Notes on Demographic Changes and the Welfare State

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"We wanted to import only labor, but we ended up importing people."
The Labor Minister in Germany, in the early 1990s.

The flow of unskilled, low-earning migrants to developed countries with a comprehensive social security system, including retirement benefits, has attracted both public and academic attention in recent years. Being relatively low earners, the migrants typically are net beneficiaries of the welfare state in the short run.[1] Therefore, an almost unanimous opposition to migration may arise in the potential host countries. This phenomenon of host-country resistance has been modeled by Wildasin (1994), Razin and Sadka (1995), and others.

An important pillar of such a welfare state, and more and more the focus of attention in recent years, is the pension system. It is commonly agreed that the pay-as-you-go system is heavily burdened in most industrialized countries and is in need of reform.[2] For instance, Gruber and Wise (1999, p. 34) state that "the populations in all industrialized countries are aging rapidly, and individual life expectancies are increasing. Yet older workers are leaving the labor force at younger and younger ages. Together, these trends have put enormous pressure on the financial solvency of social security systems around the world." In many countries, the theoretical tax (contribution) rates, that is, the rates that would balance the social security system, are significantly higher than the statutory rates. For example, Brugiavini (1999) reports that this theoretical rate would have been 44 percent for Italy in 1991.

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[1] See, for instance, Lalonde and Topel (1997); Borjas (1994); Borjas and Trejos (1991).

[2] For a survey of various reform proposals see Heller (1998).

Generational accounting provides insight into the fiscal pressures arising from aging populations. By explicitly taking into account the government intertemporal budget constraints, this methodology assesses the present value of taxes that individuals at different age cohorts need to pay over their remaining lifetimes to finance the future stream of public expenditures. (See Auerbach, Kotlikoff, and Leibfritz 1999.) Recent studies have drawn attention to the high net tax burdens facing the young and middle-aged populations of the industrialized economies under current tax and transfer policies, because current transfers to the elderly are generous compared to their earlier contributions to the system. In the globalized world economy, though, the current fiscal systems could last longer, if the net pension liabilities were partly financed by foreign savings. International migration could bring help to the system by enlarging the tax base.

Thus, migration may have some important implications for the financial soundness of the pension system. As *The Economist* succinctly put it: "Demography and economics together suggest that Europe might do better to open its doors wider. Europeans now live longer and have fewer babies than they used to. The burden of a growing host of elderly people is shifting onto a dwindling number of young shoulders" (February 15, 1992). Projected public pension spending reaches the level of at least 14 percent of national income by 2040 for France, Germany, Japan, and Italy. Recent United Nations projections indicate the levels of migration that would keep elderly dependency ratios constant. For the United States, Japan, and the European Union, the migration required to stabilize dependency ratios is in the range of 10 to 13 million people a year, clearly far above recent levels and probably higher than would be politically and economically feasible. Storesletten (2000) makes a similar calculation, based on a general equilibrium model, about the rates of immigration needed for the United States to restrain the pension system from a fiscal explosion.

"Are immigrants an asset or a liability in the provision and financing of public services in the United States?" asks the 1997 book *The New Americans* (p. 254). The text goes on to say: "Judging by the 1996 welfare reform legislation restricting the access of legal and illegal immigrants to a variety of federally funded transfer programs, citizens' approval in 1994 of Proposition 187 in California denying funding for public services to illegal immigrants, and recent suits by Arizona, California, Florida, New York, New Jersey, and Texas to recover additional funding from the federal government for immigrant services, many people believe that the effect is both negative and large." However, across the immigrant population, the size of the net fiscal burden imposed on native-born residents varies significantly. Households of immigrants who have lower incomes and include more school-age children impose a relatively heavy burden, whereas households of immigrants who have higher incomes

and high-skilled members contribute to a fiscal gain. Chapter 7 of the book (based largely on Lee and Miller 1998) reaches the conclusion that U.S. immigrants provide a net fiscal benefit in present value terms, when account is taken of their own impact on tax receipts, transfers, and government purchases, as well as the impact of their descendants.

Another aspect of population growth driven by immigration is the perception that, as Paul Krugman (*The New York Times*, May 23rd, 2001) puts it, "other things being the same, a growing population means more houses, more cars and hence more sprawl. But population growth is only a secondary contributing factor to a disastrous pattern of land use driven by skewed incentives that encourage people to spread out in a low-density sprawl that in turn forces them to spend more and more of their time in cars." Krugman sees the (largely off-base) association of immigration and sprawl as a factor behind a small but growing anti-immigration movement.

International Migration and Social Security

While it is common sense to expect that young migrants, even if low-skilled, can help society pay the benefits to the current elderly, it may nevertheless still be reasonable to argue that these migrants would adversely affect the current young, if the migrants are net consumers of the welfare state. But here the ingenuity of Paul Samuelson's concept of the economy as an everlasting machine comes into play, even though each one of its human components is finitely lived (Samuelson 1958).

Razin and Sadka (1999) employ Samuelson's concept in a dynamic model of a welfare state, with an old-age social security system that is also inherently progressive. They show that even though the immigrants may be low-skilled and net beneficiaries of a pension system, nevertheless all the existing income groups (low and high) and age groups (young and old) living at the time of the immigrants' arrival would be better off, provided the economy is relatively small and has good access to international capital markets. Therefore, on these grounds, the political economy equilibrium will be overwhelmingly pro-migration in this case. Furthermore, this migration need not put any burden on future generations. If the migration episode repeats itself, or if the social security trust generates a surplus that is used to finance future benefits, all generations are made better off. This unambiguous result for the small open economy obtains whether or not the low-skilled immigrants are net beneficiaries of or net contributors to the old-age social security system. That is, the result obtains both when the contributions of the immigrants to the pension system fall short of the present value of their pension benefits and when they exceed it. Indeed, when the market rate of interest exceeds the biological rate of interest (the population growth rate), which is usually the case, and the percentage of skilled workers in the native-born

population is relatively large, then the low-skilled immigrants may well be net contributors to the pension system.[3]

Razin and Sadka next drop the small open economy assumption that serves to fix factor prices in the wake of migration, either through capital mobility or through factor-price-equalizing trade in goods. They show that when migration affects factor prices,[4] particularly when it depresses wages of unskilled labor,[5] it may create some anti-immigration elements that may counterbalance the initial positive effect on the pension system. Indeed, with a sufficiently small substitution between capital and labor, the factor price effect may well inflict losses on some income groups of the current generations and some future generations.

Does the possibility of "fiscal leakage" from the native-born to low-skilled immigrants imply anything for a related question: What is the political-economic effect of immigrants on the tax burden and on the level of redistribution in the host country? Immigrants make income distribution less desirable to the median voter, because the transfers "leak" to more workers with the lowest incomes. This effect tends to lower the political-equilibrium tax rate. Second, immigration reduces the skill level of the median voter, and this effect increases the tax rate. The empirical work of Razin, Sadka, and Swagel (2002a) uses data for eleven European countries. The labor tax rate is the dependent variable, and the independent variables include separate immigrant variables for low-, median-, and high-education immigrants. The results show that immigration of the highly skilled lowers the tax burden, while immigration of the low-skilled raises the tax burden, consistent with the "fiscal leakage" effect.

International Migration and Lobbying

The political-economic theory of Grossman and Helpman (1994) specifies that in choosing the optimal tariff policy, politicians trade off aggregate welfare against the lobbies' contributions. The equilibrium rate of protection is given by

$$\frac{t_i}{1 + t_i} = \left(\frac{I_i - \theta_L}{a + \theta_L}\right)\frac{z_i}{e_i},$$

[3] This intertemporal aspect of the net contribution of low-skilled immigrants to the welfare state seems to be absent from the static measures of the fiscal burden imposed by immigrants provided in much of the empirical literature cited earlier. The Razin and Sadka (1999) finding that the social security fiscal burden is not necessarily a good welfare indicator is another drawback of this literature.

[4] This factor price effect of migration arises either when there is an inadequate inflow of capital in conjunction with the influx of labor or when the economy is large enough so as not to be a price taker in the global economy.

[5] For instance, Altonji and Card (1991) find that a 1 percent increase in a country's labor force due to immigration lowers wages by 1.2 percent.

where

t_i = the tariff rate (or the tariff equivalent of the import quota),

$$I_i = \begin{cases} 1, \text{ if the sector is organized,} \\ 0, \text{ if the sector is not organized,} \end{cases}$$

θ_L = the share of population involved in lobbying activity,

a = weight of aggregate welfare in the policymaker utility,

z_i = the inverse of the import penetration ratio, and

e_i = the price elasticity of import demand.

The tariff (subsidy) is granted according to a modified Ramsey rule: the higher the elasticity of import demand (export supply), the smaller the deviations from free trade. All organized sectors obtain protection. For the lobbying sectors, protection increases with the share of domestic production for domestic consumption. Protection, naturally, decreases with the weight attached by the government to aggregate welfare and with the share of the population involved in lobbying activities. These rules extend to policies concerning migration and foreign capital; see Facchini and Willman (2001).

The protection formula carries over to protection of various factors of production. The implied tariff rate on factor i, t_i, is reinterpreted by Facchini and Willman as follows. Let

$$t_i = \frac{w_i - w_i^*}{w_i^*},$$

where w_i^* is the world real wage of input i and w_i is the domestic real wage of the input. If the aggregate production function is separably additive, the Grossman-Helpman formula is reinstated. If, however, there are complementarities between inputs (that is, increasing the quantity of one of them raises the marginal productivity of the other), then a lobbying substitute will have a positive effect on the protection level obtained by the other factor. Letting in more imports of either factor would decrease not only the real wage of that factor itself but also that of its substitute. The substitute, therefore, also has an incentive to lobby for protection on behalf of its "partner." A lobbying complement, on the other hand, would like to see a lower real wage for the other factor and has, therefore, a strong incentive to lobby against protection for the other factor.

Facchini and Willman use a sample of twenty OECD countries and find support for the idea that organized groups influence policy toward international factor movements. Complementarities between labor and capital inputs play a significant role in the degree of protection actually granted. Their findings support the hypothesis that the degree of protec-

tion granted to a factor depends on whether it is organized or not. Organized factors enjoy a distinct pattern of protection. Furthermore, Facchini and Willman find some evidence to support the hypothesis that lobbying complements, such as unskilled labor and foreign direct investment, reduce the degree of protection granted to an organized factor.

The following examples illustrate the link between factor complementarity and lobbying activity: (1) During the debate on the recent bill proposed by Senator Hollings to limit foreign direct investment by foreign corporations in the United States, the president of the Communications Workers of America, Morton Bahr, was called as a witness on the proposed takeover of Voicestream by Deutsche Telekom. In his testimony he emphasized how "in the telecommunications industry, the presence of Deutsche Telekom in our marketplace could yield some substantial benefits to workers and consumers." (2) Another example is the debate on H1-B visas, where Silicon Valley executives trooped before the Congress, warning of a Y2K computer disaster unless the number of H1-B visas was increased.

The Aging Population and Social Security

With the aging of the population, the proportion of voters eligible to receive social security payments to the elderly has increased, and these pensions are by far the largest component of government transfers in all industrial economies. Indeed, in the rich countries, the ratio of people of working age to those over age 65, currently about four to one, is expected to fall by half by the year 2030. Razin and Sadka (1999) examines the implications of this ongoing increase in the size of the social security transfer system for the welfare state, focusing particularly on the relationship between aging of the population and the tax rates and benefits involved. The paper develops a model in which the size of the taxes and social transfers between the working-age population and the retired is endogenously determined by voting. That is, the extent of taxation and redistribution policy is decided by democratic voting, with the political-economy equilibrium determined as a balance between those who gain and those who lose from a more extensive tax-and-transfer policy. The aging of the population and the consequent increase in the dependency ratio affect the political-economy balance in two directions: The greater number of retirees increases demand for benefits, but at the same time it reduces the willingness of the working-age population to accede to higher taxes and transfers, since current workers are net losers from the welfare state—the "fiscal leakage" effect. We show that the outcome of the model in which both workers and retirees vote on the level of taxes and social benefits is that a higher dependency rate may well lead to an equilibrium with lower taxes and transfers.

Our conclusions are consistent with the standard theory of the

determinants of the size of government in a representative democracy, in which the size of government or the scope of redistribution depends on pre-tax income inequality. Two economic interpretations are used to explain this dependence. Lovell (1975) emphasizes the size of the government as a provider of public goods, while others, notably Meltzer and Richard (1981), consider the role of the government in redistributing income. See Persson and Tabellini (1999) for a recent survey. In both applications, the size of government or the scope of redistribution depends on a particular measure of the skewedness of the income distribution, the ratio of the pre-tax median income to the pre-tax average income. This ratio represents the price of collectively supplied goods in terms of private goods for the median voter. Our model adds a new channel through which the size of government is determined, namely, the effect of the "fiscal leakage" that occurs in the pay-as-you-go social security system, in which current workers are net contributors while the retired are net beneficiaries.

Empirical evidence using panel data on twelve European countries from 1974 to 1992 provides strong support for our theory. These welfare states share common institutional features, including tax rates on labor income ranging from 40 to 50 percent, transfers constituting 20 to 30 percent of GDP, and dependency ratios approaching one-half of the population. While the institutions are broadly similar, taxes and transfers vary across the twelve countries and are found to depend on demographic characteristics, as proxied by the dependency ratio. The dependency ratio has a statistically significant *negative* effect on both the labor tax rate and the generosity of per-capita transfers, after controlling for income skewedness as suggested by the standard theory and for a number of social and demographic control variables. Because the age structure of the population is not affected by annual changes in tax or benefit rates, the econometric finding that the dependency ratio affects the parameters of the welfare state is unlikely to be sensitive to a problem of reverse causality (see Razin, Sadka, and Swagel 2002b).

These results shed light on the current debate over privatization of the social security systems in the industrial countries. Privatization of social security is typically viewed as providing for individual-specific balances between total discounted contributions and total discounted benefits. That is, the privatized system does not redistribute income, but instead simply provides a publicly run (and in many cases, mandatory) mechanism for savings. Privatization would eliminate the payroll tax/transfer element of national social security systems, cutting both the payroll tax burden and the size of public transfers. Our model can thus explain the rising calls for privatization in light of the aging of the population.

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