

PRIVATISIERUNGSMÖGLICHKEITEN DER SOZIALVERSICHERUNG IN EUROPA

von

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ZUSAMMENFASSUNG

Wir argumentieren, daß die Umlagefinanzierung, auf denen die meisten Alterssicherungsverfahren in Europa beruhen, nicht die Flexibilität bietet, die nötig ist, um die Herausforderungen der nun einsetzenden Altersstrukturverschiebung zu meistern. Das Umlageverfahren zwingt die Alterssicherung zwischen die Scylla sehr niedriger Pensionszahlungen an die dann ältere Generation und die Charybdis abschreckend hoher Beitragszahlungen der erwerbstätigen Generation. Das Papier zeigt, daß ein partieller Übergang zu einem Kapitaldeckungsverfahren, das auf privater Ersparnis basiert, statt dessen zusätzliche Flexibilität gleich in zweierlei Hinsicht verschaffen kann. Zum einen kann durch den Mechanismus der intertemporalen Substitution die kommende Alterslast über eine größere Zeit verteilt werden als es im Korsett des Umlageverfahrens möglich ist. Zum zweiten erlaubt die Diversifikation auf dem globalen Kapitalmarkt, dem durch die Altersstrukturverschiebung induzierten Druck auf die inländische Rendite weitgehend zu entgehen.

Das Papier belegt diese Argumente mittels eines Simulationsmodells für das umlagefinanzierte Alterssicherungssystem der Bundesrepublik Deutschland. Es berechnet zunächst Projektionen der Beitragssätze zur deutschen „Gesetzlichen Rentenversicherung“ unter alternativen Annahmen über die zukünftige Erwerbstätigkeit, aus denen folgt, daß das jetzige Umlageverfahren in der Tat nur wenig gestalterische Flexibilität besitzt. Das Papier rechnet dann einen graduellen Übergang zu einem Kapitaldeckungssystem durch, in dem die Haushalte durch private Ersparnisse den Rückgang der umlagefinanzierten Altersversorgung kompensieren müssen. Es ergibt sich, daß das Übergangsproblem weit weniger einschneidend ist als oft behauptet wird. Schließlich wird gezeigt, daß der globale Kapitalmarkt die Investitionen aller europäischen Länder, USA und Japans durchaus absorbieren kann, ohne daß es zu Einbrüchen in der Rendite kommt. Tatsächlich liegen die Konsummöglichkeiten mit einem solchen Alterssicherungssystem deutlich über denen, die das gegenwärtige Umlageverfahren bieten kann.

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PRIVATIZATION OF SOCIAL SECURITY IN EUROPE

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ABSTRACT

This paper argues that the pay-as-you-go systems that dominate the old age social security programs in Europe cannot provide the flexibility necessary to master the demographic changes to come. They are locked between the Scylla of low pension levels and the Charybdis of high contribution rates. The paper shows that a partial transition to a funded system, based on private savings, can provide additional flexibility in two ways. First, intertemporal substitution permits a smoothing of the demographic burden across a much longer period than the contemporary budget constraint of a pay-as-you-go system. Second, international diversification on global capital markets enables to escape the likely decline of domestic rates of return in an aging economy.

The paper takes the German pay-as-you-go system as an example. It provides projections of the contribution rate under alternative labor force scenarios and policies to demonstrate that the pay-as-you-go system has insufficient flexibility under realistic assumptions. The paper then turns to a partially funded system to show that the transition problem is much less severe than is often argued, and that financial risks can be minimized by international diversification. Indeed, a funded system that invests globally can provide rates of return that generate consumption profiles far above those that are possible under pay-as-you-go.

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PRIVATIZATION OF SOCIAL SECURITY IN EUROPE

by Axel H. Börsch-Supan

Introduction

Pay-as-you-go (PAYG) systems dominate the old age social security programs in Europe. French, German and Italian workers rely almost exclusively on pensions financed by a PAYG system, while the Netherlands and Great Britain are exceptions in funding a substantial fraction of their future pension benefits.

This paper argues that the prevalent PAYG systems cannot provide the flexibility necessary to master the demographic changes to come. PAYG pension systems are locked between the Scylla of low pension levels and the Charybdis of high contribution rates. Additional flexibility can be achieved by funding the pension systems at least partially through two mechanisms. First, intertemporal substitution – possible only in a funded system – permits a smoothing of the demographic burden across a much longer period than the contemporary budget constraint of a PAYG system. Second, international diversification on global capital markets enables to escape the likely decline of domestic rates of return in an aging economy.

The paper takes the German PAYG system as an example. In Section 1, I briefly present the demographics of aging and the implications of this aging process on the social insurance systems in this country. Section 2 collects projections of the contribution rate under alternative labor force scenarios, most notably a change in the retirement age and in female labor force participation. It shows that the PAYG system is limited in its ability to cope with this dramatic change in the population structure. In Section 3, I contrast the mechanisms of fully funded and pay-as-you-go pension systems for the German case. Sections 4 and 5 are concerned with the drawbacks of a fully funded system. Section 4 shows that the transition problem is much less severe than often argued. Section 5 argues that financial risks can be minimized by international diversification. In conclusion, we show that a funded system that invests globally can provide rates of return such that per capita consumption profiles dominate those that are possible under PAYG through the entire 2000-2050 period.

1. The Demographics of Aging and the Social Insurance Burden

All industrialized countries are aging but particularly so the European countries. Exhibit 1 shows projections of the share of the elderly population, here defined as age 60 and older. The aging process is particularly strong in Germany. The proportion of persons aged 60 and older will increase from 21 percent in 1995 to 36 percent in the year 2035, when the aging process will peak. With Switzerland and Austria, this will be the highest proportion in the world. However, not only Europe is aging. The Asian countries, notably Japan, is projected to face a very steep aging process in the middle of the next century, and even in Africa will the share of the elderly significantly increase.¹

The aging process in the OECD countries is partly a transitional process because a large baby boom cohort is followed by a thin baby bust generation. This transitional process is superimposed by the world-wide secular process of a steadily increasing life expectancy. The increase in life expectancy – about 1.5 years every 10 years in Germany – is not likely to end soon. To the contrary and to the surprise of many demographers, it even has accelerated between the most recent computations of German mortality tables. The combination of both processes will dramatically change the structure of the German age pyramid. As Exhibit 2 shows, there will be more elderly and less working age persons in absolute terms.

Consequently, the ratio of elderly to working age persons – the old age dependency ratio – will increase steeply in the industrialized countries and particularly so in Germany (Exhibit 3). The OECD projects an increase from 20.6 percent in 1990 to 39.2 percent in 2030 for its European member countries. In Germany, the old age dependency ratio will far more than double from 21.7 percent in 1990 to 49.2 percent in 2030.²

One might be suspicious about projections that reach as far as the year 2030. However, the major components of these demographic projections are fairly certain. The two generations of retirees and their children in the year 2030 are already in place. Thus, changes in fertility do not affect the dependency ratio in the year 2030 anymore. Changes in the mortality rate are subtle; if at all, current mortality projections underestimate the increase in life expectancy. The main wild

¹ World Bank (1994).

² OECD, based on World Bank projection by Bos et al. (1994). The OECD dependency ratio relates persons age 65 and older to persons between ages 15 and 64.

card in these demographic projections is immigration. In the case of Germany, projected immigration is low relative to current and recent immigration, characterized by the opening of the iron curtain and its aftermath. However, we will show later that immigration would have to be implausibly large over more than two decades in order to revert the demographic trends depicted in Exhibits 1 through 3.

The increase in the dependency ratio of a country has immediate consequences for its pay-as-you-go social insurance systems because fewer workers have to finance the benefits of more recipients. This affects not only the PAYG pension system, but also health and long-term care insurance and other social programs financed by general taxes that are geared to the elderly.³ Exhibit 4 computes projected tax burdens for selected OECD countries. It extrapolates current age-dependent social expenditures by the projected dependency ratios, thereby assuming current benefit levels. Taxes in the countries of the European Union will exceed 50 percent of GDP at the peak of population aging, and Japanese taxes, now substantially lower than in Europe, will exceed the current European level solely through the changes in demography.

Again, Germany faces the strongest challenge. The German social security contribution rate, now at about 20 percent of gross income,⁴ will significantly exceed 30 percent of gross income at the peak of population aging if the current system and the current labor force participation remains as they are now (Exhibit 5). Official estimates range between 26 and 29 percent, assuming some adaptation of retirement age and female labor force participation.⁵ Because the main share of health care services are consumed by the elderly, also health insurance contributions will increase. Currently at 12.5 percent on average, the contribution rate is projected to increase by almost 50 percent to 17.5 percent of gross income. The most dramatic increase is in the new long-term care (LTC) insurance because the share of the very old is particularly quickly rising. If current benefit levels will be maintained, the contribution rate will double from 1.7 percent now to almost 3.5 percent in 2035. Unlike to the pension and health insurance systems, the contribution rate to the LTC insurance will continue to increase after the peak of population aging in the year 2035 because of the projected increase in life expectancy. Because the three projections in Exhibit 5 assume constant age-specific expenditures and constant

³ In addition, about 20 percent of the German old age social security budget is financed by general taxes.

⁴ Currently, the total contribution rate is 20.3 percent. 10.15 percent are deducted from employees' gross pay, another 10.15 percent are paid by the employer.

⁵ Prognos (1995).

benefit levels, they are most likely pessimistic estimates as they ignore society's adaptation to the new population structure. In addition, morbidity may change in line with mortality, thereby reducing age-specific health and LTC expenditures particularly at old age.

2. Structural limitations of the current PAYG Pension Systems

Key questions for public policy are therefore: Are the current pay-as-you-go pension systems sufficiently flexible to bear the large and increasing retirement burden? What are the policy instruments that can realistically be employed? What are the built-in labor market mechanisms, developing endogenously within the current system, that accommodate population aging? Or should we substitute, at least partially, the current pay-as-you-go systems by pension systems which are at least partially funded?

As its name says, a pay-as-you-go pension system finances current pension benefits by current social security tax contributions. If P denotes the number of beneficiaries, W the number of workers paying social security contributions, and r the replacement rate, here defined as the ratio between the current average pension benefit and the current average wage, then the social security tax rate c has to be

$$c = r \cdot P/W$$

in order to balance the budget of the PAYG pension system.

To a first degree of approximation, P/W is the dependency ratio displayed in Exhibit 3. As we have seen, this ratio will double for Germany. If one wants to keep the current level of benefits constant, the current system requires a doubling of the tax rate. This is Scylla: already the current social security contribution rate of 20.3 percent in Germany is considered an obstacle to international competitiveness and an incentive to escape taxation, so that the government has pledged to keep the rate at „around 20 percent.“ If this were the case, benefits will have to decrease to half of their current levels to keep the PAYG budget balanced. This is Charybdis: it

would drive a considerable percentage of retirees below the poverty line.⁶ The PAYG pension system is in a dilemma, if not in a serious crisis.

In order to escape this dilemma, the ratio of beneficiaries to contributors, P/W , has to change. The most powerful way to achieve this is to change the retirement age as this increases the number of contributors and at the same time decreases the number of beneficiaries. Retirement age is rather low in Germany, around age 60 in 1996, mainly because of a generous early retirement policy designed to reduce the unemployment rate. Retirement benefits in Germany are not actuarially fair. The term „actuarially fair“ is used in the sense that workers when facing the decision when to retire receive the same net present value of pension benefits independent of their retirement age. Rather, early retirees receive substantially higher benefits (in present value) than normal and late retirees because the benefit reduction is small relative to the prolongation of retirement.⁷ Simulations show that removing these incentives for early retirement will increase retirement by about two years.⁸ However, simulations also show that in order to fully compensate for the effects of population aging, the average retirement age has to increase by nine years, to about age 69.⁹ It is unlikely that the labor market is sufficiently flexible to permit this to happen.

Another instrument of labor market flexibility that has recently gained popularity is part-time retirement. Part-time retirees receive only part of their pension benefits, and they pay social security contributions from their part-time labor income. The above simulation shows that this will not be an effective mechanism to alleviate the pension crisis. Even if all pensioners would begin as part-time retirees, 18 years of half-time work are required to offset the aging effect in Germany – too long in face of a life-expectancy at age 60 that is about 17 years for German males.

Increasing the number of workers without a corresponding decrease of retirees is less effective but still helpful. In this sense, an increase in female labor force participation is another mechanism which also helps reducing the retirement burden. However, the effect is small for

⁶ The poverty line for a retired couple was a monthly income of DM 1298 in 1989 (Bäcker, Bispinck, et al., 1989, p.135). 38.4% of blue collar and 20.1% of white collar retirees received an old-age pension below DM 1300 per month in 1989 (Bundesminister für Arbeit und Sozialordnung, 1990, p.200-207). Most of these households have some supplemental income, increasing their income by 15-20% (Börsch-Supan and Schnabel, 1997).

⁷ These incentives are still present in the current system, but were particularly strong before the 1992 pension reform (Börsch-Supan and Schnabel, 1997).

⁸ Börsch-Supan (1992).

⁹ Börsch-Supan (1996).

Germany. Even if female labor force participation would reach the level of male labor force participation within the next decade, the increase of the social security contribution rate would be dampened by only about 6 percentage points.¹⁰ The effect is small because social security benefits would also rise because more female workers are enrolled in the pension system. Thus, higher female labor force participation eliminates some of the current transfer payments in form of survivor benefits, and it has a small transitional effect when female labor force participation is still increasing but the benefits are not yet due. It is also important to note that the additional labor force participation must substitute leisure by labor to be effective. If instead household labor is substituted by market labor, without a corresponding reduction of leisure, only the tax base will be widened, tantamount to a tax increase for households that now have two earners. In addition, the same qualification as for later retirement ages holds: the market has to be sufficiently flexible to absorb the additional labor supply.

Migration is another potentially powerful mechanism to alleviate the effects of population aging. Quite clearly, the influx of young immigrants can in theory fully compensate for population aging. In practice, one faces two problems. First, the domestic labor market has to be sufficiently flexible to absorb immigrant workers and provide the necessary training. Given high European unemployment rates, there is certainly at least a serious short-run limitation. Second, the numbers have to work out. To fully compensate for population aging in Germany at the given typical age structure of immigrants—immigrants into Germany are on average about ten years younger than the resident population—about 800,000 persons (workers and family) have to immigrate annually into Germany from now on through the year 2035. These are very large numbers.¹¹ They are not without a historical precedent but only during a few exceptional years, e.g., after the opening of the iron curtain, and they are unlikely to persist. Nevertheless, simulations show that a steady immigration of 300,000 immigrants will reduce the increase of the social security contribution rate by about a third, provided that labor force participation of these immigrants is equal to current German labor force participation.¹²

Finally, tightening the eligibility for disability benefits – a part of the German retirement system that is particularly expensive because benefits occur early in life – is another frequently

¹⁰ Börsch-Supan (1996).

¹¹ The projections in Section 1 assume an annual immigration of some 80,000 persons annually. Note that all numbers refer to net immigration.

¹² Börsch-Supan (1994)

cited step. As far as disability claims are made essentially for labor market reasons and without a „real“ disability this amounts to an increase in retirement age discussed above. About 27 percent of male workers and 20 percent of female workers use the pathway of claiming disability in order to retire before age 60, most of them between ages 54 and 59.¹³ However, the effect of tightening the eligibility for disability benefits is smaller than often claimed. Even if all early retirement before age 60 were eliminated, average retirement age would increase by only 2.3 years for male and 1.9 years for female workers.

It should be clear, that no single one of these steps can solve the dilemma of the German PAYG pension system. Similar calculations hold also for the French and the Italian PAYG systems.¹⁴ Of course, this does not imply that a combination of several steps will inevitably fail to solve the pension crisis within the PAYG system. Such a piecemeal approach could consist of an increase in retirement age (e.g., by two years by making the benefit calculation actuarially fair, another year or two by shifting the pivotal age of the benefit calculation („normal retirement age“), and another year by tightening disability rules),¹⁵ by lowering benefits and increasing contribution rates mildly, and by hoping for higher female labor force participation and a steady influx of immigrants below a level that causes concern among residents.

Current government proposals tend to be in this direction. The main problem with this piecemeal approach is that it is far from clear that the labor market is sufficiently flexible and will absorb this additional labor supply during the next two decades. One can only hope that population aging, after all a decrease of the working age population as a share of the total, population, will resolve the unemployment problem automatically. To the extent that this will not happen smoothly, the PAYG system must increase contributions and/or decrease benefits rather dramatically in order to remain in balance, as was shown above.

3. Pay-As-You-Go versus Funded Pension Systems

The previous section has shown that the PAYG mechanism is very restrictive. The budget constraint, represented by the equation at the beginning of this section, has to hold in each period,

¹³ Verband Deutscher Rentenversicherungsträger, Rentenzugangstatistik, Nettozugänge (ohne Umwandlungen), 1995.

¹⁴ Blanchet (1988).

¹⁵ These changes are interdependent and are not necessarily additive.

making a PAYG system very sensitive to demographic changes. The aging process, as depicted by Exhibit 2, is a serious problem for the decades beginning around the year 2015 until 2040 when the large baby boom generation retires and a lean baby bust generation has to feed these numerous retirees. Unlike a household which saves for a rainy day or takes a credit to finance temporary high expenditures, a PAYG system has to balance benefits and contributions in each year and has no flexibility for intertemporal substitution of consumption between years of financial strain and relaxation. In particular, it cannot financially anticipate the strains from year 2015 through 2040.

Taking a credit to finance the high pension expenditures during the peak of population aging is a dangerous proposition. Exhibit 1 showed that more than a third of the European population will be retirees at the peak of population aging, consuming about a quarter of GDP. Financing significant parts of this consumption for two or more decades with foreign debt will raise the debt to GDP ratio to unsustainable levels.

However, saving for a rainy day is not out of the question. The savings mechanism permits a redistribution of the aging burden from the peak years of population aging to earlier years. The resulting intertemporal substitution of consumption from now to later introduces an element of flexibility into the retirement system that a PAYG system does not have. In this sense, the saving mechanism can substitute for a lack of labor market flexibility.

One can introduce private savings on top of an existing pay-as-you-go pension system. This is in some sense what is happening right now in those countries that have decided to decrease the future retirement benefits – most prominently Italy, Germany is planning such a move – and in which young households are observed to invest more in life insurance policies for a private „pension pillar.“ This recent trend is a specific form of the transition to a partially funded pension system. The United Kingdom, the Netherlands, and to a lesser extent, the United States, have already partially funded systems. Fully funded systems, such as in Chile, rely only on the savings mechanism.

As described, one advantage of funded systems is the possibility to smoothen temporary peaks in expenditures. A second advantage is the accumulation of a large capital stock which increases labor productivity and thus per capita income. Whether a funded system is better than a PAYG system, ultimately depends on the systems' rate of return. In a funded system, the rate of return is simply the average rate of return of its investments while the rate of return of a PAYG

system is the sum of the growth rates of the work force and of labor productivity. Exhibit 6 shows that the rate of return of the German PAYG system was reasonably high – some 3 to 4 percent in real terms from 1950 through 1980 – because Germany had a rather steep productivity and increase and a mild population growth.¹⁶ At the same time, rates of return in the corporate sector were much lower than today. For workers retiring now, the PAYG system was clearly more advantageous than a fully funded system in which the savings had been invested in the German business sector during the time between 1950 and 1980.

However, this has changed. The rate of return of savings funneled into the German business sector has increased to about 7 to 8 percent in real terms. 7.4 percent is the real rate of return that prevailed during the 20 years from 1975 through 1994 in the German business sector. This rate, computed by McKinsey Global Institute (1996), is based on a portfolio that includes all equity and debt that was invested from 1975 through 1994 in all corporations in Germany (including foreign owned corporations), counting interest, dividends and capital gains from 1975 until 1994 after business and before personal taxes.¹⁷⁻¹⁸

In turn, labor force growth is now slightly negative, and labor productivity is increasing „only“ at the long run historical average of about 1.5 percent.^{19, 20} This has shifted the balance towards a funded system: it would be more advantageous for a current worker to opt out of the current social security system and to invest in the business sector in order to build up retirement income.

This is shown in Exhibit 7. A worker, starting work life at age 20, has 40 years to save for 20 years of retirement. To fully fund the retirement income of a worker with 40 years of service and an average wage, DM 22,400 annually,²¹ annual savings of about DM 1,100 are required if a household would earn the full 7.4 percent average rate of return of the German corporate sector. This is substantially less than the average annual contribution to the German PAYG pension

¹⁶ This is in line with a recent estimate by Eitenmüller (1996) who reports 6.5 percent in nominal terms (the rate of inflation during the 1950-80 period was 3.1 percent).

¹⁷ Initial stock in 1970 is counted as inflow, final stock in 1994 as outflow.

¹⁸ McKinsey Global Institute (1996) also computed US and Japanese real rates of return (9.1 and 7.1 percent, resp.). The US rate closely corresponds to the rate computed by and used in Feldstein and Samwick (1996).

¹⁹ Buchheim (1994), p.15.

²⁰ For this case, Eitenmüller (1996) estimates a nominal rate of return of 4.9 percent.

²¹ Bundesministerium für Arbeit und Sozialordnung (1997), p. 108.

system that amounted to DM 11,500 in 1995.²² The huge difference is due to the force of compounding a large rate of return differential over a long time period. If, more realistically, the household would not receive the full rate of return of the corporate sector but 1.5 percent less for financial transaction costs and profits of the pension fund,²³ the rate of return to the individual household would be 5.9 percent. Note that is after business taxes but without personal income taxation.²⁴ In this case, the required annual savings would be about DM 1,800. Even at a much lower rate of return, say, 4 percent, approximately the long run interest rate on government bonds, the required annual savings of DM 3,300 are less than a third of the current contributions. If this worker had a choice, it quite clearly would be the funded system.

4. The Transition Problem

However, today's workers simply do not have the choice to leave the PAYG system because they have to finance the pensions of the current retirees. This transition problem requires one generation to pay twice – once for their parents and once for themselves. In a sense, this transition generation has to pay off the debt resulting from the very first generation when the PAYG system was started because the initial generation received pensions without contributions. Obviously, the severity of the transition problem depends on the size of this additional burden for the transition generation. As it will turn out, it is not at all a „double“ burden.

There is a wide array of literature in how to solve the transition problem. The theoretical literature has focused on the question whether an intergenerational redistribution scheme exists that permits compensation of the transition generation by those future generations that will profit from the funded system. These schemes require taking up debt during the transition period. However, this demands resources and creates distortions because the debt has to be paid back through taxes. Economic theory shows that if the transition burden is sufficiently smoothed to avoid labor disincentive problems, a transition to a funded system is advantageous for all generations, including the transition generation. A crucial parameter is therefore the elasticity of

²² The average household paid 1995 DM 11976 for social insurances (Statistisches Jahrbuch, 1996, p.547). Of these, 48 percent went to the pension system. The same amount was paid by the employer on the employees' behalf.

²³ Administration costs of Dutch pension funds are about 0.5 percent; they are considerably higher in Chile.

²⁴ For a fair comparison to the tax-free pay-as-you-go pension, income from a funded system is assumed to be also tax free. In addition, as noted before, the interest income of an average earner's pension fund is below the exemption limit for capital income taxation.

labor supply with respect to increases in the contribution and general tax rates. Unfortunately, there is little reliable empirical evidence on this parameter. One can only tentatively conclude from the current electorates' pressure on governments to reduce taxes, and from the fast increase of labor escaping taxation,²⁵ that this elasticity must be fairly large. Raffelhüschen (1993) and Buslei and Kraus (1996) provide simulations for Germany. Feldstein and Warwick (1996) and Kotlikoff (1996) have computed simulations for the U.S. These simulations show that under realistic parameter choices one can indeed design feasible transition schemes that are advantageous for all generations. In turn, Fenge (1995) assumes that the actuarially fair part of the German PAYG system does not create any kind of labor supply disincentive. He concludes that a pareto-improving transition from the PAYG to a funded system is not possible.²⁶

None of these studies explicitly show the size of the added burden that has to be borne by the transition generation. In order to do this, we consider two transition scenarios. Both are based on a demographic and labor force projection model described in Börsch-Supan (1995).²⁷

In the first scenario, we assume that the contribution rate to the PAYG system will be frozen from the year 2000 on at the projected rate of then 21.1 percent of gross income. In this case, the annual social security benefits of an average retiree in 2035 will be about DM 8,500 lower than if the current net replacement rate of 72 percent were maintained by increasing the contribution rate as depicted in Exhibit 5. Exhibit 8 shows how much an average worker has to save to make up for this „pension gap.“ This computation assumes the worst case: a worker born in 1960, who started working in 1980, starts saving in the year 2000, retires in the year 2020, and lives until the year 2040. This worker will have very little time to save and faces the peak of population aging just during the retirement years. This worker faces a pension gap of about DM 7,600 on average between the years 2020 and 2040, reaching a peak of DM 8,500 in the year 2035, and totaling to a present discounted value of almost DM 90,000. In order to accumulate this level of pension wealth from the year 2000 until retirement in 2020, the worker needs to save DM 2,300 annually at a 5.9 percent interest rate. At an average net household income of about DM 51,000,²⁸ this appears to be quite feasible. The increase of the household saving rate from

²⁵ Increases in self-employment and black-market transactions.

²⁶ See Buslei and Kraus (1996) and Börsch-Supan (1997) for a review of other studies that deny the possibility of a pareto-improving transition.

²⁷ Demographic scenario „MostLik“; constant age and gender-specific labor force participation rates.

²⁸ Statistisches Jahrbuch für die Bundesrepublik Deutschland, 1996, p. 67, inflated to 1996.

currently 11.6 percent²⁹ to 15.1 percent implied by this calculation is large, although not unprecedented.³⁰

The DM 2,300 annual savings should be compared with the increase in the PAYG contributions that are required to keep the same level of benefits. Current retirement age maintained, PAYG contribution rates will gradually rise to almost 28 percent in the year 2020, when our worker will retire. This was shown in Exhibit 5. The annual contribution increase is on average DM 2,900.³¹ Thus, the transition requires on average less resources than maintaining the PAYG system. Because the contribution increase is back-loaded while savings occur every year at a fixed amount, it depends on the time preference of the household whether the household prefers the transition to a partially funded system or maintaining the PAYG system. Exhibit 8 shows that even under the high time preference rate, the difference is small.

Exhibit 9 presents the results of a slightly different transition model that honors all claims to the pay-as-you-go system that are acquired before the transition but will result in a fully funded system after the transition: In 1997, it is announced that the transition to a fully funded system will begin in the year 2005. For all persons who have retired until 2005 (i.e., for retirement age 60 all cohorts that are born before 1945), pensions remain as they are. Persons retiring in the transition period will get a pay-as-you-go contribution in proportion to the share of their work life before the transition year. Thus, a worker retiring in 2006 after 40 years of work will receive 39/40 percent of a pay-as-you-go pension. The remainder, 1/40 of the retirement income, has to be financed by private savings during the time before retirement (between 1997 and 2006). A worker retiring in 2007 will have 38/40 of a pay-as-you-go and 2/40 of a funded pension, etc. From the year 2045 on, assuming a 40-year work life, no worker will acquire new pay-as-you-go pension rights.³²

Exhibit 9 shows the simulated time path of contributions plus savings by cohort, assuming a 40 year work life and a retirement age of 60. The dotted line corresponds to the monthly PAYG contributions if current replacement rates are maintained. The solid line denotes monthly PAYG contributions plus monthly savings according to the above transition model. Although the

²⁹ Household saving rate in 1996, Deutsche Bundesbank, quoted from FAZ.

³⁰ The household saving rate in 1975 was about this level.

³¹ Total increase between years 2000 and 2020 divided by 20 years.

³² The transition lasts even longer until all persons with some pay-as-you-go pension share have died.

transition does not give any relief to the generation that has to finance the transition burden, this burden turns out to be anything but „double“ – in fact, it just smoothens the increase in contributions that are unavoidable under the current German pay-as-you-go system. The maximum transition burden occurs about 2012 to the cohort born in 1952 which has relatively little time to save but already has to finance a substantial part of retirement income by saving. However, the added burden is relatively small and anything but a „double burden.“ It is less than DM 190 per month for the average earner of this cohort, about the same order of magnitude as in the first scenario. This added burden should be compared to the DM 975 that the average earner currently pays as monthly contributions to the PAYG system. Note that the transition will be advantageous for all cohorts born after 1963.

5. Risks of Funded Pension Systems and How to Cope With Them

While the PAYG system is not without its own risks – most notably the demographic risk that was in the center of the discussion in section 2, but also the political instability of a public transfer system that has been modified almost continuously during the last 10 years – the public discussion tends to focus on the risks associated with funded pension systems. A funded system that requires putting the accumulated savings into government creates an enormous temptation for government to use these funds to finance current consumption.³³ This generates low returns and submits the funds to a substantial political risk. Similar considerations hold for private firm pensions that are as book reserves invested as equity in the own firm.³⁴ Both of these risks can be avoided by keeping savings private and under the control of the investors in a competitive capital market. This is why the term „privatization“ is frequently used for proposals that recommend transitions from PAYG to partially or fully funded pension systems.

While funding reduces the demographic risk that plagues the PAYG system, it does not fully eliminate it. An aging society, featuring fewer workers and a stable if not shrinking population, also needs less capital for production. This lowers the rate of return. However, simulations show that this effect is small but not negligible.³⁵

³³ The Social Security Trust Fund in the U.S. is used to reduce the large U.S. government debt.

³⁴ This is frequently the case in Germany and in the Netherlands.

³⁵ Börsch-Supan (1995) estimates a range between 30 and 120 basis points. See also Cutler et al. (1990).

This points to the most serious risks of funded pensions, namely the financial risks. They include inflation and the possibility of low or negative returns. Although countries such as Germany and Austria that went through a hyperinflation and two wars during this century are particularly sensitive to these risks, they can be substantially reduced by diversification.

Financial risks can be diversified within a country. However, funding opens another dimension of flexibility that is unavailable in the current pay-as-you-go pension systems. The capital market not only extends the contemporary budget constraint of the PAYG system and yields intertemporal flexibility through the savings mechanism. The quickly increasing globalization of the capital market also permits diversifying country-specific risks. While a global PAYG pension system that would diversify the demographic risk is unthinkable, a global funded system is emerging simply because the capital markets are growing together.

International diversification reduces the inflation risk as well as the financial risks. It also minimizes the residual demographic risk of a domestically funded system. Simulations show that international diversification raises the potential level of consumption quite considerably above the level achievable in a PAYG system but that the main step is funding in the first place.³⁶

Exhibit 10 is an example of such a simulation exercise. It depicts the path of aggregate consumption for Germany in four scenarios.³⁷ Scenario 1 represents maintaining the current PAYG system, while the other scenarios represent funded systems based on private savings. In Scenario 2, these savings are invested domestically. Scenario 3 depicts a two-region world consisting of Germany and the newly industrialized countries in South-East Asia.³⁸ These countries are growing quickly, they still require large sums of capital, and they have a much younger population (Exhibit 1). We assume perfect capital mobility between the two regions. Scenario 4 includes all OECD countries and models the potential crowding-out effects by competition on the capital market – not only Germany but all other aging countries will try to invest in growing economies. The exhibit shows that while a declining consumption appears unavoidable, the decline is small under funding but substantial when the current pay-as-you-go system is maintained. The increase in consumption is due to the fact that capital is now employed

³⁶ Cutler et al. (1990), Börsch-Supan (1995), Meier (1996).

³⁷ Exhibit 10 refers to consumption in each year, aggregated across cohorts. It therefore does not permit a welfare comparison across cohorts.

³⁸ Hong Kong, Indonesia, South Korea, Malaysia, the Philippines, Singapore, and Taiwan.

where it is scarce and where labor is abundant. This creates higher rates of return than domestically possible. It is important to note that this mechanism improves per capita GDP and aggregate consumption not only in the capital-exporting country but also in the capital-receiving country.

A final point for a country that went through a hyperinflation and two wars during this century: while a transition from a pay-as-you-go system to a fully funded system requires time and hurts the transition generation unless an intertemporal redistribution scheme is put in place, the reverse transition can always be made at an instant and without any further losses. If the capital stock is destroyed in a catastrophe, one restart a pay-as-you-go system from current income, such as it was done after World War II in Germany.

Conclusions

The current debate about the implications of population aging on our pay-as-you-go pension systems focuses on patching up the current system. These fixes include downsizing the system by decreasing benefits, increasing the retirement age, and hoping for an increase in female labor force participation and some help from immigrants. These fixes require some additional flexibility of the labor market but stay within the realm of the inflexible pay-as-you-go budget constraint.

A gradual transition to funding opens two important dimensions of additional flexibility. First, it permits more intertemporal substitution through the savings mechanism. Rather than experiencing a 10-20 year squeeze around the year 2030, funding can smoothen the aging burden from now on through the peak of population aging. The additional burden that is levied on the transition generation is relatively small because the rate of return differences between PAYG and capital market savings are so large.

Second, funding permits international diversification. An aging country can profit from the lack of capital in developing countries, just as well as these countries can increase their rate of growth with the added capital. The globalization of capital markets decreases the country-specific risks – inflation, financial and residual demographic risks – through the possibility of a broad diversification.

One should keep in mind that changing the retirement system later will become more complicated. First, saving needs time, and as Exhibits 8 and 9 have shown, it is already fairly late to start saving for the generation that will retire around the peak of population aging. Second, the politics of the social security system will change soon. The political power is quickly shifting from the working population to the retired population – to an electorate which is unlikely to substantially change the balance between per capita benefits and contributions.

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