 2000). It would be useful at this point to run through some typologies of pension plans. In *unfunded* pension plans, the contributions of active members are used to pay for the benefits of pensioners, and there is no fund accumulation. These are also known as pay-as-you-go pension plans. *Funded* pension plans accumulate the contributions of an individual or a group into a fund which is used to pay for their pension benefits. Some pension plans set the benefits according to a pre-established formula, and vary contributions to cover the resulting liabilities. These are known as *defined benefit* pension plans. *Defined contribution* pension plans, in contrast, set the contribution level and allow pension benefits to vary. *Contributory* pension plans link entitlements to the contribution history of individual members, while *non-contributory* pension plans provide entitlements independent of past contributions, but associated with old age or a specific contingency such as disability.

Provident funds enjoy a dual role in providing basic social security (old age pension included) and as a source of long term finance for development projects (McKinnon, 1996).

A less tractable distinction is the one existing between *public* and *private* pension plans. It is hard to find purely private pension plans, and it is increasingly difficult to find purely public pension plans. Governments have in most countries a substantial role in establishing private pension plans by legislating compulsory affiliation, and discharge an even larger role in regulating, supervising, and guaranteeing seemingly private pension plans. On the other hand, public pension plans increasingly rely on private fund managers and advisors, as well as on private contribution collection, record keeping, and benefit payment.

PENSIONS IN CHILE, SINGAPORE, BRAZIL AND SOUTH AFRICA

This Section provides a brief outline of the main pension schemes in the four selected countries. Table 1 presents these in summary form.

Chile

Pension provision in Chile dates back to the 1920s, when social insurance funds (*Cajas de Previsión*) were established for specific categories of workers providing old age and retirement pensions (Arellano, 1980). These were funded from payroll contributions from employees and employers, with benefits determined by final earnings and contributory history. After the 1950s there was rapid growth in the number and coverage of social insurance funds. By 1976 there were over 35 social insurance funds covering three quarters of the labour force against a wide range of contingencies including disability, dependants, health costs and unemployment. This expansion was financed by raising contribution levels and by fiscal transfers. The military government, which took power in 1973, imposed fundamental reform of social insurance in 1980 (Barrientos, 1998). Individual retirement saving plans managed by private pension fund managers were introduced for new entrants to the labour force, while existing workers were offered substantial inducements to switch their pension entitlements to the new pension plans. Concerns over the sustainability of the old social insurance pension plans, and the initial high investment returns of the new saving plans, led a majority of workers in the old social insurance schemes to migrate to the new saving plans.

In the new individual retirement plans, workers contribute ten percent of their earnings to a retirement saving account kept with one of the pension fund managers (*Administradoras de Fondos de Pensiones*). These manage the retirement savings with the returns being credited to the individual retirement accounts. The pension fund managers are permitted a range of charges including a fixed monthly commission, and an earnings related commission on contributions. On paper, pension fund managers compete for affiliates on their rates of return, commission levels, and quality of service, and workers can switch pension fund managers in search of the best deal. In practice, competition is rather limited as pension fund managers have very similar results, and administrative constraints make transfers possible only twice yearly (Barrientos, 1999).

Table 1. Main Features of Pension Schemes

	Chile	*Singapore*	*Brazil*	*South Africa*
Main pension plan:				
Type	individual retirement saving plans	provident fund	social insurance	social assistance
Pension beneficiaries	0.365 m	n/d	0.543 m	1.42 m
Pension benefit	annuity from account balance at retirement	lump sum withdrawal at retirement	formula based on contributory record and final salary	difference between maximum benefit and means tested income
Financed through	payroll contributions: employees 10% of earnings	payroll contributions: employee 20% of earnings, employer 20% of payroll	payroll contributions, taxes on profits, earmarked taxes on output, government tax revenues	government tax revenues
Minimum pension benefit	4/5 minimum wage	none	1 minimum wage	maximum benefit
Other contributory pension plans:				
Type	(i) social insurance (payg – closed to new entrants) (ii) military and police (payg – defined benefit)	(i) high civil servants (closed to new entrants) (ii) individual retirement saving plans (non-residents)	private complementary plans (defined benefit and defined contribution)	private occupational plans (defined benefit, defined contribution, and provident fund)

Number (millions) of members or accounts	0.243 members	n/d	1.65 members	9.3 accounts
Number of funds	2	2	362	16000
Assets as % GDP	not applicable	civil servants fund 7.3	14.0	73
Other assistential pension programs	for over 70s, ¼ of minimum wage	n/a	for over 70s, ¼ minimum wage	n/a
Public expenditure on pensions as a % of GDP 1996	5.9	1.4	7.8 (1995)	2-3 (1990)

n/a not applicable

n/d no data

Data Sources: (Chan and Cheung, 1997; Case and Deaton, 1998; Central Statistics Service, 1998; Camarano, 1999; Mideplan, 1999; Barrientos 2000; ILO 2000; UNDP 2000)

The government retains a substantial role in pension provision. It mandates affiliation to a pension plan for workers in dependent employment. It licenses and regulates pension fund managers as regards their financial products, rates of return, incidence of commissions, investment portfolios, and information disclosure. It guarantees retirement savings against pension fund failure, underwrites poorly performing pension fund managers. It partially guarantees pension annuities, and a guarantees minimum pension for workers with twenty years of contributions but insufficient funds. Given the substantial role of government, it is difficult to describe pension provision in Chile as private.

Singapore

Singapore established a provident fund in 1955 as a means of encouraging saving for retirement (Asher and Karunarathne, 2001). Colonial administrators had a large role to play in designing provident funds as a provisional scheme until such time that economic development created the conditions for the establishment of social insurance (McKinnon, Charlton et al. 1997). Provident funds have a number of specific features distinguishing them from social insurance pensions. In common with all contributory pension plans, provident funds collect earnings related contributions into a fund which is invested in interest yielding assets, but in addition to retirement related withdrawals, provident funds allow withdrawals for a range of merit expenditures. In Singapore, these include housing, health, and tertiary education. Compared to conventional pension schemes, provident

funds are broad saving instruments and extend beyond pension provision. A feature of Singapore's provident fund is that the accumulated balances are invested in government debt issued for this specific purpose, which is not traded in secondary markets. The investment of the savings collected by the provident fund is largely determined by government's social and economic objectives, and the rates of return paid to individualised saving accounts are the outcome, in practice, of an administrative process.

In Singapore, native and permanently resident workers in dependent employment are required to contribute to the provident fund, and their employers are also required to make an additional contribution on their behalf. Independent workers can contribute to a retirement account on a voluntary basis, but are required to contribute to a health insurance account. Smaller pension schemes are available for high ranking civil servants and foreign workers (Asher and Karunarathne, 2001).

Brazil

In common with other Latin American countries, pension provision developed in the 1920s in Brazil based on social insurance principles. In 1964, the social insurance funds were consolidated into a nationwide public social insurance system. Brazil's large share of informal employment restricted the coverage of social insurance, and only one in two dependent workers, and one in ten independent workers, contributed to the system. The coverage of contingencies was more ambitious. The social insurance system provided old age, service, disability and survivor pensions, as well as sickness and work related injuries benefits, maternity leave, health care, and support for childbirth and funeral costs, family benefits and unemployment. Pensions were generous in terms of entitlement conditions and the value of the benefits. Among pensioned civil servants, one in two men and two in three women retired before reaching the age of 55 (Barreto de Oliveira and Iwakami Beltrao, 2001). The system was financed by contributions from workers, employers and the government. Payroll contributions rose significantly over time to around 40 percent of earnings[5] and became a matter for concern because of their impact upon employment, and labour market segmentation (Amadeo, Paes e Barros, et al. 1995; Amadeo and Camargo, 1997). The acute deterioration in labour market conditions in the 1980s reinforced a vicious circle of rising payroll contributions, triggering a rise in informality, evasion, avoidance and fraud, in turn leading to ever higher contribution rates. Social insurance deficits, at present around 1 percent of GDP, are predicted to rise to 5 percent of GDP in 2050.

The return to democracy after 20 years of dictatorship encouraged a new 'social contract' which crystallised in the 1988 Constitution.[6] Issues of social protection and social insurance took centre stage, and the new Constitution enshrined the principle of universal entitlement to social protection. In terms of pension provision, it involved extending social insurance pension entitlements, in place since the early 1970s, to rural workers and their households, and raising the level of pension benefits to one minimum wage (Delgado and Cardoso, 2000b). At the same time, social assistance pension provision has been targeted on the poor elderly. In parallel, complementary private pension provision experienced significant growth. Brazil is unique in Latin America in having a large private occupational pension market. There are 362 pension funds in Brazil covering 1.61 million workers and controlling assets valued at around 14 percent of GDP (Yermo, 2000; Barreto de Oliveira and Iwakami Beltrao, 2001). More recently, the new *Plan Gerador de Beneficios Livres*, modelled on the USA's defined contribution 401k plans have expanded rapidly.

The need to curb rising deficits in the public social insurance system, and to regulate more effectively private pension provision, led the Cardoso government to submit proposals for reform. After a long process of scrutiny by parliament, a Constitutional Amendment was approved in 1998, and enabling legislation has been coming on stream. A key change is the reformulation of pension benefits in the public system. The new formula *Fator Previdenciário* introduces an adjustment to pension benefits which take account of a person's contribution record, and her age and life expectancy at retirement. This is intended to discourage early retirement, and will be introduced gradually over a five year period. As regards private pension provision, new regulations aim to standardise products and to clarify their tax exemptions with a view to encouraging their expansion.

South Africa

In South Africa, pension provision dates back to the 1920s with the development of occupational pension funds for whites.[7] Pension provision has been strongly segmented along racial lines, reflecting the social structure in South Africa. From 1956, occupational pension plans were established for less skilled white workers in formal employment, and over time they were extended to include other races. Van der Berg (1998) reports that by 1993 there were 9.3 million members in 16,000 pension funds controlling assets valued at 73 percent of GDP. Around 40 percent of the labour force are covered by occupational pension plans, but rates of coverage for Africans are significantly lower. As affiliation to an occupational pension plan is not mandatory, and private pension providers are not

regulated, occupational pension plans show a variety of defined benefit, defined contribution, and provident fund design (Aitken, 1999).

The main source of old age support for the majority of older groups is the 'social pension', a non-contributory pension plan paying a means tested old age, disability, and survivor pension benefit. It evolved from a safety net pension for poor whites, but was later extended to coloureds in 1928 and Africans in 1944 (van der Berg, 1998). Africans faced more stringent means tests and received much reduced pension benefits, compared to whites (Lund, 1993). The fall of apartheid led to full parity in entitlements to the 'social pension' and to a rapid rise in take up rates among Africans. The 'social pension' is financed through general tax revenues. Entitlements start at age 60 for women and 65 for men, and require a means test of the income of the beneficiary and spouse. This assesses private income and assets, but excludes output from subsistence agriculture and housing assets. Below a threshold level of income, the pension benefits, around US$70 per month is paid in full. Above this threshold, the benefit is reduced at a rate of 0.5 of extra income.

WHAT IS THE CONTRIBUTION OF PENSIONS TO OLD PEOPLE'S LIVELIHOODS?

It is important to place pension provision within the broader context of old age support. Although a detailed comparative analysis of the livelihoods of older people in the countries under investigation is beyond the scope of this paper, brief reference will be made to labour force participation, household support, and income sources of older people.[8] Table 2 below provides basic country information.

Participation in the labour market among elders is higher in Chile and Brazil, and markedly lower in Singapore and South Africa. Cross-country studies of the labour force participation of elders has concluded it is inversely related to the coverage and generosity of pension provision, and to the share of formal employment (Clark, York et al. 1997, 1999). The higher labour force participation of elders in Chile and Brazil reflects both gaps in pension entitlements and the importance of informal employment. In South Africa, the fact that the social pension is means tested is likely to discourage employment among elders. The low rate of labour force participation among elders in Singapore result from the strength of old age support, and relative affluence. In Brazil, Chile, and Singapore, the majority of economically active elders work on their own account, as opposed to formal salaried employment (Barrientos, 2000; Delgado and Cardoso, 2000b).

Table 2. Older people's livelihoods. Some indicators

	Chile	*Singapore*	*Brazil*	*South Africa*
Share of population over 60 (percent)	10.2	10.5	7.8	5.7
Labour force participation of over 64s	37.4	9.7	15.9	12.8
Mean size of households with older people	c3.3	n/a	2.98	6.0[a]
Percent of older people living alone	9.6	3.0	17.1	n/a
Percent of older households with children	n/a	35.4	49.1	58.3[a]

n/a not available
[a]refers to households with a pension recipient
Data Sources: (Chan and Cheung 1997; Case and Deaton 1998; Central Statistics Service 1998; Camarano 1999; Mideplan 1999; Barrientos 2000; ILO 2000; UNDP 2000)

The living arrangements of older people can provide some indication of the strength of household support, although great care needs to be taken here. In Singapore, a very small fraction of elders who had at least one child live alone, around 3 percent. The overwhelming majority of elders live with their children and grandchildren (Chan and Cheung, 1997). In Chile, households with older persons are on average smaller, have fewer children and more females, than households without them (Mideplan 1999). The same is true of Brazil (Camarano, 1999). In South Africa, Case and Deaton (1998) find that households with at least one pension beneficiary are larger and have more children than households without one. When disaggregated by race, an important difference emerges between White and African households. While the majority of White older people live alone, or with other older people, three generation households are the rule among African households with pensioners. The incidence of co-residence of children with older people is high. In South Africa, Case and Deaton find that of "the 11.9 million African children under the age of 16, 3.8 million (32%) live with a social pensioner" (1998, p.1340). In Brazil, nearly one half of the households with older people have co-resident children. Co-residence of elders and children provides some indication of the significant role of household in providing old age support, and suggests pension provision is likely to have a wider impact on the households of beneficiaries.

How important is the contribution of pension income and labour earnings to household income? Pension income is 44 percent of average household income among Africans in South Africa, and income from labour a further 40 percent. Among Whites, pension

income is only 7.3 percent, with labour earnings contributing another 26 percent. For Chile, pension income for the average household with a member over 60 is 42.8 percent of all household income, with labour income contributing a further 44.9 percent. Among poorer households in Chile, those in the lowest quintile of per capita household income, non-contributory pensions and widows' pension benefits provide 40 percent of household income. In Brazil, older persons contribute a significant share of household income, at 53.5 percent, although the contribution of their labour earnings to household income is much lower at 7.1 percent. It is likely that pension income accounts for a large part of the difference. In Singapore the identification of separate sources of income is more difficult because of substantial intra-household transfers, and the availability of withdrawals from the provident fund. In a survey of old persons in Singapore, Chan reports that 52.3 percent of respondents were primarily self-supporting, with the remaining 47.7 percent identifying allowances from children as their main source of financial support (Chan and Cheung, 1997).

We can be much less confident in discussing the level and adequacy of older people's income. Reported figures on the income of older people need to be taken with great care.[9] In Chile, the incidence of poverty among older people appears to be lower than for the population as a whole. Headcount poverty is 16.6 percent in rural areas and 9.7 percent in urban areas for over 60s, compared to 20.7 and 27.6 percent respectively for the population as a whole (Mideplan, 1999). For South Africa, Case and Deaton report that the ratio of per capita household income for households with a pension recipient to the per capita income for all households is 0.6 for Africans and 0.9 for Whites (Case and Deaton, 1998). In Singapore, the mean independent income of elders is not very high, with just under 60 percent of elders reporting income below one half of average earnings in 1995 (Chan and Cheung, 1997; Asher and Karunarathne, 2001). However, the vast majority of elders find their financial status is adequate (89.2 percent of males and 89.1 percent of females), mainly because of significant transfers from their children.

In sum, household transfers, labour earnings, and pension income are the main sources of old age support in the countries under investigation. Labour force participation among elders is highest in the two Latin American countries, and probably this is in part due to the very large informal sector in the region. A majority of elders works on their own account. Only a minority of elders lives alone, the majority co-resides with their extended family and children. The extent of co-residence is greatest among Africans and lowest

among Whites in South Africa. Household support for the elderly is extensive in Singapore, to the extent that it is difficult to identify independent income sources of the elderly. Pension income is a significant contributor to household income, and this is especially the case for poorer households in South Africa, Brazil, and Chile.

WHO AND WHAT DO PENSION SCHEMES COVER?

The effectiveness of pension schemes as a component of old age support can be gauged by considering pension scheme coverage, both in terms of risks and population. Table 3 below presents summary indicators of coverage.

Starting with population coverage, Table 3 provides information on two key indicators: the proportion of the old who are currently receiving pension benefits, and the proportion of the labour force who are contributing to a pension plan. The share of pensioners in the population is very similar across the countries involved, at around 3-4 percent. For the purposes of this measure, pensioners as those receiving a pension benefit from the main pension schemes. The share of pensioners in the older population as a whole is also similar across countries at around 60 percent. However, the factors explaining why a significant proportion of the old are not receiving a pension are different in different countries. In Chile, Singapore, and Brazil, pension entitlements are dependent on contribution history. Those not entitled to a pension benefit are mainly women who did not participate in the labour market for significant periods of their working lives, and a minority of very wealthy individuals who were never in a pension scheme. In Chile and Brazil, where safety net pensions are available from age 70 onwards for those without any means of support, the older poor under the age of entitlement are an important group. In South Africa, on the other hand, the fact that social pensions are means tested implies that those not receiving a pension benefit are on the whole those with significant income from other sources. Some in this group are probably in receipt of a private pension. In Singapore, the majority of those not entitled to a pension are women and those previously self-employed.

Table 3. Pension Scheme Coverage

	Chile	*Singapore*	*Brazil*	*South Africa*
Population coverage:				
Pensioners as % of population	4.0	3.0	3.2	4.0[a]
Pensioners as % of population over 64	61.1	52.0	67.3	61.1 [a]
Active contributors as % of labour force	45	65	40	n/a
Informal share of urban employment	30.3	n/a	48.2	17.4
Risk Coverage:				
Longevity risk	yes	no	yes	yes
Disability risk	yes	yes	yes	yes
Dependent survivor	yes	no	yes	yes
Inflation risk	yes	no	partial	partial
Political risk	low	high	medium	medium

[a] refers to social pension recipients and age qualified recipients only
n/a is not applicable
Data Sources: (Chan and Cheung, 1997; Case and Deaton, 1998; Central Statistics Service, 1998; Camarano, 1999; Mideplan, 1999; Barrientos, 2000; ILO, 2000; UNDP, 2000)

The proportion of the labour force contributing to a pension plan provides a good indication of future pension receipt coverage among pensioners. As can be seen from the figures in Table 3, a majority of current workers in Chile and Brazil are not contributing to a pension scheme, with the implication that a majority of the future elderly will not be entitled to pension benefits. The explanation for this is straightforward, the decline in pension scheme coverage among workers in Latin America is the mirror image of the expansion of informal employment in the region. In Singapore the majority of those not contributing to one of the main pension schemes are the self-employed and workers with low earnings and irregular employment.

As regards coverage of contingencies, longevity risk is not covered by the provident fund because there is no requirement that retirement withdrawals are used to purchase an annuity or equivalent. In the Chilean case, retirees have a choice of taking up an annuity or agreeing a withdrawal scheduled withdrawal with a formula taking account of life expectancy. Longevity risks are covered by the pension schemes in Brazil and South Africa because the benefits are paid until the death of the beneficiary. All pension schemes provide insurance against the death or disability of the breadwinner. Only Chile's pension scheme provides coverage against inflation because the annuity contracts are set in inflation adjusted units (*Unidades de Fomento*). There is partial coverage in Brazil

because the pension benefit has to be at least one minimum wage, and coverage against inflation risk depends on the mechanism for adjusting the minimum wage. In South Africa, the pension benefit is adjusted for changes in prices, but this is a policy variable.

Because all pension schemes have a significant government input, pension income is subject to political risk, sometimes referred to as 'policy risk', that is the risk that government decisions have a large impact upon pension income. Because of its multi-dimensional nature, political risk is more difficult to evaluate. In the Chilean case, government is limited in its ability to alter the parameters of the pension scheme, therefore a 'low' score was awarded to political risk (Diamond, 1994). Having said this, projections of future pension benefits suggest that as many as one half of current workers will only receive the government guaranteed minimum pension, and the level for this is a policy variable.[10] In Singapore, the government determines the rate of return applied to provident fund accounts, and because of this a 'high' score was awarded. In Brazil and South Africa, the nature of the pension scheme means that governments have a direct input into contribution rates or the benefit formula, or both. On the other hand, strong political support for the pension schemes sets definite limits to the scope for government interventions.

DO PENSIONS PROVIDE ADEQUATE SUPPORT IN OLD AGE?

It is important to examine whether pension plans provide adequate old age support. This is difficult to assess for Chile and Singapore. As regards the former, the problem is that pension benefits depend on earnings-related contributions, the returns in investment, and the conditions in the annuity market at retirement. As the new pension scheme will only mature around 2020-30, current pension benefits are not a very accurate guide to the future. Furthermore, a majority of current pensioners receive pensions benefits granted under the old social insurance system. For the minority who draw pensions from the new individual retirement accounts, their actual benefit was largely determined by the transfer value of their entitlements under the old pension system (Barrientos, 1998). It would be more useful to focus on the bottom line. In the Chilean case, workers who contribute for 20 years to a retirement account are entitled to a government guaranteed minimum pension set currently at around 75 percent of the minimum wage. Projections of future pension benefit levels suggest that a majority of current workers will only receive this minimum pension (Arenas and Bertranou, 1997). Given the level of the minimum pension is set annually by the government, it would not be surprising if its value declines as the

proportion of beneficiaries rises. As for those currently economically inactive, or who are active but will be unable to meet the contribution requirements, their only entitlement is a non-contributory pension payable from age 70 with a current value of around a quarter of the minimum wage.

In Singapore, the difficulty in assessing the adequacy of pension benefits arises because contributors can withdraw a large part of their savings well before retirement. In addition, retirees only get a lump sum at retirement and have no requirement to purchase an annuity. Contributors to the provident fund can therefore withdraw funds and transfer these to their children, who in turn will support them in old age. Only a tiny minority of retirees actually purchases an annuity, the majority hold their balances in a bank. It is hard, therefore, to assess the adequacy of pension benefits. Asher, (2000) argues that fund balances are inadequate to finance retirement, and the median balance of active contributors in 1997 was equivalent to less than one mean annual earnings. Furthermore, the average withdrawal of those contributors reaching retirement age in the period October-December 1998 "was equivalent to only 64 percent of the average annual earnings" (Asher, 2000, p.7). As noted above, three quarters of current elderly females and 40 percent of males rely mainly on their children for old age support. The availability of withdrawals to support merit goods, and the absence of compulsory annuity purchase at retirement, militate against elders making adequate financial provision. On the other hand, it may well be that household support is adequate, and perhaps more reliable.

In Brazil and South Africa, the adequacy of pension benefits can be identified more clearly. In Brazil, the requirement is that the minimum pension benefit is equivalent to one minimum wage. In South Africa, beneficiaries entitled to the full value of the benefit, after the means test, receive a benefit which is equivalent to "more than twice the median per capita monthly household income of Africans" (Case and Deaton, 1998, p.1335). In both these countries, pension benefits are around US$70 per month, and have a substantial impact on poverty reduction (van der Berg, 1998; Delgado and Cardoso, 2000a).

ARE PENSION SCHEMES EXPENSIVE TO RUN?

An important feature of the Chilean individual retirement plans is their high administrative costs. If a measure of all commission and charges by the pension fund managers, is added to a measure of the costs associated with translating the pension fund balance at

retirement into a life annuity, administrative costs amount to around 36 percent of contributions (ILO, 2000, p.122). This makes the Chilean pension scheme very expensive indeed. The reasons for the high level of costs arise in part from the costs of running individualised accounts, but mainly from the large marketing costs of the private pension fund managers.

Calculations of the cost of the pension scheme are obscured in Singapore because of the investment arrangements. Basically, the government pays an administratively fixed rate of interest on saving account balances. A measure of the costs of the scheme can be gauged from the difference existing between the rate paid and a market based rate over a period of time. Asher performs this calculation and estimates an implicit tax on contributors "equivalent to 6.5 percent of contributions in 1997" (Asher, 2000, p.9). This is a reasonable measure of the costs of the pension system, and it indicates that these are substantially lower than the Chilean pension scheme. Given that both pension systems provide individualised saving accounts, and probably incur similar administrative costs, the bulk of the cost differences across the two countries are explained by the marketing costs of the decentralised and private pension scheme in Chile.

The administrative costs of pension provision in Brazil can be approximated by the personnel and administration costs of the social insurance system. For 1999-2000 these amounted to 5.6 percent of contributions, split into 3.6 percent of contribution explained by personnel costs and 2 percent of contributions accounted for by direct administration costs. It is always difficult to assess with accuracy the administrative costs of public agencies because some portion of their running costs will not be accounted for explicitly, for example postage (Mitchell, 1996), so this is perhaps a lower bound figure.

There are no reliable estimates of the cost of pension provision in South Africa. It can be expected that the cost of assessing eligibility net of means tests, the costs of fraud, the costs of delivering pension benefits in rural areas with low population density, all contribute to high administrative costs. In Namibia, for example, Fultz and Pieris (1999) report that in remote rural areas the cost of delivering pension benefits can be as much as ten percent of the value of the benefit. In Namibia and in South Africa, delivery of pension benefits in rural areas is done through a network of private contractors using armoured vehicles. There is considerable variation in the costs of this delivery, from approximately R50 to R570 per pension.

The administrative costs of pension schemes can be substantial. In the rough approximations provided above, the Chilean individual retirement plans are the most expensive, followed by the Singaporean provident fund. Individualised retirement accounts are associated with higher administrative costs, but the central collection system in Singapore has significantly lower costs than the decentralised collection by competing pension fund managers in Chile. The administrative costs of centralised non-contributory pension schemes are lower, although we cannot be absolutely certain this is the case in South Africa until reliable figures are produced. Another important proviso is that the costs of public agencies are usually underestimated. The four countries provide a good contrast on this issue, suggesting that decentralised pension provision with private providers results in a significantly higher level of costs.

ARE PENSION SCHEMES POLITICALLY SUSTAINABLE?

The brief country pension scheme profiles presented above demonstrate the very different political conditions attending the development of pension schemes into their current incarnation. In Chile, the replacement of social insurance pension scheme with individual retirement saving plans took place as part of structural adjustment and in the context of the suspension of normal political processes. In Singapore, the Central Provident Fund was created as a basic saving scheme providing old age support. The original designers believed this arrangement to be a provisional one, to be superseded by social insurance when economic development created the right conditions. Over time, the provident fund expanded to cover a wider range of contingencies, but some, such as longevity risk, are still absent. In Brazil, the expansion of social insurance pension programmes was a consequence of a new social contract arrived at after 20 years of dictatorship and embodying modern notions of citizenship. In South Africa, the extension of pension entitlements to the majority African population was a product of the fall of apartheid, and the empowerment of the excluded majority. Even this brief comparison shows that pension schemes reflect in their design, evolution, and reform, dominant values and social norms. Political processes are important, and as a result the sustainability of pension schemes is a political issue as much as an actuarial, or financial, one.

It would be useful to draw some parallels between developed and developing countries on this. In both developed and developing countries, old age and retirement pension schemes were established before programmes addressing other contingencies, such as

unemployment or poverty; and in developed countries, they have developed faster than other social programmes. Atkinson explains the former in the context of social insurance models of provision, as arising from the differential nature of risks (Atkinson, 1991). Unemployment risks vary significantly across groups in the labour force, making it difficult to monitor self-selection and moral hazard. Old age, on the other hand, is a homogeneous risk, and easy to monitor. Life tables allow for reasonable estimates of actuarial costs, making insurance plans viable. Mulligan and Sala-i-Martin explain the fact that pension schemes usually precede other programmes in terms of the, reputedly, lower productivity of the old. To the extent that worker productivity depends on a worker's own productivity, and on the productivity of the labour force as a whole (e.g. colleagues, subordinates, bosses), lower productivity workers pull everyone down. Old age and retirement schemes can be rationalised in this context as a means of preventing the decline in productivity from the downward pull of less productive workers (Mulligan and Sala-i-Martin, 1999b, c). These explanations try to find an economic rationale for why pension schemes, as opposed to other programmes, are introduced earlier. Further research is needed to establish whether these apply to developing countries.

As regards the second question, why pension programmes grow faster than other social programmes, the evidence for developed nations (Gruber and Wise, 2001) cannot be generalised to developing countries. For developed countries, and especially the USA, Mulligan and Sala-i-Martin maintain that the explanation lies in the political influence of older groups. The growth of social security in the USA in particular is explained by 'gerontocracy', the effect of continued pressure on policy makers by well organised and effective pressure groups representing the interests of the elderly (Mulligan and Sala-i-Martin, 1999a).[11] The view is that the political influence of the old in developed countries has ensured the growth of social expenditure, and old age support programmes within it.

In developing countries, this trend is hard to find. In the countries under examination, the pension reform in Chile in the early 1980s reinforced a downgrading of pension benefits which was already underway in the decade before the reforms (Godoy and Valdés-Prieto, 1997). In Singapore, the expansion of the provident fund has strongly supported household expenditure on housing, health and education, but has not secured adequate old age support. In Brazil, the extension of social insurance entitlements, and their greater generosity, in the 1990s has been followed by retrenchement, and further legislation along this lines is under discussion in Parliament. In South Africa, the

extension of the social pension to Africans has more to do with the political processes associated with the fall of apartheid, and with the effectiveness of the social pension as an anti-poverty measure, than with the influence of the old as a pressure group. The spread of pension reform clearly reflects weaker 'path dependence' in old age support programmes in the developing world, and this is inconsistent with 'gerontocracy'. It would be more accurate to describe trends in developing countries as reflecting a 'reversed gerontocracy', in that the increase in the share of older people has not produced a significant redirection of social programmes towards them.

This 'reversed gerontocracy' in developing countries draws attention to the role of pension schemes as a catalyst for the expansion of social protection. In the countries under examination, and elsewhere in the developing world, pension schemes have provided the basis for building social protection programmes. In Chile, the expansion of social insurance in the 1950s and 1960s involved supplementing pension schemes with insurance against health expenditures, maternity, and other contingencies. In Singapore, the basic retirement saving plan has been supplemented with a range of other forms of insurance and support for household investment in human and physical capital. In Brazil, pension schemes were the basic foundation bloc of social insurance. In South Africa, the effectiveness of the social pension, and the support it enjoys, have led to discussion on whether to introduce a Basic Income Grant, which extends income transfers to other groups in poverty. Pension schemes in the developing world are crucial to building solidarity values, which are fundamental to the establishment of broad based social protection.

THE FUTURE OF PENSIONS IN THE DEVELOPING WORLD

What are the implications from this comparative study of pension schemes for the future of pensions in the developing world? Four issues are particularly important: the extent to which formal pension provision 'crowds out' or 'crowds in' informal old age support; how pension schemes can support 'active ageing'; how to move in the direction of universal basic pension provision; and the related issues of how pension schemes can build on integrated old age support. These will be briefly examined below.

In the 1994 Report on 'Averting the Old Age Crisis', an argument is presented that the introduction of formal pension schemes will 'crowd out' informal old age support. The evidence on 'crowding out' relating to formal social protection programmes as a whole is

mixed. Some studies, on a range of countries, find that there is some trade off between formal and informal social protection (Cox and Jimenez, 1992, 1998; Cox, Hansen et al. 1999). A review of the evidence in the context of insurance comes to the opposite conclusion (Murdoch, 1998). Some studies focused on the impact of old age support in particular find evidence of 'crowding out', notably Chan and Cheung in the paper referred to above (1997), but other studies fail to find this (Cameron and Cobb-Clark, 2001). The discussion in the paper suggests that pension schemes in Singapore, South Africa, and Brazil, have had the effect of strengthening, rather than weakening household support for old age (Chan and Cheung, 1997; Case and Deaton, 1998; Carvalho, 2000; Delgado and Cardosom, 2000a; Duflo, 2000). There are specific features of pension design involved here. In South Africa, the fact that means testing refers to the income of the beneficiary and his/her spouse only, and excludes the income of other household members, precludes household fragmentation. In Brazil, the lifting of the rules restricting entitlement to one pension beneficiary per household had the same effect. In Singapore's provident fund, the fact that withdrawals and deposits from other family members are allowed, strengthens household risk management involving several generations. At the very least, it can be argued that 'crowding out' effects arising from pension schemes, to the extent they are significant, can be limited by appropriate pension design. More positively, it is important to see older people as members of a household, and to devise pension schemes which 'crowds in' household old age support.

This also implies that pension schemes have effects that go beyond the direct beneficiary. The evidence on the South African and Brazilian pension schemes suggests that pension benefits have strong positive effects on beneficiary households. It has been observed that children in beneficiary households have higher rates of school enrolments, and better health status, than those in households without a beneficiary (Carvalho, 2000; Duflo, 2000, Case, 2001). These pension schemes also have positive effects on poverty reduction among beneficiary households (Case and Deaton, 1998; Delgado and Cardoso, 2000a). Furthermore, pension benefits have played an important role in encouraging household economic activity, and through this on economic development.[12] In the rural sector in Brazil, the extension of pension provision has contributed to mitigating the impact of economic adjustment (Delgado and Cardoso, 2000a). Pension schemes must aim to support 'active ageing' by facilitating and strengthening the economic contribution of older people. Pensions schemes provide a core component in old age support, but, as noted above, access to employment, and household support, are as important to the well

being of older groups. It is important to avoid the steep decline in the labour supply of older people experienced by developed countries, and to design pension schemes supporting the employment of older people.

The experience of Brazil and South Africa with universalising pension provision provides important lessons for developing countries. The development of basic pension provision focused on poorer groups, and designed to strengthen household support and economic activity, has had very positive effects on household livelihoods and economic development in these two countries. It is often argued that developing countries, and especially low income countries, cannot sustain non-contributory universal pension provision (James, 1999). The comparative analysis here suggests this view should be strongly constested (Willmore, 2001). The 'social pension' in South Africa absorbs between 2 and 3 percent of GDP, and around 7 percent of government expenditure. The 'previdencia social' in Brazil, together with all other benefits provided by the social insurance system, takes up 7.8 percent of GDP (Clements, 1997). It is true that in both South Africa and Brazil, their sustainability is questioned, but then consider the case of Chile. It has been estimated that future government pension liabilities, largely consisting of guaranteed pension for those with individual retirement accounts and pensions for the military and police, will reach 5 percent of GDP by the time the current private pension plans mature (Mesa-Lago, 2000). In Chile, future government pension liabilities are directly related to the inability of the individual retirement pension plans to extend coverage, and to their high administrative costs. In comparative perspective, the costs of universalising pension provision are affordable, especially when account is taken of the positive effects of the 'social pension' and the 'previdencia social'. Furthermore, It does not take very long to work out the distributional effects of government pension expenditures in these countries. Whereas in the Brazil and South Africa, public pension expenditure associated with the 'social pension' and the 'previdencia social' largely reaches poor older groups, in Chile it will be focused on formal sector workers.

Pension schemes are largely focused on providing income, and income insurance, but it is important that they also provide a basis for the development of integrated old age support, encompassing health and long term care insurance. Singapore's provident provides one model of how this could be attained, strongly mediated by household support. In Chile, this issue has not received much attention, although some preliminary studies suggest the possibility of 'bolting in' lifetime health insurance to the individual

retirement accounts (Fischer, Mizala, et al. 1998). Brazil has introduced a number of programmes directed to the elderly within their social insurance pension scheme (Instituto de Pesquisa Economica Aplicada, 2001). This is a crucial area for future research and policy development.

CONCLUSIONS

The paper has provided a comparative analysis of pension schemes in Chile, Singapore, Brazil and South Africa, in the context of their role in old age support in the developing world. The recent spread of pension reform in the developing world has drawn attention to the role of pension schemes in providing effective old age support in developing countries. There is a wide range of pension provision in developing countries, justifying a comparative analysis. Chile relies on individual retirement plans, managed by private providers. Singapore's main pension scheme is the Central Provident Fund, which also collects payroll contributions and manages individual accounts for its members. In contrast to the Chilean pension scheme, it allows withdrawals for merit expenditures on tertiary education, housing, and health. Brazil and South Africa have attempted to universalise basic pension provision. In South Africa the 'social pension' provides a basic benefit targeted on the poor. In Brazil, the expansion of social insurance to workers in informal and rural employment has resulted in a large increase in coverage of the older population. The 'previdencia social' pays one minimum wage to men over 65 and women over 60. The pension scheme remains firmly rooted in social insurance principles but with a strong solidarity component. These pension schemes demonstrate the range of pension provision models in the developing world.

Pension income is an important component of the income of older households, although labour earnings and intra-household transfers are also important. In the countries studied, there is strong evidence of co-residence of elders with their children and grandchildren, and labour force participation rates are higher for the two Latin American countries, where older people are predominantly self-employed. The population coverage of pension schemes varies significantly across countries. The proportion of the labour force contributing to a pension scheme is below 50 percent in Chile and Brazil, but around 65 percent in Singapore. This is in large part explained by the incidence of informal employment in the first two countries. The proportion of the population over 65 receiving a pension is similar across countries ranging from 52 percent in Singapore to 67 percent in Brazil. There are also important differences in the coverage of contingencies

across countries. There is significant variation in pension income, and the paper focused on minimum pension entitlements. These are higher for South Africa and Brazil, but lower in Chile. In Singapore, the central role of the household in providing old age support means that independent income is not a good indicator of well being among the old. The costs associated with running pension schemes were also compared. These were found to be highest in Chile, a direct consequence of decentralisation and competition in pension fund management. Singapore also has individualised retirement accounts, but centralised provision. Administrative costs are lowest in Brazil and South Africa, although reliable figures for the latter are not available.

The political sustainability of pension schemes in developing countries is a key issue. The growth of public provision of old age support programmes in developed countries has been explained by the strong political influence of pressure groups representing the old, i.e. 'gerontocracy'. This is hard to find in developing countries, where the rise in the share of the old in the population has not been accompanied by a growth in public pension programmes. In fact, the spread of pension reform, and pressure on public expenditure on the old point to the opposite trend, 'reversed gerontocracy'. In developing countries, pension schemes have served as a catalyst for the extension of social protection.

There are important lessons from this comparative analysis for the future of pensions in the developing world. The evidence on whether formal old age support 'crowds out' informal support is mixed, but it is feasible to limit this through appropriate pension design. The pension schemes studied show it is possible to 'crowd in' other forms of old age support. This is the case in Singapore, Brazil and South Africa, but not Chile. It is important to consider the wider impact of pension programmes on household risk management and economic development. Pension schemes can be designed to facilitate and strengthen the contribution of older people to social and economic development. The examples of Brazil and South Africa show that attempts at universalising pension provision focused on the poor can be effective and can attract popular support. To the extent that pension schemes achieve these, they can provide the basis for more extensive social protection. As far as old age support is concerned, the main challenge will be to develop pension schemes into integrated old age support programmes covering health and long term care.

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Notes

[1] I am grateful to Francie Lund, Peter Lloyd-Sherlock, and Ana Maria Camarano for helpful comments and information. The errors that remain are all mine.
[2] This is grounded on economic theory. Given the assumptions that individuals derive the same utility from a dollar of consumption throughout their life course, and secondly that utility declines at the margin when consumption rises, it follows that total lifetime utility is maximised when consumption is the same through the life course.
[3] As a general rule, people's expectations of length of life crystallise out of observation of previous cohorts. As there are large improvements in life expectancy from one cohort to another, length of life expectations are very likely to be wrong by an order of magnitude.
[4] In the UK, for example, the calculation of the state basic pension benefits takes account of up to ten years of home responsibility (indicated by receipt of child or disability care benefits).
[5] Barreto de Oliveira and Beltrao (2001) note that employee contributions are on average 10% of earnings, while employer contributions are on average 22%, and in addition unemployment insurance contribution is 8%. These do not include employer contributions calculated on profits or revenues.
[6] Brumer (2000) traces the influence of political mobilization on the extension of social insurance.
[7] On the background to the social pension in South Africa see Devereux (2001). Reviews of pension provision in Southern Africa can be found in (Barbone and Sanchez B. 1999; Fultz and Pieris 1999).
[8] The section draws from papers examining the livelihoods of older people using household survey data collected in the 1990s (1993 for South Africa, 1995 for Singapore, 1996 for Brazil, and 1994 and 1998 for Chile) (Chan and Cheung 1997; Case and Deaton 1998; Central Statistics Service 1998; Camarano 1999; Mideplan 1999; Barrientos 2000).
[9] There are few comparative studies on the adequacy of older people's income. Whitehouse (2000) looks at a sample of countries, mainly advanced economies, and finds that older people are under-represented in lower income groups and over-represented in higher income groups. The income measures normally used are biased against finding poverty among the old (Barrientos 2001). The conventional methodology is to add all sources of household income and divide by the number of household members, generating a measure of per capita household income. As noted above, older people live predominantly in smaller households with fewer children, except for South African blacks. Because the relative cost of children is lower than older people, and because of the presence of economies of scale in household consumption, this measure biases downwards poverty incidence among the old (Deaton and Paxson 1997, 1998).
[10] This is discussed in more detail in the next section.
[11] As a pressure group, the elderly derive strength from the fact that everyone is likely to become older, their geographical concentration, and their free time.
[12] Pension entitlements in South Africa and Brazil do not require an inactivity test.