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Pension Reform in a Transition Economy: Notes on Poland and Chile

Peter Diamond

Like other countries in the process of converting from centrally planned to decentralized market economies, Poland has a pension system that is undergoing change.¹ This paper explores issues that arose in considering the problems and proposals for change in the Polish pension system. Since one of the proposals is to imitate the Chilean system and replace part of the Polish system with individual retirement accounts, it seems useful also to discuss the Chilean system as well as a partially similar proposal made for the United States.

Before the start of transition, the Polish pension system was a defined-benefit system, with benefits based on years of service and earnings in the last twelve months of work. No records on individual workers were kept by the social insurance institution, which relied on information provided by employers. It is widely understood that a decentralized economy cannot base a social insurance system on a short earnings record. The incentives for both legal and illegal manipulation are too great. Thus, it is essential that a set of earnings records be built up as quickly as possible and that the pension system not rely too heavily on the short earnings records that will become available in the near future. The current situation also involves great tension between the severe budget shortfall of the government and the low level of income of many retirees (and future retirees). Thus, there is great need to concentrate benefits on those most in need, recognizing that the system should evolve as longer earnings

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1. For other discussions of pension change in Eastern Europe, see Atkins (1991), Deutsch (1991), Hambor (1992), Jenkins (1991), and Kopits (1991).

records become available and as the budget situation and income levels evolve. The current system also has excessively easy access to disability benefits, a defect widely seen to be in need of correction.

It has been proposed that part of the current defined-benefit system be replaced by a privatized defined-contribution system, partially imitating Chile's. However, the Chilean system involves a great deal of regulation of the privatized fund managers, a level of regulation that may be beyond the regulatory abilities of Poland. In any case, one can ask whether the regulatory abilities might not be better allocated to the banking system. In addition, the Chilean system currently costs about 15 percent of tax revenues per year in administrative costs. This is far higher than the costs of administration of the current system. It is not clear that privatization will bring benefits that exceed this cost. Moreover, one can consider a defined-contribution system that is not privatized. This might have many of the advantages of the proposal with fewer complications. Whether privatized or not, high interest rates in a defined-contribution system represent an increase in government implicit and explicit liabilities relative to those in a continued defined-benefit system. Unless the change in pension system affects other taxes or government spending so as to increase investment, a high interest rate may be harmful for society even though it is good for those who will receive higher benefits from the government budget. The paper presents these issues, along with a considerable number of additional issues in the design of pension systems.

The discussion of retirement and disability pensions is divided into three groups of questions. The first group considers incentive and insurance aspects of pensions and the distribution of pensions while holding constant the aggregate level of expenditures. I will refer to this as the microeconomics of pensions and discuss some of these issues in section 10.1, along with a presentation of recent Polish legislation. The second group of questions relates to the aggregate budget for pension expenditures, and these questions are discussed in section 10.2. The third group of questions has to do with funding, involving the role of funding in the intertemporal pattern of consumption cuts to finance benefits, the effect of funding on other government expenditures, and the effect of funding on the politics of pension determination in the future. These issues are discussed in section 10.3 along with a Polish proposal to create individual funded accounts, a proposal for reform of Social Security in the United States, and the experience with individual accounts in Chile. The possible roles of public pension funds in the privatization of firms and in the development of the capital market, as well as issues of the private annuity and private pension markets, are raised in section 10.4.

10.1 The Microeconomics of Pensions

To start the discussion of the microeconomics of pensions, I give a rough description of the workings of the current Polish pension system, with some

mention of the previous system.² This description is approximate because the system is complex and in the midst of reform, with some grandfather clauses in the new legislation. Moreover, there is the possibility of further change. In December 1990, pensions for those over age eighty were reformed. In November 1991, a new law changed the basic pension calculation for all workers and retirees.

10.1.1 Description

The pension system inherited from the pretransition regime was very generous relative to wages, although the low level of real wages means that many pensioners are living in poverty. The old system relied heavily in its functioning on the role of state enterprises in the economy.³ The pension system is *administered* by ZUS (Zakład Ubezpieczeń Społecznych, the social insurance institution). ZUS maintains no records on active workers. For pension recipients, ZUS does preserve in its records the elements relevant for the determination of benefits in the benefit formula. There are four elements. First is whether the pension is a retirement pension or a disability pension. Second is the final wage level of the benefit recipient. Third is the calculation of the number of years of work. Fourth is the particular industry of the worker if that is relevant for either benefit determination or benefit eligibility. In the new law, the dependence of pension benefits on industry was largely eliminated.

For *financing*, there is a payroll tax levied on the aggregate payrolls of enterprises. At present, the tax rate is 45 percent, with 43 percent going to ZUS and 2 percent for unemployment benefits that are not distributed by ZUS.⁴ In 1990, contributions covered about 88 percent of expenditures. The deficit is financed from general revenues. In 1990, benefits made up 19.6 percent of aggregate disposable income, with 49 percent of the benefits being for retirement and survivor pensions, 23 percent for disability pensions, and the remaining 28 percent for family allowance, maternity, sickness, and work injury benefits. Administrative costs run 4 percent of benefits, half of which went to the post office for hand delivery of benefits (Tymowska and Wisniewski 1991).

The age of *eligibility* for retirement benefits is sixty-five for men and sixty for women. However, workers can become eligible for benefits at a younger age if they have worked for a sufficient number of years in a designated industry. As a result of the various ways of becoming eligible for benefits, the average age of new retirees is fifty-eight for men and fifty-seven for women (Tymowska and Wisniewski 1991). Eligibility for disability benefits is based

2. In this description, I am drawing on Barr (1991) and Henderson (1991) as well as conversations with Polish economists.

3. In addition to the pension system for industrial workers, there is a separate, sizable pension system for the agricultural sector and a system for priests, neither of which I discuss. In June 1991, there were 6,137,000 recipients of labor pensions and 1,765,000 recipients of pensions for farmers (Central Statistical Office, Warsaw, August 1991).

4. There are some deviations from this structure, which I ignore.

on the certification by a doctor of inability to work. The system recognizes three different levels of disability: level 1 is an unambiguous inability to work, level 3 an unclear inability to work, and level 2 in between. In 1990, nearly 40 percent of benefits in force were disability benefits (Topinski and Wisniewski 1991a). It was believed by analysts that the standards for disability were not adequately policed. Benefit calculations are different for the different levels of disability. Benefit eligibility also depends on the cessation of full-time work.⁵ Under the new law, no benefits are paid to those eligible for benefits but still earning more than 120 percent of the national average wage; benefits are reduced by 24 percent of the national average wage for those earning between 60 and 120 percent of the national average wage. Survivor benefits are paid to children, the surviving spouse, and, sometimes, surviving parents. There is a family supplement of 10 percent of the national average wage. Benefits are fully subject to income tax, having been increased just enough to offset the basic income tax rate.

Before the start of the transition, the *benefit formula* was in nominal terms; the very high levels of inflation that occurred in the 1980s resulted in periodic adjustments of benefits for those already retired. These adjustments often involved raising the minimum benefit, resulting in cohorts of workers receiving the same benefit level. The current reform is designed to restructure the pension system on the basis of previous earnings records rather than simply adjusting for the most recent inflation without adjusting for the somewhat arbitrary corrections for earlier inflation. Thus, benefits are based on the earnings records, with *indexing of records* for the determination of benefits for those newly retired and *indexing of benefits* after retirement. In both cases, the index used is the national average wage. Benefits in force are *adjusted quarterly*, if the adjustment is at least 5 percent. There is also a *minimum pension* of 35 percent of the national average wage.

The formula in the new law is that the worker receives 24 percent of the national average wage plus 1.3 percent per year "worked" of the individual's "final" wage adjusted for the increase of the national average wage since the year that the individual's final wage was earned.⁶ In formula terms, the pension can be written as

$$e_{it} = aW_t + bn_i r_i W_r$$

where e_{it} is benefits for person i in year t , W_t is national average wages in year t , n_i is "adjusted" years of work for person i , r_i is the average of w_{is}/W_s over the relevant averaging period, w_{is} is wages that were earned by person i in year s , and a and b are constants.

5. However, under previous law, working 90 percent of full-time did not bar individuals from receiving either disability or retirement benefits. Such years of additional work after retirement resulted in a new (higher) benefit calculation.

6. This law has been found unconstitutional. Nevertheless, it remains useful to see the shape of legislation that can be passed by Parliament.

In the debate over pension reform, the Sejm first passed a law with a equal to 25 percent rather than 24 percent and a b of 1.5 percent rather than 1.3 percent. The calculation of "adjusted" years worked includes adjustments for education, military service, and child care. For a noncontributory year, the benefit calculation uses the factor 0.7 percent (0.9 percent in the first plan) rather than 1.3 percent. In terms of the formula as written above, adjusted years of work include 7/13 times the number of allowed noncontributory years. Thus, a retiree with twenty-four working years and six allowed noncontributory years would have 27.2 adjusted years, 90.7 percent of the adjusted years of someone who had worked thirty years. This is fairly close to a calculation based simply on age. The years used for calculating the individual's final wage are initially the best consecutive three calendar years out of the last twelve. The number of years used in calculating the individual average wage increases by one per year until it reaches ten (out of the last twenty).⁷ The length of the averaging period depends on the year of retirement, not the year of eligibility (or date of birth).

The formula for disabled retirees is basically the same, with an inclusion in the formula of years until "retirement" (twenty-five years of service or age sixty) treated the same as the noncontributory years in the retirement benefit formula.⁸

There is also a *cap on benefits* that comes from a ceiling on the final wage usable in the benefit formula, with the cap equal to 2.5 times the national average wage (three in the first plan).

10.1.2 Discussion

The image of the system held by analysts with whom I talked was that replacement rates (the ratios of benefits to wages) were very high by Western standards, but, with very low wages, the living standards of many of the retirees were very low.⁹ This contributed to the perceived need for a highly redistributive formula.

It was widely recognized among the pension authorities with whom I talked that a final wage formula based on a short averaging period is not viable in the kind of private economy that Poland is evolving into. There are three obvious problems for final wage systems that will lead some of the people to have very high final wages and so very high pension benefits. One element is direct fraud and misreporting of final wages. This is relatively easy in a system where ZUS maintains no records and one goes to one's employer for documentation of final earnings (taxes paid by enterprises have been paid on the total wage bill without any reporting separately of wages by individuals). The second element

7. Under previous law, benefits were based on earnings in the last twelve months of work.

8. While the special supplementary pension for particular industries was eliminated, miners receive more than one year of service for benefit calculations per year of service under ground.

9. Average replacement rates were reported to be 80 percent in Poland, in contrast to 41 percent in the United States (Hambor 1992). In 1991, the average benefit (disability and retirement) was Zł 1,050,000 (\$95.00) per month, equal to 62 percent of the national average wage (Atkins 1991).

is the rise of implicit contracts that will result in workers getting very high final wages presumably taken implicitly out of earlier earnings or the earnings of younger workers. This will again make the pension system very expensive and uneven across workers depending on the extent of their access to such an implicit contract. The third element is the possibility of additional work, for example, overtime, to boost the earnings of workers in their last year or last three years.

In thinking about the magnitude of these problems, it is useful to recognize that, with an annuity based on final earnings, the return to shifting earnings is very large. One would even find it profitable to report very high wages in circumstances where high wages were subject to both income tax and payroll tax because the return would be so substantial. As a rough calculation, with a three-year averaging period, each additional zloty of earnings yields $bn/3$ additional zlotys in benefits in the first year, with the amount indexed to national average wages for the rest of the retiree's life (plus the possibility of a survivor's benefit). With a b of 1.3 percent and an n_i of 30 (roughly the average), the return is a wage-indexed 13 percent per year for the rest of life.

Moreover, the effect of pensions based on final average wages on the use of overtime by older workers is clearly illustrated by experiences in the West. For example, the MBTA (bus and subway system) in Boston has such a pension system, one based on a four-year average. Also in the union contract is the right of senior workers to claim available overtime if they want it. As a result, workers in their sixties at the MBTA work very long hours and get large pensions. This came to the attention of the public in 1978, when a Green Line train plowed into another train at the Arlington Street station, injuring twenty-one persons. The driver had worked twenty-five straight hours, had six hours off, and had gone straight back to work. It was reported that he averaged seventy-five hours a week during 1977 (*Boston Globe*, 19 January, 6 and 10 May 1978).

The use of a formula combining years of work with a relatively short averaging period creates an unattractive pattern of work incentives across workers of different ages. For workers who are merely contributing a year toward the benefit calculation, the tax is a deadweight burden on their labor supply without any offsetting benefit for marginal hours worked. On the other hand, for workers in a year that will go into the benefit calculation, the incentive for additional labor supply from the benefit calculation can easily exceed the cost from taxes, resulting in another distortion. That is, there is a double distortion involved in the use of a short averaging period. For years that will not enter the averaging period, the payroll tax is a pure tax on the margin, generating the usual deadweight burden. For years that do count for averaging purposes, the value of additional benefits less taxes will be positive, again generating a deadweight burden. Thus, if one is to maintain a system with a defined-benefit calculation of pension levels, the longer the averaging period and the less importance given

to late years, the fewer the distortions that will be associated with labor supply.¹⁰

In addition to the effect on incentives of the use of a short earnings period in determining the average wage, this use also has implications for the fairness of the system and its success in fulfilling its role of giving a sensible pattern of replacement rates. In a private enterprise economy, individual earnings are highly stochastic.¹¹ The fraction of the population with smoothly growing annual earnings is not large.¹² Thus, the use of a short earnings period results in a highly random distribution of pensions. This is not fair under many conceptions of fairness. In addition, if replacement rates are meant to relate to the standard of living to which individuals became accustomed, the use of a short averaging period defeats this purpose since a short period of earnings is not a good proxy for lifetime income and therefore the standard of living.

ZUS has discussed the need to develop a computerized system of tracking individual earnings but does not seem to feel that such a system is urgently needed. This was in contrast with the tax authorities, who are hard at work on a computerized system felt to be necessary for collecting taxes under the new income tax scheme. Thus, it would make sense to have ZUS piggyback on the large investment that the tax authorities are making, yielding an earlier tracking of earnings records than would occur with a delayed start. Taking a subtotal of earnings subject to ZUS taxation would not be a problem for the tax authority's computer system being installed. Moreover, direct linking of tax and ZUS records would affect the incentive to underreport income for tax purposes. With taxable income eventually becoming the basis for pension receipt, there is less incentive for income-tax evasion. Again, there is an interaction between incentives for tax evasion and the length of the averaging period. Even with a ten-year averaging period, the incentive for tax evasion among younger workers remains high since there is no benefit payoff for any reporting above the minimum necessary for receiving credit for a year of service. This combining of tax and insurance contribution records also represents a structure for beginning to inform workers about the value of benefits to be received as well as taxes paid and therefore, it is to be hoped, for altering the behavioral response to ZUS taxes and with it deadweight burdens.

The current reform is a change in benefit calculation, staying within the structure of the defined-benefit formula used previously. The legislated increase in the averaging period for determining final wages represents a steady cut in benefits since a high average is used for the calculation. That is, selecting the three best years of the last twelve is very likely to yield a higher average wage than selecting the best four of the last thirteen. In order to determine how

10. Of course, in the short run with very high anticipated unemployment during the transition, this issue needs to be framed differently than in the standard Walrasian model.

11. I do not know how much earnings variation there was in Poland before transition.

12. For the United States, see Consultant Panel (1976).

much of a benefit cut is implied, one would need a stochastic model of the age structure of earnings.¹³

As employment records grow, it will become appropriate to rethink the benefit formula, both the values of the constants a and b and the structure of the formula. Now, the formula includes a flat benefit term and a term that is a product of years worked and a final average wage, calculated over a short period. The growth of the length of the averaging period raises the question of the appropriateness of changing the relative sizes of the flat benefit term and the earnings-related benefit term in the formula. Moreover, once there are long earnings histories, it might be appropriate to change from a formula based on such a product to one based simply on average earnings, with years out of the labor force represented by zeros that go into the averaging calculation. Partial weight for years of child bearing, education, or military service could be included in such a formula, as at present, by imputing a wage level for such years for benefit calculation purposes. This could be done on a flat basis or proportionally to individual earnings in other years. That is, one can ask how the contribution to pension benefit of a year of military service should vary with the level of nonmilitary earnings.

With increased years available in earnings records, there is less randomness in the relation between benefits and lifetime earnings. This represents one reason for a phased transition in the benefit formula with more reliance on individual earnings and less on average earnings. Moreover, it is appropriate to consider a phased transition to a different degree of progressivity as the economy becomes richer. It might be useful to consider explicitly a time-varying benefit formula such that the constants a and b in the formula change by a rule designed to preserve the cost of pensions for a given cohort (based on age, not retirement date). One would also want to think about adjusting the minimum pension as part of the same reconsideration.¹⁴

The steady increase in the length of earnings records raises the further question of whether lengthening the averaging period and otherwise preserving the structure of the benefit formula is the best mature structure. In particular, once one had a long earnings record for individuals, would one still want the same level of importance given to years of service? Consider two individuals with the same earnings level for the averaging period, which also equals the national average wage. Then each of them will receive $.24 + .013n_i$ times the average wage. Differences in earnings outside the averaging period do not affect benefits, although the number of years with earnings (or counting toward earnings)

13. Such a model was estimated for the United States precisely to calculate the implications of a lengthening averaging period (see Balcer and Diamond 1977; and Consultant Panel 1976).

14. In the United States, there is a legislated phase-in of a delay in the "normal retirement age." This is a legislated phase-in of decreased benefits; the age of eligibility for benefits was not changed.

does matter. There does not seem to be a clear case for this way of treating different years.¹⁵

In order to consider the question of redesigning the formula, it might be useful to rewrite it in a mathematically equivalent form, but one that might be more helpful. Consider listing the earnings of an individual for all the years of his life up to retirement age. There will be many zeros for years for which there is no credit. There will be many years with actual wages. There will be years that count as noncontributory years. The first step in the procedure is to select the years used to calculate the final wage. For these years, the actual wage is left for calculation purposes. For other years with positive earnings (that count toward years of service), the actual wage is replaced by the final wage. For noncontributory years of service, the wage attributed is seven-thirteenthths of the final wage. The remaining years are left as zeros. Then an average is taken of all these years. This method gives the same calculation as the present one (up to a linear transformation). Thus, one is imputing to a year worked but not counted in the average for final wages a wage equal to the final wage. Thus, one is imputing to a noncontributory year a wage equal to 7/13 times the final wage. Taking this approach toward actual benefit calculations represents another way of thinking about both the transition and the final structure. One can then use a system where every year will count toward benefits, but not necessarily by taking a straight average. Having every year count should help ease the deadweight burdens from taxes used to finance the formula as well as helping with tax evasion and providing increased fairness.

Under the income tax law that came into effect 1 January 1992, pension benefits are fully taxable under the income tax. Given the lack of a tight historical link between benefits and past earnings, this seems an appropriate step in having a suitable distribution of after-tax pension incomes. As the system evolves, and as private pensions grow up, it may become necessary to rethink the tax treatment of pensions to reflect fairness issues on a life-cycle basis as well as on a short-run-needs basis. Fairness issues depend on the tax treatment of payroll taxes for pensions, on tax treatment of both contributions for and benefits from private pensions, and on the tax treatment of the return to savings generally.

The earnings test described above has cliffs rather than a smooth decrease in benefits with respect to earnings. It also makes no exception for advanced ages. This limits the incentives for work beyond the retirement eligibility age that comes from anticipation of future benefits. In the United States, it is also true that Social Security benefits are (partially) subject to income taxation, and there is an earnings test (for beneficiaries under seventy). The combination of tax and earnings test further concentrates net benefits not only among

15. The fact that private firms commonly use a final average wage and years of service formula does not imply that it is appropriate for a social insurance benefit formula.

those with low incomes but also among those with low earnings (beyond the progressivity present in the benefit formula). The underlying logic behind having two separate bases for implicit and explicit taxation of benefits is that benefits are meant to replace lost earnings and to be concentrated among the currently poor. Insofar as we think of the pension system as an insurance system as well as a forced savings system, this approach provides insurance against a short working life. With the rise of the income tax and the fact that benefits are taxable under the income tax, there is a mechanism in place for having a smoothly varying earnings test.

Consideration of the link between continued work and pension benefits also raises the question of the role of actuarial adjustments of benefits, that is, the variation of the level of benefits with the age at which they are first claimed. The current system has credits for years of service, and this implies that an extra year of work increases benefits. With a final benefit formula based on a short period of earnings, there is also the possibility of a sizable increase in the final wage for benefit calculation purposes as a result of an additional year of earnings. However, the increase in the averaging period based on the date of claiming benefits offsets this increase for some workers. Thus, there are two routes to increased benefits as a result of continued work, through years of service and through the calculation of the final average. Neither route involves an adjustment of the flat benefit part of the formula. The question here is whether delayed benefits should be partially compensated by increased benefits in a different way. With the lengthening averaging period, the incentive for continued work will decrease over time. With a benefit formula depending on fuller earnings histories, one can consider the incentives to continued work (and earlier work) implicit in actuarial adjustment as well as the question of the timing of paying benefits that have the same expected present discounted value. Insofar as one is trying to insure length of working life, optimal insurance principles call for a less than full actuarial adjustment for delayed retirement.

The current system has special rules for particular industries, although far less than previously. In Western economies, it is common for private pensions to differ in anticipated retirement ages even when the social insurance program does not distinguish. Given the presence of labor mobility between industries and occupations, it seems appropriate to relegate this differential to private pensions. In addition, with the current system financed by uniform taxes, industry-varying benefits imply a redistribution toward some industries that seems unlikely to have good efficiency effects.

A rethinking of disability standards is obviously an important part of a reform of the overall pensions system. The force of the importance of such a rethinking can be seen from the fact that, in 1990, nearly 40 percent of beneficiaries were receiving disability pensions. For the short run, one needs to recognize the role of disability benefits in lieu of long-term unemployment benefits. It would not be surprising if there were a concentration among older

workers of the long-term unemployment caused by the transition to market capitalism.¹⁶

10.2 Aggregate Budget for Pensions

There are two dimensions to a consideration of the determination of the aggregate level of benefits. One is the familiar normative economic calculation trying to contrast the shadow value of resources in the hands of the government with the importance of additional benefits in the hands of retirees. This dimension needs to be considered both in the short run, where there is a serious overall budget problem for Poland, and in the longer term, where demographic developments will increase the burden of a fully wage-indexed social insurance system.¹⁷ The second dimension is the political economy of budget determination, as it is affected by the design of institutions.

While the Polish replacement rate is extremely high by Western standards, the standard of living is extremely low, with the result that many retirees are living in poverty. This combination of factors makes one think that the level of progressivity in the system could properly change significantly over time as the economy grows; preservation of a high minimum pension to avoid poverty could go with a pattern of change in the benefit formula that will result in a steady shift over time in the degree of progressivity. Real growth relative to the minimum pension would represent some decrease in pension costs relative to the economy. Similarly, designing a system with progressivity in replacement rates that is not fully indexed to wages could help the long-run fiscal problem if there is real economic growth. Such a shift will not happen automatically, however, if the system is indexed on the wage, as indeed it should be in the short run, given the unpredictability of the behavior of real wages in the near term during the transition. This again raises the question of alternative structures for the benefit formula, both for the short run and as a planned transition.

It is also important to recognize the role of indexing in protecting pensions against inflation. During the 1980s, difficulties in the overall Polish budget contributed to the rise of inflation. With unindexed pensions that were adjusted incompletely and periodically, a considerable amount of the redistribution from inflation fell on pensioners. With pensions now indexed, the scope for such transfers is considerably reduced, although lags in the recalculation of pensions would imply redistribution from inflation, particularly if inflation rates are very high. In addition to considering the link from the budget to pen-

16. More generally, one needs to recognize that disability evaluation is subject to both type-I and type-II errors. For evidence from the United States of the significant fraction of workers denied disability benefits who never work again, see Bound (1989). For a discussion of the principles behind selecting disability and retirement benefit levels in recognition of the errors in disability eligibility determination, see Diamond and Sheshinski (1992).

17. The ratio of workers to retirees changes from 2.20 to 1 in 1990 to 1.76 to 1 in 2020 (Topinski and Wisniewski 1991a).

sions through inflation, it is natural to ask about possible planned real changes as the budgetary picture changes: To what extent does one want to change the earnings test as part of changing progressivity? Is there a case for changing benefit determination for those already retired to price rather than wage indexing at some point in the future? Should there be phased benefit cuts in advance of the demographic changes coming early next century?

In addition to considering normative issues in the determination of the level of aggregate expenditure on benefits, it is important to consider the interaction between the organization of the pension system and the politics of pension determination, beyond the role of indexing in the effect of inflation. The present payroll tax is levied only on enterprises and is not normally seen by workers. Thus, it is natural to consider changing the system along the lines of the change that was done to incorporate the income tax, making workers aware of the presence of the income tax. In the case of the income tax, on 1 January 1992 the wages of all workers were raised to offset the fact that they are now subject to income tax. The plan was to leave workers approximately in the same position as before.¹⁸ A similar move could be made to shift the basis of ZUS taxation from being fully on the employer to being partially on the employee, with half and half a common, but not universal, Western number (U.S. Department of Health and Human Services). This would have no short-run economic effects but would matter in the longer run if it affected the perceptions of workers and therefore the political pressures in the pension determination process. I think that there is every reason to think that there would be such an effect and that such a change would have a moderating effect on the determination of expenditures for the pension system.

10.3 Funding

The Polish pension system does not have its own fund. In the past, the payroll tax exceeded the expenditures of ZUS, with the surplus going into the general budget. At present, the payroll tax is inadequate to cover the expenditures of ZUS, and the deficit is coming out of general revenues. There has been serious consideration in Poland of partially imitating Chile and creating individually funded pension accounts managed by private firms (see Topinski and Wisniewski 1991a, 1991b). Unlike Chile, where the entire social security system was replaced by this new system, the proposal for Poland is to preserve the current benefit formula up to 120 percent of the national average wage and to replace the benefit levels between there and the cutoff of 2.5 times national average earnings by a funded system.

One can envision a strictly pay-as-you-go pension system, where either ben-

18. Since the payroll tax rate was not changed at the same time as wages were increased, this represents a sizable increase in the tax being paid by enterprises.

efits or taxes or some combination is adjusted on a year-by-year basis so that the earmarked tax revenues exactly equal benefit payments (plus administrative costs). I am not aware of any use of such a system. Thus, while it is common to refer to pension systems without substantial funds as *pay as you go*, they are not in a strict sense pay-as-you-go systems. Instead, they are systems with defined-benefit rules, earmarked revenues, and reliance on a political mechanism to deal with the implications of differences in the annual rates of flows of benefits and taxes. The crisis in social security that occurs from time to time in different countries is generally a political crisis, not an economic one. It comes from this structure and the political difficulty of either raising taxes or cutting benefits. Such crises would not happen if there were a truly pay-as-you-go system or an adequately funded and planned system.¹⁹ From the perspective of avoiding crises and of figuring out how the government will respond to the ones that do occur, it is natural to ask about the implications of having an explicit fund that grows at a rate equal to the difference between earmarked taxes and expenditures plus the value of some interest rate times the level of the fund. Such a fund will not start with a zero balance if there is a plan for a transition to a new benefit formula that starts by endowing either individual accounts or an aggregate fund. Such an endowment can come either from giving the fund government debt (perhaps debt specially designed for this purpose) or from giving the fund claims on assets being privatized.

There are many dimensions to the implications both of having a fund and of having different ways of relating benefits and taxes to the presence of a fund (either *de jure* or *de facto*). In order to separate out the different factors, I proceed in the following sequence of steps. In section 10.3.1, I briefly describe a concrete proposal that has been made for Poland to make clear the relevance of the materials that follow. In section 10.3.2, I focus on the microeconomic implications of the use of individual accounts for the determination of benefits. For this purpose, I consider how a mature system with such a funded basis might work. For purposes of concreteness, I consider a proposal for the United States put forward by Boskin, Kotlikoff, and Shoven (1988). In section 10.3.3, I turn to describing the system in Chile. I ask about the role of a fund in affecting the level of other government expenditures and the response of aggregate pension expenditures to aggregate shocks. A further question that arises in this context is the extent to which having individual accounts creates a difference from just having an aggregate fund. Because part of the logic behind proposals for creation of a fund is to decrease the role of the government, it is appropriate to consider issues of alternative methods of portfolio management and of organization of annuities for the retired. Considering Chile also raises issues of

19. Each year in the United States, costs and revenues of the retirement system are forecast for the following seventy-five years. Of course, such planning alone has not been sufficient to avoid crises.

alternative ways of dealing with the transition from the previous system to a newly designed system. Such a transition could be purely for new entrants into the labor market. However, proposals generally assume a much more rapid development of the new system by incorporating in it all individuals below some age, generally somewhere between forty and fifty. This raises the question of the design of the transition, which can naturally be either backward looking or forward looking. In section 10.3.4, I review transition considerations in Chile and in the Polish proposal, recognizing in particular the complexities in the Polish context that come from the absence of individual earnings records.

10.3.1 The Polish Proposal

The Polish reform passed in November has a cap on benefits from the cap on final average wages set at 2.5 times the national average wage. It does not contain any comparable cap on wages subject to taxation, although the introduction of such a cap would not represent any significant change in the design of this system, merely a decrease in revenue and progressivity. The reform that was proposed by Topinski and Wisniewski (1991a, 1991b) would replace part of the earnings levels subject to the current benefit formula by an alternatively funded system. The proposal is to continue to use the existing defined-benefit formula up to a wage level of 1.2 times the national average wage.²⁰ This would include the full earnings of approximately 75 percent of the work force. Similarly, the revenue from the payroll tax on earnings up to this level would go to ZUS. For earnings above 1.2 times the national average wage (perhaps up to some alternative cap), the existing benefit formula would not apply; additional benefits would instead be based on the outcomes associated with individual funded accounts. Individuals over age fifty-five would remain subject to the existing system. Individuals under fifty-five would get an initial fund level based on their age and earnings in the year of transition. The calculation for the determination of the individual fund is forward looking, based on putting the individual at the same benefit level as with the current formula if the forecasted wage growth and interest rate patterns hold and the actuarial factors come out as projected. Actual fund accumulation would depend on actual earning levels above 1.2 times the national average wage and realized rates of return on the investments selected for the individual accounts. It is proposed to follow the Chilean pattern and have some number of regulated private portfolio managers to handle fund accumulation and investment. Individual accounts would be insured by the government. Some of the income would be used to purchase life and disability insurance policies for the workers; the rest would be accumulated for retirement. It is proposed that conversion of the fund to an annuity or individual phased withdrawal would happen at age sixty-five without any

20. It is proposed to lower this cutoff slowly over time as the economy grows richer.

earnings test.²¹ Moreover, borrowing against the account would be allowed for approved purposes.²²

Thinking about such a proposal, one needs to recognize that this is a compulsory savings program, with limited insurance elements apart from the conversion to an annuity, and with the capital accumulation forced to flow through the designated intermediaries. With individuals having forced savings rather than lower taxes, some will save more than they would have otherwise, which can be evaluated in terms of the usual paternalism that underlies much of social insurance. From the perspective of an individual who would have saved otherwise, by and large the payroll tax will come out of the savings that would have happened anyway, so we are getting a redistribution of the flow of capital accumulation through these intermediaries rather than through whatever alternative allocation mechanism might have been employed. This system presumes that the level of redistribution arising from the current benefit formula in the basic part of the pension system is sufficient and envisions no further redistribution through the mechanism of the individual accounts. Of course, there would also be a chain of derivative effects on wages, employment, and interest rates that I will not discuss. This proposal differs in many ways from the continuation of the current structure. My purpose in this presentation is to isolate some of the differences by considering comparisons having only some of them.

10.3.2 The U.S. Proposal

In a thumbnail description, in the United States at present, there is a payroll tax on individual earnings up to a maximum level that covers full earnings for over 90 percent of the labor force. The revenue finances disability insurance, survivor insurance for both children and spouses, and retirement benefits. The benefit system is based on families rather than individuals, but without record sharing. That is, there are explicit spouse benefits, with individuals receiving the higher of the benefits that they would receive as a spouse or as an individual. Receipt of retirement benefits is based on a combination of age and earnings. Between sixty-two and seventy, one can receive benefits if one's earnings are sufficiently low. Beyond seventy, benefits are paid independently of earnings. Benefits are partially taxable. The level of initial benefits depends on the age at which they are first claimed and the earnings history. A piecewise linear formula relates benefits to the average of wage-indexed earnings in the thirty-five best earnings years, with declining marginal rates for progressivity. Notice

21. The annuity would include survivor benefits. This approach, based on marital status at the time of retirement, is different in its treatment of divorce and remarriage from the American proposal described below, which is based on marital status at the time of taxation. After a divorce, there is no good reason to have a benefit dependent on the continued life of a former spouse, as in the U.S. proposal. On the other hand, the Polish proposal does little to protect divorced spouses.

22. Chilean law attempts to prevent borrowing against the individual account. Allowing borrowing for some purposes results in a more open door for proposals to allow borrowing for other purposes, threatening to erode the paternalistic requirement of adequate savings for retirement.

in this structure that paying benefits independently of age at some point is an important part of the incentive for individuals who want to go on working until an advanced age.

The proposal for the United States was designed to stay rather close to the existing U.S. structure. As such, the system was envisioned as a wholly government-run and -organized system, with investment strictly in Treasury debt. In contrast with the defined-benefit approach of current law, the personal security account plan of Boskin, Kotlikoff, and Shoven (1988) is a defined-contribution approach. Moreover, the approach treats the family at the time of taxation as the basis for future benefit receipt from that year's taxes. Thus, the first step is to determine the taxes to be paid on the basis of aggregate family earnings. These taxes are then allocated separately and equally to husband and wife. The second step is to redistribute across individuals so that taxes that are the basis for future benefits are not the same as taxes paid. Low earners are credited with more than they paid, high earners with less.²³ Boskin, Kotlikoff, and Shoven consider no explicit redistribution between single individuals and married couples, although such a redistribution could also be done at this step. The credits available for an individual are then allocated to several uses. One is the purchase of five-year term disability insurance. Another is the purchase of survivor insurance for children. Another is the purchase of survivor insurance for the spouse. The rest goes for the purchase of a real annuity that will begin payment at age sixty-two.

In order to calculate the amount of this year's contribution to the future real retirement annuity, one needs a life table and a real interest rate (or a sequence of interest rates). The life table is presumably the current life table (or possibly some projected life table based on trends in mortality improvement). The interest rate could be simply a market rate taken from the Treasury yield curve. Such an approach would require adjustment of taxes over time to balance the budget as taxes, interest rates, and demography develop. That is, there is an aggregate risk associated with interest rates and demography. This risk must be borne somewhere in the economy.

This risk could be viewed as a problem for the income tax, with the risk shifted from the social insurance fund to the general fund. Alternatively, the social insurance system could be viewed as self-contained. Then the payroll tax would need to respond to these changes. Such induced tax changes would, in turn, result in additional benefit credits and thus further tax changes. To avoid having the system driven in this way, the authors propose that the interest rate be chosen to reflect the projected position of the social insurance fund, with taxes and benefits projected to balance. With a sizable actual fund to absorb short-run fluctuations and to smooth projected long-term changes, smooth adjustment of the interest rate should be possible to keep the social insurance

23. Thus, redistribution is done repeatedly on an annual basis, rather than once on a lifetime basis, as with a redistributive formula based on lifetime accumulation.

fund in rough balance at the level (of taxes or benefits) desired. Once an annuity has been allocated to an individual, that amount is not changed in response to future developments. Rather, the forecast of future conditions made in some year is the only basis for future benefits based on that year's earnings. That is, the social risks that arise later are spread among future benefit promises and future taxes, not past benefit promises.

Some of the differences between this proposal and current U.S. practice are compatible with the current defined-benefit approach and are not part of my discussion. For example, equal sharing between husband and wife of their total annual earnings is something that has been repeatedly proposed for and is compatible with the existing system (see, e.g., Congressional Budget Office 1986).²⁴ The two elements that I consider are the role of an earnings test and the determination of benefits for the newly retired.

Earnings Test and Actuarial Adjustment

Under the current U.S. system, benefits are reduced by one-third (for sixty-five to seventy-year-olds) or half (for sixty-two to sixty-five-year-olds) of the excess of earnings above an allowable amount.²⁵ Thus, the system works to give larger benefits to people who have shorter careers. This is a separate mechanism from relating the size of initial benefits to the date at which they are first claimed. Both these mechanisms are designed to provide insurance on the length of working life, an otherwise uninsurable event. Moreover, to the extent that length of working life for a given individual is independent of length of actual life, reflecting risks associated with job availability rather than health, the risk has a twofold nature: a shorter working life represents both a shorter time for the accumulation of income for retirement and a longer retirement period that needs to be financed. Thus, this seems a dimension of risk well worth consideration in the design of a social insurance program. Of course, any attempt to insure length of working life by observing actual period of earnings involves a deadweight burden through the disincentive to additional work. Optimal insurance/tax considerations suggest there should be some positive implicit tax on further work. Given the presence of an income tax already, this theorem, which is based on no taxation in the absence of an implicit tax from the insurance program, is not directly applicable but needs to be confirmed in the context of the actual income-tax level.

It is useful to consider the question of the relation between benefit level and age at which benefits are first claimed in a series of steps. Assume that one has an annuity that begins at age sixty-five. One could then consider allowing

24. Further differences relating to family structure are also ignored. For example, the current U.S. system provides survivor benefits for children out of the general revenue pool. The Boskin, Kotlikoff, and Shoven proposal would deduct the expected cost of survivor benefits for children from the retirement benefits of their parents.

25. \$6,840 for sixty-two- to sixty-five-year-olds and \$9,360 for sixty-five- to seventy-year-olds in 1990.

individuals to select a different age at which to start the annuity. Individuals feeling a liquidity pinch at an earlier age could receive an actuarially reduced pension at an earlier age. (Of course the paternalism that underlies a forced savings program should limit the minimum age at which such a claim can be made.) Alternatively, individuals who are not feeling a pinch at age sixty-five might prefer to delay receipt of this pension. Since the private annuity market is very imperfect (high markups and limited indexing), an individual might prefer having a larger annuity starting later rather than starting an annuity now, which includes the option of taking the payments and using them to buy further annuities. The obvious difficulty with simply allowing such a choice is the adverse selection problem associated with life expectancy: those with longer life expectancy would be more likely to delay the start of benefits in return for increased benefits once started. Considering both earlier and later starting dates for benefits, one can ask about limiting choice based on an earnings test. That is, one might only allow an early start of benefits for retired workers, and one might require the start of benefits once retired beyond some age. Thus, allowing the claiming of benefits by workers age sixty-two to seventy can be viewed in one of two different lights. First, it is a form of paternalism requiring workers to wait to receive higher benefits. Second, it relates to adverse selection that the trade-off between earlier benefits and higher benefits will be selected by workers in light of their life expectancies. Without the use of the earnings test, choice of date to start benefits will depend on the shadow interest rates for individual calculations, which are no doubt related to earnings flows as well as wealth levels. The presence of an earnings test therefore seems to be a useful supplement to the incentives and the deviation of the change in benefits from a purely actuarial pattern, even if the actuarial adjustment is deliberately different from actuarially fair.

Defined-Benefit and Defined-Contribution Formulas

In this context of a government-designed and -run social insurance system, the differences between defined-benefit and defined-contribution approaches lie in the differences generated by the types of formulas likely to be used and the differences in the ways the two systems are likely to be adapted to changing circumstances. In terms of typical formulas, there are four differences that are worth noting. A defined-benefit formula is normally related to past earnings, while a defined-contribution formula is normally related to past taxes. The conventional defined-benefit formula begins by calculating an average lifetime wage and thus aggregates nominal wages in different years by a wage index. The defined-contribution formula aggregates by means of an interest rate. The defined-contribution formula aggregates all years with positive taxes, while a standard average earnings approach calculates an average over some number of years (thirty-five in the United States). The approach to redistribution in a defined-benefit approach is by progressivity in the benefit formula, usually designed from consideration of the wage-related replacement rate; the defined-

contribution approach could redistribute on the basis of the size of accumulated funds, but seems less likely, politically, to do so. In Chile, redistribution is in the form of a guaranteed minimum pension. However, the minimum pension is financed from general revenue, not social security revenue. With only part of the labor force included in the social security system, it seems appropriate to have a broader tax base for redistribution purposes.

While I have focused on the differences in the two approaches, it is perhaps useful to notice that in a mature system, in a smooth, stable economy, the differences may be small. In particular, if tax rates do not change, there is no difference between relying on wages subject to tax and relying on taxes paid. It is probably not a bad approximation of many mature economies that the wage growth rate and the nominal interest rate are roughly equal on average. In a transition economy, however, one would expect large differences between the interest rate and the wage growth rate. There are probably small differences across people in the implications of extending the averaging period a few more years. Thus, the major difference is accommodation to shocks and transitions. There is also a difference in the likely response to foreseen changes, such as the demographic swing coming early next century. I will return to this issue in the next section, where the role of funding is discussed in relation to shocks and transitions.

In terms of promised benefits, both approaches can be seen as specific simplified approximations to a more general benefit determination function. That is, consider determining the benefits for a new retiree as a function of the entire history of both the individual and the economy up to that date; the benefit depends on the full history of earnings subject to tax, the history of tax rates, the history of interest rates, and any other variables that one might like to add to an expanded conception of the design of an insurance mechanism responsive to both individual risks and social risks. It is not clear what elements would go into deciding which of the two common approaches is a better approximation of an optimal design. Of course such a question cannot be answered without a prior determination of what an optimal design might look like, a question that has not been addressed in the literature as far as I know. In particular, the literature typically ignores issues involving the general health of the economy. In practice, the state of the economy often results in ad hoc adjustments of general benefit levels. Of course this opens up the level of descriptive complexity (and, often, mismanagement) that comes with repeated ad hoc adjustments of benefit levels.

10.3.3 Chile

In 1981, Chile introduced a new, fully funded social security system with individual accounts.²⁶ Retirees and older workers were kept on the old system;

26. I have drawn on several descriptions of social security in Chile, including Cheyre V. (1991), Iglesias and Acuna (1991), Mesa-Lago (1989), and Vittas and Iglesias (1992).

younger workers switching to the new system had special government bonds allocated to them and have their payroll taxes go into their accounts. This funding pattern meant an enormous expense for the government, financed out of general revenues. The deficit in the pension system increased from 2.2 percent of GDP in 1980 to 6.6 percent (including borrowing from the new pension funds) in 1986 (Mesa-Lago 1991). The new system is a mandatory defined-contribution system (with contributions only from workers) for old age, survivor, and disability benefits (although a guaranteed minimum benefit was retained). These funds are managed by private firms, called AFPs (Administradoras de Fondos de Pensiones). At present, there are thirteen, with the four largest having 75 percent of the insured. The AFPs are heavily regulated and meant to compete. The set of allowable investments and the portfolio fractions allowed in riskier investments have grown slowly over time. The government guarantees a minimal return of the lesser of (1) the average return on all funds less 2 percent and (2) half the average return on all funds.²⁷ Workers are free to switch their accumulated funds between AFPs every three months. On retirement, the accumulated funds are used to purchase indexed annuities, or they can be taken in a phased withdrawal (or a combination of the two).

The experience of these funds to date has been very favorable for workers. The annual average real yield for all invested assets for the period 1981–90 was 13 percent (Vittas and Iglesias 1992). The return for 1991 is about 30 percent. While it would be tempting to attribute these high rates of return to the power of competitive markets, I think that this attribution would be misplaced. The funds have been heavily regulated, no doubt reflecting the Chilean experience with the collapse of their banking system, which was bailed out by the government even though the funds were not guaranteed. Overwhelmingly, the funds have been in government bonds and in bank liabilities, both deposits and mortgage bonds. Investment in shares did not exceed 1 percent of the portfolio until 1984 and reached 8.1 percent in 1988 (Mesa-Lago 1991) and 20 percent in 1991. There is a committee to select the set of stocks in which AFPs can invest. Thus, the high returns have reflected high real interest rates generally rather than excellent investment decisions. It is important to remember that, when the portfolio is in government debt, a high rate of return is an increase in government obligations. That is, if the rate of return is higher than the rate that would have resulted in approximately the same aggregate pensions as under the previous defined-benefit system, then there is an increase in government obligations beyond what would have been present under the previous system. Only when the portfolio is invested (directly or indirectly) in real assets does a higher rate of return represent a greater sum of resources for the economy.

27. Each fund has a reserve fund, and the government has a fluctuations reserve fund to finance this guarantee. So far, one pension fund has been liquidated for failing to maintain the minimum return.

The pattern of portfolio holdings also makes it clear that having individual accounts does not necessarily translate into a more positive government budget balance. In order to know what has happened to government budget balance, one needs to infer the implications of individual accounts for other tax increases or expenditure cuts to finance the benefits that are no longer directly financed by the taxes now flowing into individual accounts. The experience probably does show how defined-contribution pensions are likely to show a different growth over time than defined-benefit pensions, although one wants a longer time series before reaching conclusions on long-run effects.

The rate of return on the portfolios held by the AFPs does not translate directly into the return on taxes for workers since there are commission costs that must be paid and are deducted from the account or bundled with monthly payments. The structure of these costs is regulated.²⁸ Net commissions are currently around 15 percent of contributions, down from 23 percent in the early years (Vittas and Iglesias 1992). The marketing and sales costs amounted to 39.8 percent of total operating costs exclusive of depreciation and amortization in 1982 and 30 percent in 1983 (Arellano 1985, cited in Mackenzie 1988). Currently, marketing costs are estimated to run in the range from 30 to 40 percent of operating costs (Vittas and Iglesias 1992). In contrast with these numbers, administrative costs for the cash benefits portion of U.S. Social Security were 0.9 percent of benefits paid in 1990 (U.S. Department of Health and Human Services, *Social Security Bulletin* 54, no. 9 [1991]: 19), and, as noted above, administrative costs in Poland are currently 4 percent, including 2 percent for the post office for delivery of benefits. Instead, the privatized system has costs that resemble those of life insurance markets.

The Role of Funds

There are two dimensions to building up individual funds. One dimension relates to a possible decision to have a time shape of taxes that generates a fund that is different from a time shape that does not generate a fund. Obviously, any change in the time shape of taxes represents a redistribution across generations and across individuals in the same generation with different lifetime earnings patterns. When a fund is being created that did not otherwise exist and there is no particular plan to make taxes in the future different from what was originally planned, then we are not considering this dimension of the effect of building up a fund. Rather, we are converting an implicit liability into an explicit one, changing the characteristics of the obligation as a result.

First, such a changeover affects the politics of social insurance expenditures. Second, there is the question of the extent to which funding, both in the short run and in the long run, affects the expenditures on the rest of the budget. This

28. The design of this structure has important distributional implications. The mix of charges per account, per peso deposited, and per peso on deposit affects the returns on taxes of workers with different earnings levels and different histories. The choice of mix has been a source of controversy in Chile.

depends a lot on the nature of the political process and the role of different measures of the budget deficit in that determination. It is to my mind an open question whether the use of individual accounts has a further effect on this outcome beyond the role of funding in the aggregate. A third question that is addressed below is the role of individual accounts and private management in the workings and development of the capital market.

The presence of an aggregate fund is likely to have a significant effect on the politics of the evolution of a social insurance system. In considering such effects, it is natural to think in terms of a two-by-two matrix. One dimension relates to whether earmarked taxes are above or below the benefit flows. The other dimension refers to social insurance expenditures and other government expenditures. (In addition, one should consider the effect of a fund on legislation in advance of short-run difficulties.) I do not know of solid empirical work on political responses to fill in the elements in this matrix. But it is useful to state the questions that arise in the four boxes. Assume that the earmarked tax flow exceeds the current benefit flow. Does the presence of a fund (into which the excess flows rather than flowing into general revenues) affect the continuation of the current levels of earmarked taxes and benefits? Would taxes be more likely to be cut or benefits more likely to be raised if the excess did not flow into a fund? Considering the politics of the full budget, rather than just the social insurance budget, an excess of earmarked taxes over current expenditures is probably powerful protection against a cut in benefits even when the rest of the government budget is in trouble. In the adjoining entry in the matrix, the question is the extent to which this surplus flow affects other government taxes and other government expenses. My own impression of the process in the United States is that recent Social Security annual surpluses have indeed had some effect on other government expenditures even though the money was flowing into a fund. That is, it is not clear how much larger the deficit on the rest of the budget would be if the Social Security surplus went to general revenues rather than to a fund. Whether having the money flow into a fund limited the size of other expenditures is too subtle to be inferred from the casual evidence at hand.

In the row where earmarked taxes do not cover current benefits, the presence of interest on a fund and the presence of the fund itself seem likely to affect the behavior of the social insurance account. That is, the state of the fund has an independent political effect. The effect of such a continued short-run deficit on other expenditures is more difficult to have a feeling for. One also needs to examine the role of a fund in the likelihood that the social insurance system will be in such a position. That is, a fund that appears to be in trouble, now or in the future, contributes to the possibility that benefits, at least benefits out in the future, will be reduced below then-legislated levels and that increases in the earmarked taxes will also be voted in advance.

Given the desirability of lead times for pension planning, the forward-looking politics generated by a fund is good. Contrasting a sufficiently funded

system so that large changes can be introduced with sizable lead times with a strictly defined pay-as-you-go system, there is a general consensus that one wants to protect the retired from sudden changes in benefit levels. Moreover, it is difficult (although not impossible) to design a sequence of benefit changes in response to short-run fiscal positions so that they add up to a sensible overall design.

I suspect that having individual accounts rather than an aggregate fund contributes to the protection of social insurance benefits from short-run fiscal difficulties. This protection is only limited, however. The opportunity to change tax treatment of benefits represents another way of altering benefits, at least up to the point where benefits are taxes on the same basis as other income (a situation that already holds in Poland). This is probably a natural barrier to the height of taxation of social insurance benefits. Tax treatment of the interest earnings of individual funded accounts is another way of altering benefits. Similarly, there is the possibility of requirements to invest in low-yield socially preferred assets.²⁹

The focus in this discussion has been on the response of the social insurance system to short-run difficulties. Given the demographics of a steadily aging population, true in Poland as it is in Chile and the United States, it is also appropriate to ask how the presence of a fund affects the politics of adapting the social insurance system to this ongoing phenomenon. A fund represents a mechanism for adapting to such a change in a different way than a sequence of simultaneous tax and benefit changes. The presence of a fund may contribute to advance legislation for dealing with such a problem. Thus, in the United States, legislation to cut benefits (by delaying the normal retirement age but not the age of eligibility for benefits) beginning in 2000 was passed in 1983. This was without doubt an easier problem for the legislature than would occur with a later response. Moreover, one can expect that, on average, decisions taken with less time pressure will be better and better integrated.

Fund Management

In Chile, individual accounts are partially invested in the economy, and that investment is handled by private portfolio managers.³⁰ There are three sorts of questions that come to mind when considering investment of the fund in the economy. One is the extent of real effects on the allocation of capital. Presumably, the less well developed the capital market, the larger the effects of directed investment. That is, in the United States, it is likely that general portfolio adjustments would make the shift of a Social Security fund from Treasury debt to stock market holdings somewhat offset by private portfolio adjustments.

29. In the United States, there have been repeated calls to move the Social Security trust fund partially out of Treasury debt and into direct investments in infrastructure. It is not clear how this generates revenue for pension payment.

30. Another model of funds being invested in the economy can be found in some Asian economies.

The small changes in interest rates on different types of assets would probably not have large effects on the U.S. economy. Of course it remains the case that any differences in rates of return will affect benefits determined by a defined-contribution formula and may affect the legislated level of benefits in a defined-benefit formula. In a less well-developed capital market, the final incidence of investment plans will be much closer to the initial incidence. Thus, there is room for a significant effect on capital allocation. This is discussed further below. Second, one must ask the question of the response of the system to the bearing of risk that is a natural counterpart of investments in riskier assets than Treasury debt. To what extent will the political process *de facto* insure the investments being made. If this is indeed the case, as experience in Chile and elsewhere with the banking system suggests, then the general capital allocation process and the role of government guarantees needs to be thought through.³¹

The question of asset choice for funds must also face the question of the transfer of funds between different fund managers. The presence of a significant part of a portfolio in terms of assets that are not readily evaluated by the market opens up the possibility of runs. Having significant movement out of some fund at a point of time raises the problem of the effect on the market of the sale of assets on well-organized markets as well. Purchases by the funds to which accounts are moved need not coincide with sales by the funds losing accounts. If this movement is not regulated in some way, there could be significant gains and losses associated with such movements, as a forced sale is combined with an unforced set of purchases. This can happen even when all assets are regularly traded if funds are large relative to the market, as they are in Chile. Possibly, one should consider the option of transferring divisible assets rather than their value. The possibility of runs is not restricted to individuals who monitor the performance of their funds closely. As experience in Ohio has shown, there can be runs by normally passive investors when some event has raised the question of the safety of the funds in a salient way.³²

The third question is the role of portfolio managers and their regulation. We know that even the most highly regulated capital markets in the world today are subject to criminal behavior that involves sizable losses of funds. It is natural to wonder whether similar problems would happen with these funds. In Chile, portfolio decisions are very tightly regulated by the government, with the majority of funds necessarily invested in government securities or bank deposits. The process of development of the funds has reflected a very slow widening of investment opportunities. It seems to me unlikely that private forced savers can be relied on to do much in the way of serious overseeing of funds; in fact,

31. The likelihood of government guarantees in case the funds do not have earnings rates as high as were forecast has been recognized by Topinski and Wisniewski (1991a).

32. In Ohio, there were runs on sound banks because the deposit insurance fund was thought to be inadequately financed. For a description of a recent run in Missouri triggered by rumors of a takeover by the FDIC, see *New York Times*, 3 April 1992, D1.

there is probably a serious cost associated with trying to rely on the market in this case.

This concern with the costs of private markets starts with the expenses that will be associated with attempts by portfolios managers to compete for handling of the funds. Advertising and sales commissions are a natural part of the expense associated with insurance markets and portfolio management of funds. As noted above, returns on portfolios are not the same as returns on taxes paid. In this case, the presence of large numbers of inexperienced investors suggests that the aggregate selling costs will more closely resemble that for individual policies in insurance markets than it will selling costs for portfolio management in well-developed capital markets like the United States. If that is the case, then a sizable fraction of the value of the funds will be eaten up in the competitive process. There is an obvious internal contradiction between having a forced savings system based on a lack of reliance on individuals to save adequately for their own retirement and the empowering of these people to control the management of their portfolios. In particular, the implicit high discount rate of such workers raises questions as to whether they will respond to solicitation to change managers in a way that will overweight the current blandishments of solicitation relative to the possible long-run effects on the value of the account. I am told that, already in Chile, running shoes are being given out to workers switching between funds.³³ This is reminiscent of the time in the United States when interest rates were regulated and banks competed by giving out toasters to people opening accounts. An even closer parallel is the report of a school in England, where there are education vouchers, that “offered a discount on shower units as an incentive to parents to enroll their children there” (*New York Times*, 7 January 1992, 1). The cost of private firms pursuing individual fund account holders may be very large, and there is an important role for regulation to avoid such an equilibrium. I think that it is natural to be very suspicious about the efficiency of the competitive market in this type of intertemporal transaction involving large numbers of inexperienced investors.

Another problem arises with the conversion of accumulated funds into annuities. The annuities market is a relatively underdeveloped market even in advanced economies. There is no reason to think that this market will work with reasonable efficiency on the basis of individual purchases. Of course there is a range of alternative interventions for organizing this market besides simply having the government do it. This is discussed further below.

10.3.4 Transition

When setting up accounts for existing workers at the start of such a program, there are two bases for selecting account levels. One is to be backward looking,

33. Such incentives for switching are illegal. Regulation of the marketing process is an important component of the regulation of portfolio management.

giving individuals an approximation of what they would have had had the new system been in place. The alternative is to be forward looking, giving individuals a sum that will yield approximately what the existing system would yield. This can be done with a sum that can be invested or with bonds that come due at retirement age. In Chile, bonds that grew at a real rate of 4 percent per year were allocated to individual workers. The underlying logic was forward looking, aiming at a Pareto improvement.³⁴ In Poland, the proposal is to be forward looking. The calculations that have been made imply that men under forty-five and women under forty would not lose from the changeover and would receive no initial compensation. Older highly paid workers would receive compensation, with the amount drawn from a share of the value of enterprises being privatized (Tymowska and Wisniewski 1991). This assumes not only a satisfactory projected basis for compensation but also a reasonably accurate valuation of the shares being distributed.

One complication, of course, is the absence of earnings records for individual workers in Poland. Thus, the proposal keys off a single year's earnings at the time the funds are set up. This is highly random in its implied redistributions and highly subject to manipulation. An alternative approach would be to make use of additional years of earnings as they become available. There are probably a number of different ways of doing this that should be explored. The current proposal gives an individual an initial allocation that is a multiple of earnings (above the threshold) determined in the year the accounts are started, with the multiple depending on age. Instead, the multiplier could be allocated to a number of the remaining years until retirement age. For example, instead of giving someone an initial allocation of twice the level of earnings above the threshold in the first year of the transition, the individual could be given half that sum the first year and an additional amount the following year equal to the amount of the following year's earnings, less that year's threshold. This second number could be adjusted for interest. This pattern would both be fairer and have a better incentive structure.

10.3.5 An Alternative Proposal

The current Polish law is based on a defined-benefit formula that may be easily manipulated and that has limited long-run appeal. The proposed reform is focused on a privatized role in asset markets. The problems of regulating such a privatized system may be severe. If one considers a defined-contribution system that invests only in government debt, it may be possible to design a system that is politically acceptable, has some effect on fiscal discipline, and has better incentives. The following simple proposal is put forward to show how such an approach might work, perhaps thereby stimulating development

34. One problem was the absence of a complete set of records for individual workers. Bond levels were calculated on the basis of the average of declared income for three years (1977-79).

of more detailed proposals that fit with Poland's political and economic constraints.

The current benefit law has two parts, a flat benefit and an earnings-related benefit. Consider earmarking part of the payroll tax for defined-contribution pensions. Consider dividing the earmarked tax between a general account and individual accounts. The general account finances the flat benefit. The individual account finances the earnings-related benefit. Either or both benefits can be subjected to an earnings test. To implement this system, one needs a rule for selecting an interest rate and an actuarial formula for converting an accumulated fund into an indexed annuity.

This approach lends itself to a straightforward transition that does not rely on individual records. Each eligible worker can be credited with an indexed benefit to begin at the same time as the flat benefit. The indexed benefit would depend solely on age at the time of transition. An algorithm is still needed to determine the structure of this benefit. One could be constructed along lines parallel to the analysis done for the proposed reform.

With individual accounts in place, in the future one could consider privatizing part of the accumulation of individual accounts, once there were better understanding and skills for regulating privatized accounts. Contrasting this proposal with both current law and the proposed reform highlights the many different pieces relevant for design of a pension system.

10.4 Relation to Private Institutions: Capital, Annuity, and Pension Markets

Returning to the discussion of Poland, it is natural to think about the role of this pension reform in the development of the capital market and in the privatization of state enterprises. It also seems useful to mention issues in organizing the annuity and private pension markets.

10.4.1 The Polish Capital Market

Economies converting from central planning to decentralized markets do not have well-developed capital markets. To my way of thinking, the most critical missing piece is a set of intermediaries. The creation of pension funds seeking to invest does not directly do anything about the lack of experience and capacity in the allocation of funds. Since the development of mutual funds is a (probably small) piece of the development of the range of intermediaries, one can count the creation of such institutions by this proposal as a contribution to institution development. However, government-regulated, and probably implicitly insured, funds with a large number of small investors is probably not the best environment for the growth of such institutions. It would probably be better to have private market mutual funds receiving deposits from a smaller number of larger investors. It is probably also true that direct investments have

greater importance when intermediaries are weak. Thus, it is appropriate to wonder whether the nonintermediated investment that will be displaced by this forced saving program might not have greater efficiency.³⁵ Restating this point in a different vocabulary, the question is whether to let the demand for mutual funds respond to market opportunities or to generate demand in order to induce a larger supply of intermediaries. Of course, there is room for foreign assistance in intermediation, limiting concern about pushing too fast.

A further set of issues arises when one starts to contemplate the kind of investments, other than government securities, that these funds might hold. Obviously, the prime purpose of having such a program is to support new investment. Thus, direct loans from these funds to large firms is one possibility, although it is a possibility fraught with all the same difficulties that are present in the inadequacy of the banking system in channeling funds directly to firms. The alternative that is natural with developed capital markets, of having the funds invest in the securities market, is much less attractive in this setting. The securities market is extremely underdeveloped, suggesting that a large fraction of the funds flowing into the market will go into bidding up the prices of existing securities and so be transfers to existing securityholders rather than being a flow into new investment. (One could consider restricting investment to the purchase of new issues—including those associated with privatization—although there is unlikely to be an adequate flow of new issues to supply many good securities for such investment.) Second, some of the funds will flow into manipulation and outright theft. Only a fraction of the funds will go into encouraging investment. My uninformed prior is that the fraction is rather small and that direct general investment stimulation by the government would be a superior mechanism.³⁶ Creating a suitable environment for (possibly foreign) private mutual fund creation is probably a better route to institution creation than creating a forced demand for such institutions and hoping to create their supply simultaneously, with a larger government obligation for protection of investors. Presumably, there is a great shortage of experienced regulators of financial intermediaries in Poland. One question that must be addressed by the proposal for individual funded accounts is whether the regulation of the firms handling such accounts is the best use of limited regulatory abilities.

10.4.2 Transition to Private Ownership

Like other centrally planned economies converting to a private market organization for the bulk of the economy, Poland faces the problem of redefining the ownership of firms. It seems useful to divide this problem into three pieces. One is the creation of some private ownership in order to create the ownership part of the ownership-management relationship, which deter-

35. On the role of direct lending to friends and family, see Ben-Porath (1978).

36. Case-by-case direct stimulation is subject to the same potentialities of fraud and mismanagement.

mines the rules and incentives under which firms are managed. A second issue is the ownership of future income. Since one does not need to allocate all of ownership to have enough ownership to create a relationship with management, these two issues are clearly separable. The third issue is to develop institutions for the ongoing role of ownership in policing management. This ongoing role includes bankruptcy, sale of ownership, takeovers, etc. This third step is clearly slower and of less initial importance and compatible with a variety of other institutions.

It is natural to inquire into the role of a public pension system in filling each of these roles. An active role in overseeing management must involve either explicit institution design for overseeing (such as public representatives on boards of directors) or ownership shares (either individual or aggregated) that have enough of a stake in a firm to oversee management. Thus, it is commonly felt that a widespread individual distribution of share ownership would not easily generate any concentrations of ownership sufficient to overcome the free-rider problem and so have relatively efficient overseeing of management. It is therefore frequently proposed that mutual funds be used to aggregate ownership shares and so have an incentive (and obligation) to oversee management. Pension plans can clearly be used in this role in place of mutual fund companies. In terms of ownership shares and obligations, the two institutions seem similar in the short run.

For the longer run, there are several differences in the way the two institutions might work. Since the payout of pension plans is based on retirement behavior of workers having claims on the assets of the funds, this could be used as a device to transfer shares into the pool of individually owned and traded shares slowly. This would contribute to the third aim, of a slowly growing private market. Second, there is a fiscal problem for the Polish government. By substituting the funding of some pension obligations for the one-time general gift of ownership, there should be a reduced claim on the government budget in the future. This could be done in a way that tends to place the risk of success of Polish enterprises either on the benefit claimants or on the government. With political pressure to move ownership out of the hands of the government, it might be sufficient to move it to an earmarked use, as in pensions. Such an allocation opens up the issue of the age-related structure of the allocation of this wealth to individuals. While a direct giveaway could have any age structure, the use of pension funds naturally structures this question while leaving room for a variety of answers, depending in part on the offset from other government pension obligations that are part of the package. For example, the proposal discussed above had an allocation based on a forward-looking replacement of part of pension obligations. Whether shares are allocated to individual accounts or to an aggregate fund is open. Individual accounts could be used to create another level of incentive in the presence of multiple funds. However, such allocation does place individuals at additional risk. There is also a serious problem of valuing these assets if they are being used as part of

some “compensation” of workers for a change in the pension system, as in the Polish proposal described above. The use of the vocabulary of compensation may affect the likelihood of later government compensation in the event that the assets prove to be worth less than anticipated.

10.4.3 The Annuity Market

Another issue that is raised by individual accounts is the problem of conversion of accumulated funds to annuities at the time of retirement. The individual annuities market does not function very well anywhere in the world, as we can expect from the theory of adverse selection.³⁷ Thus, this market would need to be organized and regulated by the government if the pension system is to work well. Since to date few pensions have been received out of the new system in Chile, there has not been so much concern about how well the annuities market functions.³⁸ There are a variety of ways for the government to organize this market that lie between full reliance on the private market and government provision of annuities. A variety of regulatory schemes have been proposed for health insurance, which could be adapted for annuities.³⁹

10.4.4 Regulation of Private Pensions

Unless the social insurance system is so large that there is little room for private saving for retirement, it is natural to expect that employer-provided pensions will arise as an institution.⁴⁰ This is an institution that needs serious regulation. One of the worst possible outcomes would be unfunded private pension promises where the workers did not save because they believed excessively in the likelihood of collecting on these promises, while firms and shareholders did not save because of a recognition that the risk-adjusted expenditure needs were not very large. This combination would depress capital accumulation and do little to deal with retirement needs. Thus, it is a common phenomenon for governments to worry about the funding of pension promises, an issue that arises particularly with defined-benefit pensions. More generally, the history of private pensions is a history of the need for consumer protection legislation. Pension promises are very complicated assets. Individual workers are not

37. Adverse selection can be a problem when individual retirees choose between phased withdrawal or annuity purchase on the basis of asymmetrical information on life expectancy. Adverse selection can also be a problem when insurance companies particularly seek out those with shorter life expectancies, incurring additional marketing costs. From a social insurance perspective, one needs to consider the optimal degree of cross-subsidization between groups with different life expectancies; those with longer retirement periods are, in one sense, poorer.

38. There are independent brokers charging sizable fees for counseling retirees on annuity choice.

39. One could, e.g., consider mandatory grouping of individuals into risk pools with private market bidding on the groups. Such a proposal has been made for health insurance in the United States (Diamond 1992).

40. The proposed reform described above would allow individuals to contribute voluntarily to their individual fund accounts on a tax-deferred basis. Similarly, in Chile, there is favorable tax treatment for additional contributions to the individual account by the employer.

generally sophisticated enough to appreciate the risks associated with these assets. Thus, there has arisen in the United States a set of rules designed to protect the expectations of workers that are taken to be legitimate.

With a defined-contribution pension, individuals are promised whatever annuities their accumulated funds will purchase when they reach retirement. The retirement implications of such funds are somewhat difficult to describe to workers because they depend on projections of interest rates and actuarial factors, which one does not project with certainty. However, defined-contribution pensions have the obvious advantages that they are more readily perceived as having the same value to both sides of the promise and involve no portability difficulties when there is to be labor mobility. Defined-benefit pensions are easier to describe to workers in large part because the description focuses only on the circumstance of the worker staying with the same firm until retirement, the firm doing well, and the worker having steady wage increases. Introducing the various other scenarios, such as worker mobility, firm bankruptcy, and low future wages because of industry or firm difficulties, makes this much more complicated to describe. Also complicated to describe is an adequate level of funding. In an economy that does not have a well-developed actuarial profession, it is implausible that funding for defined-benefit pensions can be adequately policed. If the government is to enter this arena by allowing tax recognition for the development of pension funds, then serious thought needs to be given to the class of pension systems that will get tax-favored treatment. Restricting tax-favored treatment to defined-contribution pensions is a way of avoiding a host of potential difficulties. In other words, the issues appropriate for comparing defined-benefit and defined-contribution pensions are very different when considering private market pensions and social insurance pensions. The latter can be based on employment records throughout the economy and do not have to adapt to the needs of labor mobility. Moreover, the risks associated with the ability to pay pensions are different for governments and individual firms. On the other hand, the process of adapting the system to a changing environment is driven differently by a political process and a market process (whether collective bargaining or not).

In the United States, the government also enters directly into guarantees to workers about some of the funds available for their pensions. Insurance against some risks associated with fund accumulation by intermediaries is a widespread aspect of well-developed capital markets. Thus, it is common for there to be insurance provided by either the government or the industry against well-defined criminal activities involving stealing funds. Because it is very difficult for individuals to police this issue themselves, this is a natural role for some sort of collective institution. The question is the extent to which the government should go beyond fund-based guarantees to look at promise-based guarantees. It is very easy for such guarantees to turn into a basis for political manipulation, and such redistribution was indeed a major part of the development of ERISA in the United States. Moreover, the design of the guarantee

mechanism can encourage behavior that adds considerably to the magnitude of the risk borne by taxpayers (see, e.g., Bodie 1992).

10.5 Concluding Remarks

This has been a long paper, rambling through a wide variety of policy issues. It would serve no point to recapitulate all of them. An underlying theme of my approach may be worth recapitulating. Poland faces serious short-run financial difficulties both in general and with its social insurance system. Like many other countries, Poland faces a large demographic swing early in the next century with long-run financial consequences. Poland also faces a major need to develop institutional design of its pension system. It is difficult for the political process to separate out the three elements of short-run financial concerns, long-run financial concerns, and institutional design. One can only hope that a balance among these elements will be struck in the process of reform.

References

- Arellano, Jose Pablo. 1985. Políticas sociales y desarrollo—Chile, 1924–84. Santiago: CIEPLAN.
- Atkins, G. Lawrence. 1991. Social security and pension reform in Central Europe. Paper prepared for the meeting of the Institut für die Wissenschaften vom Menschen, Vienna, November.
- Balcer, Yves, and Peter Diamond. 1977. Social Security benefits with a lengthening averaging period. *Journal of Risk and Insurance* 44, no. 2:259–65.
- Barr, Nicholas. 1991. Poland: Description of the cash benefit system. Washington, D.C.: World Bank. Typescript.
- Ben-Porath, Yoram. 1978. The F-connection: Families, friends, and firms, and the organization of exchange. Report no. 29/78. Institute for Advanced Studies, Hebrew University of Jerusalem.
- Bodie, Zvi. 1992. Federal pension insurance: Is it the S&L crisis of the 1990's. Boston University. Typescript.
- Boskin, Michael J., Laurence J. Kotlikoff, and John B. Shoven. 1988. Personal security accounts: A proposal for fundamental Social Security reform. In *Social Security and private pensions*, ed. Susan M. Wachter. Lexington, Mass.: Lexington.
- Bound, John. 1989. The health and earnings of rejected disability insurance applicants. *American Economic Review* 79, no. 3:482–503.
- Cheyre V., Hernan. 1991. *La prevision en Chile ayer y hoy*. Santiago: Centro de Estudios Publicos.
- Congressional Budget Office. Congress of the United States. 1986. Earnings sharing options for the Social Security system. Washington, D.C.
- Consultant Panel on Social Security to the Congressional Research Service. 1976. Report. Washington, D.C.
- Deutsch, Antal. 1991. One pension system in transition: The case of Hungary. Vancouver: International Studies Association. Typescript.

- Diamond, Peter. 1992. Organizing the health insurance market. *Econometrica* 60, no. 6:1233–54.
- Diamond, Peter, and Eytan Sheshinski. 1992. Economic aspects of optimal disability benefits. Working paper. Massachusetts Institute of Technology.
- Hambor, John. 1992. Issues in Eastern European social security reform. Washington, D.C.: U.S. Treasury Department, Office of Economic Policy. Typescript.
- Henderson, Yolanda. 1991. Translation of Jaka dostaniesz emeryture by J. Koral. Boston: Federal Reserve Bank. Typescript.
- Iglesias P., Augusto, and Rodrigo Acuna R. 1991. *Chile: Experiencia con un regimen de capitalizacion, 1981–1991*. Santiago: CEPAL/PNUD.
- Jenkins, Glenn. 1991. Privatization and pension reform in transition economies. Paper prepared for the International Institute of Public Finance Congress.
- Kopits, George. 1991. Social security in transition economies. Paper prepared for the International Institute of Public Finance Congress.
- Mackenzie, G. A. 1988. Social security issues in developing countries: The Latin American experience. *IMF Staff Papers* 35, no. 3:496–522.
- Mesa-Lago, Carmelo. 1989. *Ascent to bankruptcy: Financing social security in Latin America*. Pittsburgh: University of Pittsburgh Press.
- . 1991. Portfolio performance of selected social security institutes in Latin America. Discussion Paper no. 139. Washington, D.C.: World Bank.
- Topinski, Wojciech, and Marian Wisniewski. 1991a. Pensions in Poland: Proposals for reform. University of Warsaw. Typescript.
- . 1991b. [Untitled.] University of Warsaw. Typescript.
- Tymowska, Katarzyna, and Marian Wisniewski. 1991. Poland's social security system. University of Warsaw. Typescript.
- U.S. Department of Health and Human Services. Social Security Administration. Office of International Policy and Office of Research and Statistics. 1990. Social security programs throughout the world—1989. Research Report no. 62. Washington, D.C.
- Vittas, Dimitri, and Augusto Iglesias. 1992. The rationale and performance of personal pension plans in Chile. Washington, D.C.: World Bank. Typescript.

Comment Barry Bosworth

The establishment of a pension system in Eastern Europe and the former Soviet Union is a very important issue. The proportion of the population of these countries that is retired or disabled is very high, yet they lack a functioning tax system that can provide sufficient revenues to finance the costs. The old system is very inadequate to deal with the issues of tax compliance, work incentives, equity, and corruption that will arise with the operation of a public pension program in a decentralized economy. In practical terms, these countries will have to start from scratch in designing new pension programs, and the question addressed in Peter Diamond's paper is what that new system should look like. The choice is between a defined-benefit program, similar to that of most industrial countries, and a defined-contribution program, like that of Chile. A choice must also be made between a publicly and a privately managed system.

The paper covers a very wide range of issues relevant to establishing a social security system in Eastern Europe. To begin with, it provides a great deal of background information about the existing defined-benefit system and the problems that will be faced in an attempt to extend it in the future. I think that that material is valuable in laying out the primary issues associated with operating a conventional defined-benefit program.

Subsequently, a major portion of the paper is devoted to evaluating a specific reform proposal that combines a flat minimum benefit payment, financed out of general revenues, with a privately managed, defined-contribution plan, similar to that of Chile. From a macroeconomic perspective, a defined-contribution program is attractive as a potential means of augmenting national saving; it is a funded system. From a microeconomic perspective, it avoids some of the political problems of keeping benefits at affordable levels.

Most articles on the Chilean program emphasize the high rates of return earned by the funds. Diamond's analysis was a major surprise to me in pointing out two serious problems of the Chilean system that have not attracted much prior attention. First, the high rate of return is a simple reflection of the fact that the Chilean stabilization program has driven the real rate of return on riskless investments to extremely high levels. The funds invest nearly all their portfolio in government bonds, where the real interest rate has been in excess of 10 percent. Chileans may feel good when they look at the earnings on their funds, but they should be a little concerned as taxpayers who have to pay those rates of return on government bonds. Private equity investments have been a very small share of the overall portfolio.

The second surprise is that the administrative charges by the fund managers represent an amazingly high percentage of contributions. It is hard to understand how these fees can be justified. If the funds were investing in an open market at global rates of return, the administrative fees would be sufficient to wipe out the interest return, and the realized yield of the contributors would be negative.

A final problem is that the fund accumulation will ultimately have to be converted to a private annuity at retirement. Annuities are a surprisingly poor bargain even in sophisticated American markets, and it is difficult to design them in a fashion that protects the retiree against inflation.

One issue that will be important in Eastern Europe—one that is not fully examined in this paper—is the effect of a Chilean-type social insurance fund on national saving. The extent of reliance on public debt in the portfolios of the Chilean pension funds suggests that their effect on national saving is ambiguous. The funds create a ready market in which the government can sell a larger volume of debt instruments than would otherwise be possible. If the existence of this debt market has made it easier for the government to finance budget deficits, any gain in private saving may have been lost at the national level.

The net effect of this paper is substantially to alter my previous favorable

view of private defined-contribution programs as an alternative social security system in countries without advanced financial market institutions. I agree with Peter Diamond that financial markets may not be sufficiently developed in Eastern Europe to support such a system. Furthermore, the Chilean experience is not as favorable as previously reported.

The East European countries are probably better advised to establish a defined-benefit plan similar to those of Western Europe and the United States. Furthermore, for the time being, the compressed nature of the wage structure suggests that they could use a simple flat benefit payment for existing retirees. In the future, however, it is imperative that they establish an administrative system that maintains records on the contribution history of future retirees and relates workers' benefits to past contributions. Furthermore, the idea of a funded system is very attractive as a source of increased saving, but it will be very difficult to accomplish because of the large existing number of retirees who must be provided for.

Discussion Summary

Boris Pleskovic noted that many privatization plans assume that pension funds will play a major role in the privatization process. He said that pension funds are expected to receive 10–20 percent of the equity in the newly privatized firms and that many planners hope that the funds will therefore take an active oversight role on the boards of directors of these new firms.

Simon Johnson warned of the problems of loopholes in pension schemes. He said that one of the largest firms in Czechoslovakia employs 500 workers, of which only two are *officially* employed. The rest are registered as individual entrepreneurs. He noted that this setup enables the firm to avoid paying the social security and wage taxes that are equal to 60 percent of the wage of official employees.

Mark Schaffer said Poland's relatively high social insurance costs partially reflect the fact that the Polish system has indexed benefits to wages instead of simply indexing to the price level. The rise in real wages has driven real pension expenditures up and contributed to the deterioration in the budget.

Peter Diamond did not agree that pension funds should be relied on to play a significant oversight role as equityholders of newly privatized firms. Diamond wondered if there was any advantage to locating this oversight capacity in pension funds. He said that, even in the United States, pension funds do not appear to be particularly sophisticated, as evidenced by their consistent pattern of relatively poor financial performance. *Olivier Blanchard* was also critical of the idea of giving pension funds a large equity stake in privatized firms. He said that it is contradictory to set up a social insurance system that relies on such extremely risky assets.

Comment George Kopits

The papers by Roger Gordon and Peter Diamond deal with key fiscal policy issues confronted by postsocialist economies. Although their primary focus is the reform of Poland's tax structure and pension system, respectively, both papers have relevance for neighboring countries, including the former Soviet republics. These remarks intend to address issues of potentially broader relevance, rather than those that are specific only to Poland.

In his paper, Gordon seeks to explain fiscal developments (in particular, revenue developments) since 1988 and to recommend tax reform measures. This explanation would be, of course, incomplete without a discussion of the overall fiscal relations that prevailed between the government and state-owned enterprises (SOEs) and between the government and households under socialist central planning. Such a discussion provides the necessary backdrop for formulating appropriate tax measures and broader systemic reforms for the transition to a market economy.

From the outset, it is worth noting that, in the past, SOEs traditionally operated under a soft budget constraint and without exposure to bankruptcy risk, in the pursuit of an ill-defined objective function. Accordingly, the government budget, as well as extrabudgetary accounts controlled by industrial branch ministries, constituted simply a channel for redistributing financial resources from profitable to loss-making SOEs, to meet rigid volume targets prescribed in the plan. Financial resources were collected in the form of negotiated tax liabilities on profits, assets, depreciation, and various earmarked contributions or through outright confiscation of profits. In turn, these resources were distributed as producer subsidies or as capital transfers. Meanwhile, households faced fixed retail prices to satisfy merit wants, as defined by the plan; differences between retail prices and producer costs resulted in either product-specific turnover tax rates (positive wedges) or consumer subsidy rates (negative wedges). Likewise, foreign trade tax rates and subsidy rates were determined residually through domestic price controls and product-specific foreign exchange coefficients. In addition to these fiscal wedges, there were implicit taxes and subsidies determined by controls on wages and bank deposit rates.

With the possible exception of payroll taxation for social security, taxes were neither parametric (across products, across enterprises, or over time) nor transparent. Statutory tax rates and tax bases had little, if any, meaning. Thus, international comparisons, such as the one in Gordon's table 9.1, would make more sense if all budget revenue from SOEs (including entrepreneurial income and other transfers) was shown. A similar comparison should be provided, on the expenditure side, of all direct subsidies and other transfers to SOEs, to reflect the redistributive role of the budget. By the same token, a discussion or com-

parison of turnover tax revenue needs to be accompanied by references to outlays on consumer subsidies (see Kopits 1991).

Reform of Poland's tax system toward uniform and fixed rates, phase-out of subsidies, the associated hardening of the budget constraint for SOEs, and the dramatic adjustment in relative prices, interest rates, and exchange rates faced by SOEs and households—all of which took place almost simultaneously—render an interpretation of changes in the real tax revenue more difficult than suggested in the paper. Indeed, revenue fluctuations at constant prices, especially in 1989–91, reflect not only output and price changes but also changes in the tax system and accounting conventions.¹ The effect of setting fixed turnover-tax rates at the beginning of 1990 needs to be separated from the effects of output and price changes, to explain the revenue changes discussed in section 9.2. The rise in expenditures in 1989 and the fall at the beginning of the adjustment program can be attributed, as noted in the paper, to a large extent to the rise and then to the cut in subsidies. However, an additional explanation for the fall in other outlays in 1990 lies in the enforcement of cash limits on the budget—a feature common to the initial phase in several East European adjustment programs—to ensure budget balance for stabilization purposes. The subsequent relaxation of these limits, the rising claims on social assistance, and the adverse effect of the collapse of CMEA (Council for Mutual Economic Assistance) trade on both the revenue and outlay sides all contributed to the widening fiscal imbalance in 1991.

The author flags the difficulty of balancing the budget and explores various forms of nonbank financing of the deficit to contain its expansionary macroeconomic effect. Unfortunately, the scope for external financing is very limited in most postsocialist countries, including Poland. As indicated in the paper, given the low initial tax base, resorting to high tax rates would be counterproductive. A related problem in the initial tax reform, starting with Hungary, has been the proliferation of tax preferences that required compensatory tax rate hikes. In this regard, it is worth stressing the need to broaden tax bases so as to permit moderation in tax rates and a larger and more elastic revenue flow.

The central question raised in the paper is the design of a fiscal system that meets a number of objectives, subject to microeconomic constraints during the transition. The objectives are familiar: allocative neutrality, fairness, incentives to work and to save, and stabilization. The micro-level constraints consist of inadequate administrative capacity, accounting illiteracy, and continued confusion over ownership rights, goals, and management responsibilities in SOEs. The value-added tax (VAT) and, under certain conditions, the cash-flow tax on enterprises,² apparently advocated by Gordon, meet the neutrality objective.

1. The accounting data underlying the average profit rates reported in sec. 9.2 are probably quite unreliable and would need further elucidation to explain revenue developments.

2. For an assessment of the cash-flow tax proposal for economies in transition, see Kopits (1992b).

Whereas the cash-flow tax has the virtue of administrative simplicity, the VAT requires some administrative sophistication, which is greatly compounded on the introduction of multiple rates for equity reasons—an approach suggested in section 9.4. Instead, the equity objective can be pursued more efficiently through means-tested social assistance to low-income households, supplemented with some progressivity in personal income taxation. Admittedly, both the progressive personal income tax and targeted assistance also entail a minimum administrative capacity, which takes some time to develop. In fact, at the outset, it is necessary to resort largely to withholding taxation, possibly accompanied by presumptive techniques for self-employment income, as the economy is privatized.

Perhaps the most elusive goal during the transition is macroeconomic stabilization, in view of the difficulties in financing the deficit from domestic non-bank and external sources and in raising tax rates. These difficulties would be exacerbated by a considerable net revenue loss associated with the shift from a profit tax to a cash-flow tax on enterprises. Moreover, fledgling private enterprises engage in outright tax evasion, while SOE managers and employees collude to raise wages, nonwage remuneration, and bonuses at the expense of profits. Also, in anticipation of possible privatization, SOE managers resort to asset stripping and insider deals—partly through joint-venture arrangements. In addition to adverse revenue implications, this behavior leads to considerable wage pressures that must be contained for stabilization reasons. Thus, until the profit-maximizing goal of SOEs is clarified and collective bargaining evolves or the fear of layoffs materializes, it is necessary to rely temporarily on the taxation of excess wage increases at highly progressive marginal rates. This has been the function of such tax-based incomes policy rather than containment of “competitive” wage increases, contrary to the assertion in section 9.2 of the paper. The adjustment of wages to market levels through increased wage differentiation—in line with marginal productivity differentials—has not been prevented by this tax, which in both Poland and Czechoslovakia was triggered by excessive increases in the enterprise’s wage bill (including manager’s bonuses) while allowing high salaries for skilled and productive workers at one end and the layoff of redundant workers at the other end of the spectrum. These wage pressures in SOEs certainly cannot be averted simply with equal tax rates on their profits and wages³ since employees do not formally own shares in these enterprises.

Therefore, consistent with incentive, allocative, administrative, and revenue considerations, every effort should be made during the transition to adopt—quite apart from a temporary tax on excess wage increases—broadly based taxes mainly on profits, personal income, and value added, at moderate rates. Also, as a temporary revenue-raising measure, consideration can be given to

3. In early 1992, Russia and Ukraine introduced the nondeductibility of wages from taxable profits (conceptually equivalent to a VAT) in addition to a formal VAT.

the adoption of a nondistortionary import tax, levied at a uniform rate—in conjunction with a realistic exchange rate—above and beyond the VAT to be also imposed on imports under the destination principle. At the same time, tax preferences, such as those applied earlier in Hungary and Poland, must be quickly eliminated. A predictable level playing tax field would be far more helpful in inducing domestic or foreign private activity than any attempt to fine-tune subsidies—in order to offset credit constraints or induce positive externalities—to possible “winners,” as distinct from “losers,” especially given that the planning instinct is still alive and well in these countries. For parity, the same tax rate and definition of the base should be applicable to private enterprises and SOEs, but, in addition, SOEs could be subject to a required dividend payout to the budget (much like in Hungary and Poland) just as private enterprises are expected to yield an adequate rate of return to their owners.

The paper by Diamond is an informative analysis of Poland's pension reform that should be useful for policymakers in Poland and other postsocialist economies. The author correctly points to the flaws in the benefit formula, the lack of tracking of contributions and underlying earnings of beneficiaries, the lack of any connection between social security administration and tax administration, and questionable industry-specific differences in benefits. Although Poland's system has a number of superior features (taxation of pensions, linear accrual formula, higher official retirement age), it suffers from shortcomings comparable to those of neighboring countries.⁴ Partly on the basis of these shortcomings, as well as mounting pressures for using disability pensions and early retirement pensions as covert unemployment benefits—in lieu of relying on transparent unemployment compensation—the financial cost of the system is likely to rise significantly in the period ahead.

Failure to correct these deficiencies (including misuse of disability and early retirement pensions) and to enhance the cost effectiveness of the system will inevitably lead to further increases in contribution rates as it has been the case elsewhere. The need for such increases is compounded, of course, by unfavorable demographic trends in the medium to long run. Statutory contribution rates in Bulgaria, Czechoslovakia, Hungary, and Ukraine range between 50 and 60 percent. With the hardening budget constraint on SOEs and the emergence of private enterprises, this tax burden is being resisted through an accumulation of contribution arrears by the former and evasion of contribution payments by the latter and through a narrowing of the contribution base (with increased nonwage remuneration of employees) by both. This, in turn, adds pressure to raising contribution rates further, making virtually inevitable the recourse to budgetary transfers for financing benefits.

In addition to recommending corrective measures under the present system, the paper explores the relevance of the Chilean model for Poland. This model has been held up as an example by various authors for other economies in

4. For an assessment of social security schemes in postsocialist countries, see Kopits (1992a).

transition (see Hanke 1990; and Deutsch 1991). In the same vein, a recent proposal for the United States is also examined. Undoubtedly, the basic approach is in many ways appealing from the perspective of these economies and deserves scrutiny. Diamond's investigation is thorough and the evaluation of key characteristics of the proposed approach persuasive. On balance, two essential conditions for the successful adoption of a Chilean-type approach in economies in transition are missing, namely, an appropriate regulatory apparatus and financial markets. Moreover, the treatment of claims by existing beneficiaries poses a difficult transitional issue under the reform proposal outlined in the paper. Any solution involving the transfer of ownership of privatized SOEs to the new funds or to the beneficiaries is unlikely to provide the anticipated security for old-age retirement given the questionable value and lack of marketability of enterprise shares. Ultimately, this could result in a considerable claim on the budget. In any event, if Poland or the other postsocialist countries were able to accumulate reserves—largely by rationalizing the benefits—these reserves should be translated, in the first place, into contribution rate cuts.

References

- Deutsch, A. 1991. One pension system in transition: The case of Hungary. Paper prepared for the International Studies Association, Vancouver, 21 March.
- Hanke, S. H. 1990. Reflections on Yugoslavia's transition to a market economy. Paper presented at the Cámara de Comercio e Industria, Madrid, 13 November.
- Kopits, G. 1991. Fiscal reform in European economies in transition. In *Transition to a market economy*, ed. P. Marer and S. Zecchini. Paris: OECD.
- . 1992a. Social security. In *Fiscal policies in economies in transition*, ed. V. Tanzi. Washington, D.C.: International Monetary Fund.
- . 1992b. Tax reform in Eastern Europe: Comment. In *Proceedings of the 84th Annual Conference on Taxation of the National Tax Association*, ed. F. D. Stocker and J. L. Staton. Columbus, Ohio.