BEFORE IT'S TOO LATE: DEMOGRAPHIC TRANSITION, LABOUR SUPPLY, AND SOCIAL SECURITY PROBLEMS IN BRAZIL

Cassio M. Turra, Princeton University
and
Bernardo L. Queiroz, University of California, Berkeley

One of today's central debates about the demographic transition focuses on the relationships that connect changes in population age structure to economic growth. Demographers and economists alike are interested in examining the extent to which interactions between population age structure and both fertility and mortality declines yield increases in aggregate income levels. This phenomenon, usually called the demographic dividend or demographic bonus, has recently been presented as a combination of two separate dividends (see Mason, in this volume, and Mason and Lee, forthcoming). The first dividend is usually related to a temporary increase in the share of the population that is of working age and can be effectively measured by increases in the ratio of producers to consumers in the population (Mason and Feng, 2005). The second dividend, which has gone virtually unnoticed among most scholars, follows after the first dividend and is related to the creation of wealth that arises in response to population ageing. The magnitude of this effect depends largely on how wealth is created. Rapid capital accumulation or larger transfers from younger generations, private and public, can meet consumption demands of an increasing older population. Only in societies where capital deepening prevails will the effects of population ageing ultimately increase the output per effective consumer (Lee, Mason and Miller, 2003).

The demographic dividends are not automatic; they depend on institutions and policies to transform changes in population age structure into economic growth (Bloom and Canning, 2001). Therefore, it comes as no surprise that some emerging economies that could benefit substantially from the demographic transition are also the ones that are more likely to fail in taking advantage of this process. Rigid labour market regulations, low investments in human capital, tax evasion, socioeconomic inequality, and lack of well regulated capital markets are some of the constraints that limit the ability of developing countries to benefit from changes in population age structure. Despite consensus among scholars about most of these issues, additional research is still needed on the linkages between the policy environment and demographic transition.

Among the critical policy areas are social security and other forms of old-age support based on pay-as-you-go (PAYGO) schemes. Weaknesses in the governance and management of PAYGO pension programmes lead to negative effects for the demographic dividends. For example, if greater tax evasion or real increases in social security benefits offset increases in the share of working age population, the fiscal capability of governments to invest in human capital will be reduced. In turn, efficiency loss may lower the effect of the demographic transition on both future productivity and economic growth. At the same time, declining social security support ratios (i.e., the ratio of social security taxpayers to beneficiaries) can represent a fiscal burden for future working age population, reducing the ability of workers to save for future consumption and thus putting at risk the second demographic dividend.

Brazil provides an important context for elaborating linkages between demographic transition and public policies. In a recent analysis of the first demographic dividend, Rios-Neto (2004) used income data from Brazilian municipalities to demonstrate that the association between growth of working age

population and income growth was positive and signi

A. THE SOCIAL SECURITY SYSTEM IN BRAZIL

The pension system in Brazil consists of three main segments: (i) the general system (private workers), (ii) the civil servants system, and (iii) other several private funded systems. Most pension systems are based on the PAYGO scheme. The country also has a large non-contributory system with means-tested eligibility that provides benefits for low-income older persons.

The social security system for private workers (general system) is an unfunded defined-benefit

implicit debt, a long-term measure of the system's financial adequacy, was also large and amounted to about two times the GDP (Bravo, 2001).

Alongside the general pension system, civil serva

taxpayer rates, but assuming that demographic rates and the other economic rates were fixed at the 1970

half since 1970 (from 5.3 to 2.13 children per women in 2000), and life expectancy at birth has improved steadily from 57.5 years in 1970 to 70.3 years in 2

Figure 2 depicts some of the changes in the age- and sex-specific LFP rates since 1970. For men, it is clear that the length of working life has fallen over time due to both increases in educational attainment (younger workers) and changes in retirement behaviour (older workers). In 1970, almost 76 per cent of the male population aged 60-64 years was in the labour force; this number declined to 65 per cent by 2000. The fall in economic participation was even greater for older workers (65 and over), of whom 30 per cent were in the labour force in 2000 compared to 60 per cent in 1970. Indeed, a summary indicator of early retirement, defined as the age in which less than 50 per cent of the population is out of the labour force, shows that the median retirement age for males declined from 69 years in 1960 to 63 years in 2000, a decline of 1.5 years on average per decade[1] (Queiroz, 2005).

Among women, LFP rates showed a different trend, increasing steadily from 13.5 per cent in 1950 to 44 per cent in 2000. As shown in figure 2, the rapid increase in female rates was driven mainly by rising participation of prime-age women (aged 20-60), while LFP at the youngest and oldest ages changed little between 1970 and 2000. Economic development, higher educational levels, decline in fertility rates, and

economic expansion when part of the labour force was absorbed by the formal labour market. The 1990s, on the other hand, observed a structural growth of the informal sector, a behaviour that is inconsistent with traditional economic theory (Loayza, 1997; Carneiro and Henley, 2001; Soares, 2004). The segmentation of the labour market is clear; a formal sector and an informal sector coexist, as in many developing countries. Only those employed in the formal market, or the registered workers, are covered by labour market regulations, including social security coverage. Workers in the informal sector work without formal labour contracts and normally do not pay taxes and are not covered by welfare regulations[2] (Soares, 2004; Ulyssea, 2005).

Social security participants

Social security benefits are the most important sources of income for older Brazilians. As discussed above, the system has been characterized by generous benefits and low contribution rates. About 77 per cent of the population aged 60 or over received some sort of pension benefits by 2002. Figure 3 reveals important trends over the last decades. On the one hand, beneficiary rates increased for all age groups. At age 50, for example, about 20 per cent of the population received benefits in 2002 compared to 17 per cent in the early 1980s, which corroborates the finding that the average age at retirement has declined. On the other hand, taxpayer rates declined for both men and women. Among men, only 50 per cent of those in the labour market made contributions in 2002 compared to 65 per cent twenty years earlier. These results also hold true for women, in general, even though their LFP has increased.

E. RESULTS

Demographic effects on social security support ratios

Not surprisingly, if all economic and demographic rates had remained at the 1970 levels, social security support ratios would be roughly constant throughout the period of analysis, declining slightly from 3.33 in 1970 to 2.85 in 2045 because of the initial effects of the demographic transition (figure 4 and

Figure 3 Age- and sex-specific tax payer and beneficiary rates, Brazil, selected years

Source: Pesquisa Nacional por Amostra de Domicilios.

table 1). If, instead, the demographic rates had varied, holding everything else constant, increases in the share of the working-age population would initially produce a demographic bonus in the social security system that would last for about 20 years (1970-1990). Although the bonus looks small – the ratio would be about 5 per cent higher than when demographic rates are held constant – it is not negligible, given the size of the social security programme in Brazil and the challenges that it will face in the future. Eventually, demographic changes would have a negative impact on the support ratios, which would decline to 2.86 in 2000 and reach 1.0 in 2045, because of fertility and mortality reductions alone. However, the estimates based on stable-equivalent populations suggest that the effect of these changes would be noted much earlier if past fertility and mortality had not played a central role. Without the effects of population age structure, support ratios would reach 2045 levels (0.8 taxpayers for each beneficiary) between 2005 and 2010. Expectedly, most of the demographic effects are due to changes in fertility. Table 1 shows that the effect of mortality declines on social security support ratios is minimal, indicating that the proportionate impact of mortality improvements on the population age structure is fairly neutral during the period of analysis.

A comparison of the “all rates” and “only demographic rates” scenarios in figure 4 also shows that

TABLE

Effects of changes in labour supply on support ratios

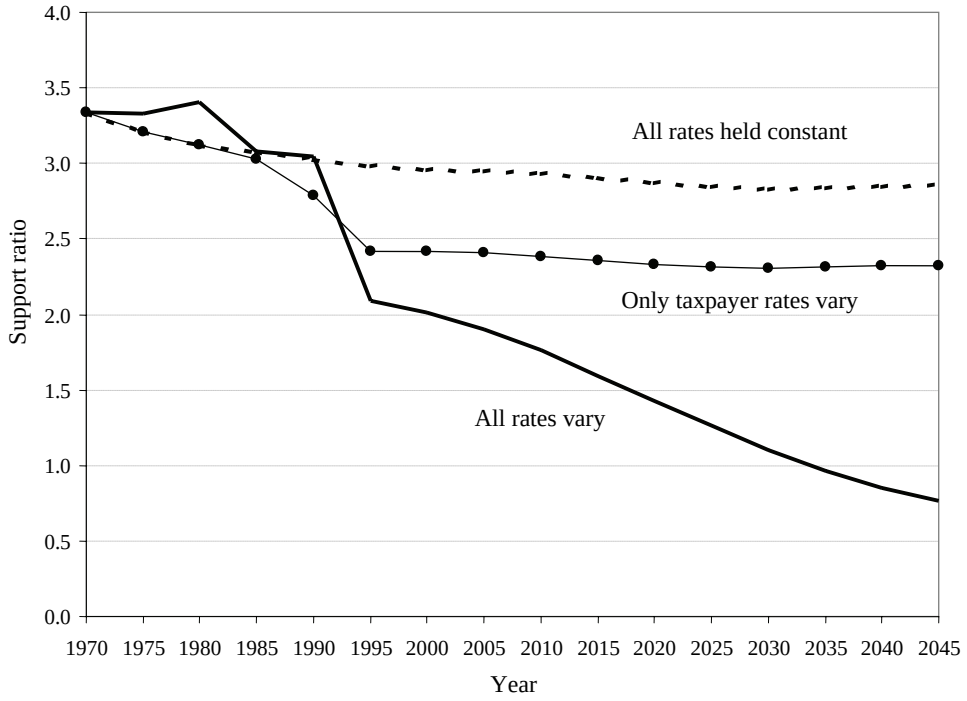
A comparison of the support ratios for the scenario that assumes that only LFP rates varied (holding everything else constant) with the two baseline models – (i) all rates held constant, and (ii) all rates vary – indicates the significance of increases in labour supply to the social security system. The results are shown in figure 5. Changes in LFP would increase the support ratios by about 5 per cent in the first three decades (1980 to 2010), while they would produce support ratios 20 per cent larger in the last decades of the analysis (2025 to 2045). Most of the effect comes from increases in female LFP, reflecting structural aspects of the labour market that were discussed previously. Although increases in labour supply have favoured social security by slightly augmenting the demographic bonus (results not shown) as well as by mitigating the adverse effects of population ageing, the magnitude of these effects is much smaller than that of the demographic effects.

the projected taxpayer rates are assumed to be fixed at the 2000 levels, the counterfactual projections are not very informative for years thereafter. Yet, it is indisputable that tax evasion will play a key role in social security deficits over the next decades. Given the low rates of tax paying, legislation to stimulate the formalization of the labour market could mitigate substantially the effects of population ageing.

The simulation described above has been repeated, this time varying only beneficiary rates and holding everything else constant. A comparison of the support ratios under this projection is informative in showing that the new regulations approved in the 1988 Brazilian Constitution worsened the social security support ratio and consequently, the fiscal balance[3]. Figure 7 shows that the "generosity effect" is very similar in magnitude to the "evasion effect" (figure 6). As a consequence of the "generosity effect", ratios would decline from 3.33 in 1970 to 2.37 in 2000. Together, the "evasion" and "generosity" effects would be responsible for having reduced potential social security support ratios by about 50 per cent since the late 1990s.

To the extent that the "evasion" and "generosity" effects were already high in 1970 compared to international standards, the results presented in the previous simulations would underestimate the true effects. Thus, a final set of projections for social security support ratios in Brazil were prepared, by applying the beneficiary rates for the United States in 2001 and assuming that 95 per cent of the work force pays social security taxes (figure 8). The results are striking. If both tax evasion and early retirement were eliminated in Brazil, social security ratios would change drastically. For example, in 2000, the ratio would be about 3 times higher than the actual ratio. In addition, the ratios would remain above 2 until the year 2045, despite the negative effects from changes in demographic rates. Finally, the demographic bonus would have been two times larger had appropriate policies been in place in Brazil since 1970.

Figure 6. Social security support ratios, Brazil, 1970-2045, given change in taxpayer rates: "evasion effect"



Source: Authors' calculations.
NOTE: The demographic rates are mortality and fertility rates; the economic rates are labour force participation rates, taxpayer rates and beneficiary rates.

Figure 7. Social security support ratios, Brazil, 1970-2045, given change in beneficiary rates: "generosity effect"

Source: Authors' calculations.
NOTE: The demographic rates are mortality and fertility rates; the economic rates are labour force participation rates, taxpayer rates and beneficiary rates.

Figure 8. Social security support ratios, Brazil, 1970-2045: policy simulations

Source: Authors' calculations.
NOTE: The demographic rates are mortality and fertil

F. CONCLUDING REMARKS

A growing literature has examined the importance of changes in population age structure for economic growth. Although there is evidence to support the view that the demographic transition leads to an income boost, the gains from this association depend on several conditions, including the ratio between producers and consumers, the degree of capital deepening, and the existence of appropriate institutions and economic policies. In this paper, it was argued that some developing countries have been neglecting the opportunities that changes in population dynamics can bring to the economy by maintaining domestic policies that are less efficient than desired. In that sense, the case of Brazil is remarkable because of the historically low levels of educational attainment and the increasingly large pay-as-you-go pension systems. In 2004, the public pension systems transferred about 12 per cent of the GDP from the working age population to the elderly in Brazil, a significant amount for a country where only 6 per cent of the population is aged 65 years or over.

The analysis examined social security support ratios under several counterfactual scenarios to provide insights into how institutional and policy issues reduce the potential economic impact of population changes. The findings revealed that Brazilian policymakers have made decisions that are poorly grounded on a technical basis and overlooked the temporary nature of the demographic transition. By granting new

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