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Privatizing Social Security in the United States: Why and How?

Laurence J. Kotlikoff
Boston University and NBER

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PRIVATIZING SOCIAL SECURITY IN THE UNITED STATES: WHY AND HOW?

Abstract

Privatization of social security is spreading from Chile to other parts of the world. Chile, Peru, Argentina, England, Sweden, and Australia have already privatized, and Bolivia, Mexico, and Italy are likely to join them. Is privatizing the U.S. Social Security System a good idea? What would it mean for the U.S. economy? Who would benefit, and who would lose? Is there an easy way to privatize the U.S. system? This paper provides some answers to these questions. It argues that privatizing social security has the potential for substantially increasing capital formation, economic efficiency, and living standards. The paper also offers a clear and simple plan for privatizing social security in the United States called the Personal Security System.

Laurence J. Kotlikoff
Boston University

I. Introduction

Privatization of social security is spreading throughout the world. Chile, Peru, Argentina, England, Sweden, and Australia have already privatized, and Boliva, Mexico, and Italy are likely to join them shortly. In the United States, there is growing interest among politicians, the public, and academics in privatizing social security.[1] Senators Simpson and Kerry have called for the partial privatization of the U.S. system, and former presidential candidate Steven Forbes has called for the complete privatization of the system.

Is privatizing social security a good idea? Is it something the U.S. should do? What would it mean for the economy? Who would benefit, and who would lose? Is there a simple way to privatize the U.S. system? This paper attempts to answer these questions. It points out that privatizing social security has the potential for increasing economic efficiency, raising living standards, and improving the intra- and intergenerational distribution of resources. Whether it does so depends on the nature of the system being privatized and the manner in which privatization occurs.

To make this point clear, Section II plays devil's advocate in arguing that privatizing social security may represent little more than a shell game in which the government simply relabels its fiscal receipts and payments leaving underlying economic conditions unchanged. Chile's privatization is described here to illustrate the relabeling of fiscal variables, although the Chilean privatization appears to represent more than just a relabelling of existing fiscal arrangements.

Section III responds to Section II by pointing out that, at least in the United States, privatizing social security would represent not just a change in form, but also a change in economic substance. This section also points out a number of fundamental economic problems associated with the U.S. Social Security System – all of which could be remedied through

privatization. These problems include labor supply distortions, the capricious inter- and intragenerational distribution of resources, the lack of information and uncertainty surrounding individuals' future social security benefits, and the difficulty of sustaining the system through the demographic transition.

Section IV examines one of these issues in more detail, namely the degree to which privatizing social security can reduce the distortion of labor supply and, thereby, improve economic performance and overall economic well being. Specifically, I simulate the Auerbach-Kotlikoff Dynamic Life-Cycle Simulation Model (the AK model) to suggest the potential welfare changes and efficiency gains from privatizing a pay-as-you-go social security system in a stylized economy. The distinction between welfare changes and efficiency gains turns on whether or not initial generations are fully compensated for any economic injury associated with privatization. In the calculation of welfare changes, no compensation is provided, whereas full compensation is provided in the calculation of efficiency gains.

The results indicate that, with the right initial conditions and the right choice of fiscal instruments during the transition, privatization can significantly reduce labor supply distortions and, thereby, raise economic efficiency. But if the initial conditions aren't right or if inappropriate fiscal instruments are used during the transition, privatization can end up lowering economic efficiency.

Sections V considers the requirements for successful privatization of the U.S. social security system. It points out that a wholesale adoption of the Chilean formulation is not likely to work in the United States. This section offers, instead, a very simple scheme for privatizing the U.S. system called The Personal Security System. After describing this scheme, Section V considers its advantages and disadvantages. The final section, VI, concludes the paper.

Is Privatizing Social Security Just a Shell Game?

To evaluate whether or not privatizing social security represents a fundamental change in policy or simply a relabeling of existing policy, one needs to first describe the four features that typically arise in social security privatizations. They are a) the replacement of payroll taxation with mandatory contributions to private pension accounts, b) continued payment of social security benefits to current retirees -- those collecting benefits at the time of the privatization, c) the gradual phase-out of social security benefits for future retirees, and d) a method of financing social security benefits during the transition to a completely privatized system.

Each of these elements is present in Chile's privatization, although not necessarily described in these terms. For example, existing social security beneficiaries continued to receive their benefits, but existing workers were given *recognition bonds* whose values were purported to equal the present value of the claims to future social security benefits which workers had accrued under the existing system.[2] The recognition bonds come due at retirement. Hence, although it used different language ("payment of principal plus interest on recognition bonds" rather than "social security benefits"), Chile, in effect, chose to provide social security income to existing workers which would phase out to zero for new workers who had accrued no benefits under the old system. Chile's method of financing social security benefits (including paying interest and principal of the recognition bonds) during the transition involves deficit finance, although no one in the Chilean government went out of his way to make this point clear. When it began to privatize, Chile was running large annual budget surpluses. With privatization, these surpluses were substantially reduced. The result was equivalent to Chile's leaving its budget surplus intact, but explicitly borrowing to cover the payment of social security benefits during the transition.

At quick glance, Chile's social security's privatization appears to represent simply a clever shell game. First, it left existing retirees in exactly their pre-privatization position. Second, it transformed an implicit liability to pay existing workers their accrued social security benefits into an explicit liability to pay them principal plus interest on recognition bonds – all of which amounts, in the main, to simply a change in language. Third, it transformed the pay-as-you-go system's ongoing implicit tax on workers into an explicit tax. The implicit tax refers to the fact that compulsory contributions to a mature pay-as-you-go social security systems earn a below-market rate of return, namely the growth rate of the economy. In permitting workers to contribute to private pensions, Chile let them earn a market rate of return on their retirement contributions, but hit them with higher explicit general revenue taxes to service a) the explicit debt issued to meet benefit payments to existing retirees and b) the recognition bonds provided to existing workers. Assuming initial older generations are not forced to share the burden of servicing the additional explicit debt as well as recognition bonds, the explicit tax hitting current and future workers will be just as large as the implicit tax would have been.

Following the money reinforces the impression of a shell game. Consider the money taken from young Chilean workers in the form of payroll taxes and handed to old retirees as social security benefits. Under privatization, the same money is taken from young workers, but is placed in private pension funds. These pension funds, however, immediately hand back the money to the government in exchange for government bonds. The government then takes the money and hands it over to the old retirees as social security benefit payments. When workers retire, they receive principal plus interest payments from the pensions based on their pension's investment in government bonds. But they are forced to hand back some of this money to the government as taxes levied to pay interest on this same government debt. To a Martian

observing, from outer space, the net flow of money from young workers and old retirees to the government, non privatized and privatized social security regimes would look identical.

Now one might object that certain elements of privatization, such as the fact that workers receive a variable rate of return on their private pension contributions, make the privatized system inherently different from its pay-as-you-go social security predecessor which pays a potentially safer rate of return which is determined by the economy's growth rate. But, such objections may not withstand close scrutiny. Under the Chilean system, workers do receive a random rate of return on their private pension contributions. But since these contributions are invested in government bonds, the variability in their return depends on the variability in the return paid on government bonds. But note that the workers also have to pay taxes to cover interest payments on the additional government bonds (including recognition bonds) that are issued in the course of privatization. So if the interest rate paid on government bonds is high, taxes will be high. If they are low, taxes will be low. These variable taxes effectively represent a short position in government bonds in workers' portfolios which exactly hedge their increased holdings, through their pension funds, of risky government debt, leaving them in the privatized system exposed to no greater investment risk than under the original pay-as-you-go system. This argument assumes that workers will invest their additional pension contributions in government bonds or encourage their pension plans to do so. But this is precisely the outcome that should arise in equilibrium. Assuming workers were optimally investing their portfolios prior to the privatization, the post-privatization distribution of risks ends up identical to the pre-privatization distribution of risks.

III. Substantive Aspects of Privatizing Social Security

First impressions notwithstanding, Chile's and other countries' privatizations of social security may produce fundamental economic changes along a number of dimensions. First, privatization may reduce labor supply distortions. Second, it may alter the inter- and intragenerational distribution of resources. Third, it may leave households at greater risk of outliving their resources during their retirements, and fourth, it may alter the extent of intergenerational risk sharing. This section considers each of these points in turn.

Labor Supply Distortions

Suppose the pre-privatized system provides social security benefits which are unrelated to a worker's past social security contributions or are perceived to be unrelated. Then social security's entire payroll tax will represent a distorting marginal tax on labor supply. Since privatizing social security eliminates the payroll tax, it eliminates this distortion.

Distortions of economic decisions rise with the square of the total effective marginal tax on the decision, so the contribution of the payroll tax to distorting labor supply depends upon the size of marginal income taxes as well as other effective marginal labor taxes. In the United States, workers who earn less than social security's covered earnings ceiling (currently $62,500) are subject to the full 15.3 percent marginal social security payroll tax.[3] Most of these workers are likely to be in the 15 percent federal marginal income tax bracket. They are also likely to face a 5 percent state marginal income tax and state sales taxes as well as federal excise taxes which together effectively tax their labor earnings at about 5 percent.

In combination, these non social security marginal taxes total 25 percent. The 15.3 percent U.S. social security payroll tax rate raises the total effective marginal tax rate on labor supply from 25 percent to 39 percent once one takes into account the fact that half of the payroll tax

contribution (the employer's contribution) is deductible from the federal income tax. Now .25 squared equals .0625, and .39 squared equals .1521. Since the distortion of labor supply is proportional to the square of the total effective marginal labor tax rate, the U.S. social security payroll tax may be raising labor supply distortions of low income workers by 143 (([.1521/.0621]-1)*100) percent even though it raises the total effective marginal labor tax rate by only 56 (([.39/.25]-1)*100) percent.[4]

The Linkage at the Margin of Benefits to Earnings

This finger exercise is striking, but it may overstate social security's actual distortion of labor supply and the efficiency gains from privatization. One reason is that, for many American workers, social security benefits are tied, at the margin, to additional labor earnings. If such workers understand this linkage (a big if), their total effective marginal tax rate will be reduced by the size of this marginal subsidy.

In thinking about marginal benefit-tax linkage in unfunded social security systems, one's first inclination might be that this linkage is governed by the difference between the economy's real return to capital and the economy's growth rate. Since, in the long run, pay-as-you-go social security pays, on average, a return equal to the economy's growth rate and since workers could otherwise receive a return equal to the economy's real return to capital if they could save their social security contributions on their own, it might seem impossible to provide workers with a dollar back in benefits (measured in present value) for each dollar they contribute in taxes; i.e., to provide full benefit-tax linkage. But what social security pays out on average in exchange for additional social security contributions is not necessarily related to what it pays out on the margin, and it is marginal, not average, social security benefit-tax linkage that matters for

understanding social security's contribution to labor supply distortions. Indeed, at the margin, one can potentially produce greater than dollar-for-dollar benefit-tax linkage with sufficiently high inframarginal taxation.

In the United States, marginal benefit-tax linkage varies enormously across the population. Many secondary earners in two-earner couples and all non working spouses in single-earner couples collect dependent retirement and survivor benefits based solely on their spouse's earnings histories. Consequently, they receive zero additional benefits in exchange for their marginal payroll tax contributions to social security.[5] The same is true for workers under age 21 since their earnings are not included in the calculation of average monthly earnings for purposes of determining retirement benefits. On the other hand, benefit-tax linkage for many primary earners in two-earner couples is significant.

Table 1 presents net marginal tax rates on social security contributions taking into account benefit-tax linkage. These data were provided by Andrew Samick based on a benefit-calculating program developed in Feldstein and Samwick (1992).[6] The calculations assume a 6 percent real rate of discount, a 1.2 percent rate of real wage growth, and a 3.5 percent rate of inflation and consider the net rate of social security benefit taxation arising from a permanent increase in monthly earnings by $1. The table considers six different cases: a) a single very low-earning female who, at the margin, is in the 90 percent bracket of the social security benefit formula (i.e., a dollar more of average indexed social security montly earnings leads to 90 cents more in social security benefits) and faces no federal income taxation of her benefits, b) a single high-earning male who is in the 15 percent bracket of the social security benefit formula and pays federal income tax on 85 percent of his social security benefits at a 33 percent rate, c) a married male in a single-earner couple who is the 90 percent social security benefit bracket and faces no federal

income taxation of his benefits, d) a married male in a single-earner couple who is in the 15 percent marginal social security benefit bracket and pays federal income taxes in old age on 85 percent of his social security benefits at a 33 percent rate, e) a secondary-earning spouse – a spouse whose earnings are sufficiently low that he will collect benefits based solely on his spouse's earnings record, and f) a very high earner who earns more than the covered earnings ceiling.

The net tax rates reported in the table consider only old age and survivors (OASI) benefits and should be compared with the 11.2 percent OASI payroll tax. Negative values refer to subsidies. The table shows three things. First, it confirms that marginal OASI net tax rates differ greatly across different Americans. For example, at age 50, the table's low-earner, single-earner husband faces a 12 percent social security subsidy, whereas a high earner (in the 15 percent benefit bracket), single male age 50 faces a 10 percent marginal tax. Second, OASI net tax rates decline, often substantially, over the life cycle. Consider again the low-earner, single-earner husband. His net tax rate falls from 2 percent to -23 percent between ages 25 and 60. The reason for the decline in net tax rates with age is that the closer one gets to collecting marginal benefits arising from additional labor earnings, the less severe is the discounting of those benefits.

Third, as one goes from low- to high-earner households who are earning less than social security's covered earnings ceiling, net marginal tax rates rise substantially. For example, there is a 15 percentage point spread between the 5 percent subsidy facing 50 year-old low earning, single males and the 10 percent tax facing 50 year-old high earning, single males. On the other hand, once one passes the covered earnings ceiling, the marginal OASI net tax drops to zero. Workers earning more than social security's covered earnings ceiling face zero marginal OASI payroll taxation and also receive no marginal social security benefits. For this large group of

workers, social security does, however, represent a substantial infra-marginal tax. Indeed, it is this large infra-marginal tax on high earners that is used to provide low earners, as a group, with low or negative marginal OASI net tax rates and average rates of return on their contributions that exceed the economy's growth rate.

Do workers whose benefits are linked at the margin to additional earnings understand the linkage? We don't know. However, we do know that correctly assessing the linkage is very difficult. Doing so requires knowledge of intricate OASI benefit provisions and the ability to make sophisticated actuarial calculations. Since very few workers have such knowledge or actuarial background, the vast marjoity are, presumably, guessing about the degree to which their benefits are linked at the margin to their additional earnings. If they are over-assessing the degree of linkage, the present social security system may be less distortionary than it appears. On the other hand, if they are under-assessing the degree of linkage, the opposite will be true. In this case, privatizing social security can be beneficial by simply making clear that the true rate of marginal taxation of labor supply is less than the perceived rate.

The Optimal Second-Best Tax Structure

A second reason that the simple efficiency calculation presented above may overstate the gains from privatization is that the tax used to finance transitional social security benefits (including the servicing of any additional debt issued in the course of privatization) may, itself, distort labor supply as well as other economic choices. For example, if income taxes are used as the transition financing instrument, both labor supply and saving decisions will be distorted. Thus, whether privatization ends up, on balance, reducing tax distortions depends on whether privatization moves the economy closer to its second-best tax structure.

The second-best tax structure depends not only on the choice of what base to tax, but also on the distribution of infra-marginal and marginal taxes given the choice of tax bases. Although the literature on optimal redistributive taxation has not, it seems, explicitly considered social security net taxation, it's clear that this form of taxation can play an important role in achieving the optimum. It's also clear from Table 1 that the current structure of marginal net social security taxation has a number of anomalous features that may be very hard to justify as part of an optimal second-best redistributive tax structure. From this perspective, social security's privatization can be viewed as an opportunity to the improve the structure of infra-marginal and marginal taxation.

Privatization and the Intra- and Intergenerational Distributions of Resources

Table 2 reports lifetime net tax payments for different household types belonging to different cohorts. The table's data were provided by Gene Steuerle. They differ from similar estimates reported in Steuerle and Bakija (1994) because they incorporate a 6 percent rather than a 3 percent real discount rate.[7] The households under consideration are single males, single females, single-earner married couples, and two-earner married couples. Low, average, and high past and projected levels of earnings are considered. Average earnings refers to the average level of social security earnings. High earnings refers to social security's maximum level of covered earnings, and low earnings refers to a level of earnings equal to 45 percent of average earnings. For 1993, low, average, and high earnings were $11,000, $24,444, and $60,000.

As the table shows, pay-as-you-go social security has produced an enormous transfer of resources from current young and, by implication, future American cohorts to cohorts who are now old or are already deceased. The system also redistributes substantial sums from the lifetime

poor to the lifetime rich, from males to females, from those who are unmarried to those who are married, and from two-earner couples and singles to single-earner couples. One caveat here is that the table ignores differences by income in survival probabilities. Since the poor have shorter life expectancies than the rich, the table overstates the extent of social security system's intragenerational redistribution.

Take current 40 year-olds who were born in 1955 and will be age 65 in 2020. For males in this cohort with low earnings, the lifetime net loss from being forced to participate in pay-as-you-go social security is equivalent to arriving at age 65 with $165,000 less in assets – a fantastic sum for someone who is now earning only $11,000 or so per year. For a high earning single 40 year-old male, the net loss totals $949,000!. For single females, the corresponding losses are about $10,000 smaller because females have longer life expectancies than do males. Next consider a 40 year-old single-earner couple whose single earner has low earnings. This couple's net tax is $89,000, which is $76,000 less than that of the low-earning single male who pays exactly the same taxes. It's less than one third the $288,000 loss experienced by the same aged two-earner couple in which both spouses are low earners, and its less than a twelfth of the $1.24 million loss experienced by the same aged two-earner couple in which one spouse is a high and one spouse is an average earner.

Would Privatization Alter the Inter- and Intragenerational Distribution of Resources?

The privatization of social security in the United States would, in all likelihood, significantly alter both the country's inter- and intragenerational distributions of resources. One reason the intergenerational distribution of resources would likely change involves the choice of the tax used to finance social security benefits during the transition. If, for example, a federal retail sales

tax were used as the financing mechanism, those who were old at the time of the reform would, as a group, end up facing a higher remaining lifetime net tax burden than they would absent the reform.[8] Another reason involves deficit delusion. If, in the course of privatization, the implicit liability to pay social security benefits to existing retirees and current workers were made explicit through, for example, the issuance of recognition bonds, the level of official U.S. debt would roughly triple. The reaction of the general public, the financial markets, and the politicians to this change in fiscal nomenclature would likely be to adopt a more conservative course of fiscal policy than would have occurred with the pre-privatization labeling of fiscal obligations. A more conservative course of fiscal policy would, in turn, likely mean that the initial elderly would face larger net taxes over the remainders of their lifetimes and that young and future generations would, consequently, face smaller net taxes over their course of their lives.

The intragenerational distribution of resources would, almost surely, be altered as well by privatization. Take, as an example, the Personal Security System proposed in Section VI. This proposal has a feature that is common to most other U.S. social security privatization proposals, namely earnings-sharing between spouses. Earnings sharing means that married workers' mandatory contributions to private pensions would be split 50-50 between themselves and their spouse and deposited in separate accounts – one for each spouse. Single-earner couples who, under the current system, receive dependent benefits free of any additional contribution would find they are no longer so advantaged. Rather than receiving roughly 1.5 times the amount of retirement income per dollar contributed that single individuals as well as two-earner couples in which the spouses have roughly equal earnings receive, single-earner couples would receive the same total retirement income per dollar contributed.

Other capricious forms of intragenerational redistribution arising under the current system would also be eliminated. Consider two workers, A and B, who have the same present value of lifetime earnings, but A earns relatively more of his lifetime earnings when young. As Table 1 indicates, the current social security system penalizes early earners relative to late earners because it fails to credit fully early earners with the fact that they pay their payroll taxes earlier and, consequently, pay more payroll taxes when measured in present value.[9] In a privatized system, contributions would earn the market rate of return, so that a dollar contributed at, say, age 30 would have more years to cumulate than a dollar contributed at, say, age 45 leaving contributors indifferent as to the timing of their contributions.

Another channel through which privatization would likely change the intragenerational distribution of resources involves bequests. If, as seems likely, privatization would reduce the degree of annuitization of the resources of the elderly, the elderly will end up leaving more bequests than would otherwise be the case.[10] The percentage increase in bequests would likely be greater for poor, low income, and middle income elderly households than it would for rich elderly households for whom social security benefits are small compared to their non annuitized resources (their net wealth). Thus, privatization would reduce, at least to some extent, inequality within a cohort in the receipt of inheritances.

Information

Another major problem with the current U.S. social security system is that workers receive no information about the size of their likely future social security benefits. In contrast, under a privatized system, workers would receive retirement account statements on a routine basis.

Admittedly, workers can request a social security benefit calculation from the Social Security Administration. But few appear to do so.

The failure of the social security system to provide benefit information may, however, be changing. According to my understanding, the Social Security Administration is planning in the near future to distribute earnings statements and estimates of future benefits to the entire U.S. workforce on an annual basis. Unfortunately, this statement, like current the current statement, will, it appears, contain assurances from the Social Security Commissioner to the effect that workers can rely on receiving their benefits when they reach retirement. This badly misstates the facts. Social security's long-term finances are in worse shape now than prior to 1983 when the Greenspan Commission announced that it had resolved the system's long-term financing problem. According to the most recent Social Security's Trustees' Report, under intermediate assumptions, a 2.2 percentage point immediate and permanent increase in the payroll tax rate is needed to close the 75-year social security OASDI deficit. The comparable 1983 figure was 1.9 percentage points. Under pessimistic assumptions, a 5.7 percent point immediate and permanent OASDI tax increase is needed. Recent experience suggests, by the way, that the pessimistic projections may provide a better forecast of the future than the intermediate projections.

Since social security has been declared "off the table" by our political leaders, it's not likely that payroll taxes will be raised any time soon. But the longer one waits, the higher is the requisite tax hike, assuming, that is, that tax increases, rather than benefit cuts, are ultimately used to shore-up the system. Indeed, the Trustees' Report suggests that OASDI payroll taxes will need to rise by over 4 percentage points under intermediate assumptions and over 8 percentage points under pessimistic assumptions if the government waits until the Social Security Trust Fund is depleted before taking action. In considering the likelihood of such large future OASDI

tax increases, one needs to take into account Medicare's long-term deficit. According to the Medicare Trustees, the HI tax rate needs to rise immediately by roughly 5 percentage points under intermediate assumptions and by roughly 10 percent under pessimistic assumptions to achieve 75-year actuarial balance. Is it likely that OASDHI payroll taxes will double at some point in the not too distant future without there being any cuts in social security benefits? The answer is surely no. Indeed, baby boomers could well experience very sharp reductions in their social security benefits when they retire. Nothing in the soon-to-be issued social security benefit statements will, however, indicate that current workers' future social security benefits are threatened by the OASDI and HI long-term deficits.

Apart from providing workers misleading information that may lull them into a false sense of security and lead them to undersave, the U.S. government is leaving unresolved how it will deal with social security's long-term deficit. This uncertainty does not reflect aggregate risk which can't be diversified. On the contrary. The significant fiscal stress facing social security at the beginning of the next millennium is predictable. Leaving uncertain exactly who will be forced to deal with social security's pending fiscal crisis has a real economic cost. Today's workers would, presumably, be willing to pay a fair amount to find out right now whether they will suffer substantial social security benefit cuts when they reach retirement or whether their benefits will be fully paid notwithstanding the likely need to levy sky-high payroll taxes on the next generation. Privatization offers a way of resolving this uncertainty, at least with respect to retirement income. In specifying the tax to be used to finance social security benefits during the transition, privatization lets everyone know today the amount they can expect to contribute to resolving this aspect of the nation's long-term fiscal problems. The act of privatization may also

send a subtle, but important message, namely that each of us must take personal responsibility for saving for and otherwise managing our retirements.

Life Span Insurance and the Annuitization of the Elderly

As mentioned, the privatization of social security is likely to reduce the resource-annuitization of the elderly and, consequently, the degree to which they are insured against outliving their resources. The U.S. social security system provides benefits in the form of real annuities and, because it pools together virtually all members of each cohort, it implicitly provides its annuities at actuarially fair rates with respect to each cohort taken as a whole. A privatized social security system would find it difficult to match this performance for four reasons. First, since private insurance companies are unable to hedge the risk of unexpected inflation, they are unable to market real (indexed) annuities. Second, since private insurance companies cannot compel the public to purchase their annuities, they face the problem of adverse selection. Third, since private insurers need to market and advertise their annuity products and since they cannot capture the economies of scale associated with selling to the entire market, they would likely operate at higher administrative costs than the Social Security Administration. Fourth, unlike the government which can adjust to unexpected increases in longevity by raising payroll taxes or making other fiscal adjustments that don't involve reducing social security benefits, private insurers need to maintain substantial reserves to deal with unexpected increases in the longevity of their annuitants. Their annuities typically involve a fairly low guaranteed rate of return with a variable dividend that depends on market conditions including the insurers' actuarial experience.

The first of these concerns – the inability of insurance companies to market real annuities – could be avoided by having the government issue indexed debt which insurance companies could then purchase to hedge their liabilities to pay real annuities. Indexed debt is issued by a number of countries. It does limit a country's ability to renege on its nominal debt and other nominal liabilities by inflating, but this should be counted as a plus.

The second concern – the problem of adverse selection – could be reduced in a privatized social security system by requiring all participants to spend their accumulated retirement accounts on annuities at a particular age, say age 65 and also by requiring insurers to sell annuities on equal terms to all those seeking to purchase them. Alternatively, the government could abandon the goal of annuitizing the elderly and simply ensure that the elderly don't spend-down their retirement accounts at too fast a rate.[11] For example, the U.S. government could adopt the Chilean government's stipulation that a retiree can withdraw in a given year only one n^{th} of those funds in his retirement accounts which are not annuitized, where n stands for the retiree's remaining life expectancy.

The third concern – administrative costs – is probably a somewhat smaller one for the United States than it would be in other countries. The reason is that the United States has a well developed private defined contribution pension system (i.e., 401k, 403b, IRA, SRA, and Keogh accounts). The typical annual fees for managing these accounts appear to range from .5 to 1.5 percent of assets. Fees of this size are fairly high. One way that the administrative fees for managing privatized social security accounts could be reduced would be to restrict the type of funds in which participants could invest. For example, the government could mandate that one half of compulsory retirement contributions be invested in a U.S. equity index fund (e.g., the S&P 500), that one quarter be invested in a foreign equity and bond index fund, and that one

quarter be invested in a U.S. government and private index bond fund. Competition to provide these standardized products would, presumably, lead to substantially smaller management fees since no real asset management would be required. Also, since the products being sold would be essentially identical, there would be little advantage in advertising.

The fourth concern – variable annuity returns with low guaranteed payouts – is more a concern about form than substance. As indicated, the risk of unexpected increases in longevity confront the existing social security system, just as they would confront a privatized system. The government's response to greater than expected longevity of its social security annuitants is, it appears, not to reduce the benefits of current retirees, but rather to raise payroll and other taxes, including, by the way, federal income taxation of social security benefits. Assuming the intragenerational and intergenerational distribution of the burden of the government's dealing with unexpected longevity is the same as that which would prevail under a privatized system, the government is, in effect, also providing the same low guarantee, variable annuity that the private market would provide – just one that is packaged differently, namely as the combination of a certain annuity together with uncertain taxes.

Economic Uncertainty

Another way that privatization could substantively alter the economy is by changing the riskiness of old age consumption. Pay-as-you-go social security effectively introduces a new asset into the economy, one whose return equals, after a transition period, the growth rate of earnings in the economy. Even if the average growth rate of earnings is less than the average rate of return on capital, participants in social security may be better off because the variability of the growth rate of earnings is less than the variability of the return to capital.

To see this, consider the long run of a very simple model in which each generation lives for two period, works only when young, earning a wage W (which, I'll assume is invariant to the introduction of social security), and consumes only when old. Let r stand for the random rate of return on capital and g stand for the random population growth rate (labor productivity growth is assumed to be zero). In the absence of pay-as-you-go social security, old age consumption is given by W(1+r). In the presence of pay-as-you-go social security, old age consumption is given by (W-T)(1+r) + T(1+g), where T is the compulsory social security tax.

Clearly, if the expected value of g is less than the expected value of r, the expected value of old age consumption will be reduced by social security. On the other hand, being able, effectively, to invest in an asset paying g, by making tax payments to social security when young, permits participants to diversify their asset portfolio. The potential to use this asset to diversify the riskiness of consumption when old will, of course, be enhanced if r and g are negatively correlated. But the potential ability to diversify risk in this manner does not necessarily imply that pay-as-you-go social security raises the welfare of those living in the long run. The reason is that the disadvantage of being forced to invest in an asset with a lower expected return may outweigh the diversification advantage. In this regard, it's worth noting that in the United States, the average real rate of return to investing in capital appears to be roughly three times larger than the average growth rate of earnings.

If the growth rate of earnings were certain and if the U.S. economy offered a safe asset in which to invest, one could compare the growth rate of earnings with the safe rate of return to determine whether pay-as-you-go social security would raise or lower the well being of those alive in the long run (again, ignoring general equilibrium effects on long-run factor prices). But those are two big ifs. Earnings growth is definitely not certain in the United States or any other

country. Moreover, unlike some countries which issue indexed bonds, the United States' doesn't issue a safe asset. The three-month U.S. Treasury bill rate is often referred to as a risk-free rate, but this ignores the fact that inflation, even three months ahead, is not perfectly predictable, making the real return on this security risky.[12]

Given the riskiness of the growth rate and the lack of a risk-free asset, there is no simple way to determine whether the diversification value of participating in pay-as-you-go social security is worth the price of receiving, on average, a lower return. And, unfortunately, there are not, to my knowledge, any empirical studies that have tried to address this question by a) specifying how households view risk and b) how the distribution of g compares and covaries with the distribution of r.

Intergenerational Risk Sharing

A final issue in considering the pluses and minuses of privatizing social security is the extent to which an existing pay-as-you-go social security system is part of a broader government scheme to share risks across generations.[13] If it is, the act of privatizing social security may alter the degree of intergenerational risk sharing. Consider again our model in which each person pays social security taxes when young. But now assume that there is no population growth, but that labor productivity each period is random, taking on either a high or low value. Given a proportional social security tax rate, the amount of social security taxes collected each period depends on that period's labor productivity. Furthermore, since social security is, let's assume, a pay-as-you-go program, the level of benefits will be low if labor productivity is low and high if labor productivity is high. But this means that social security helps the contemporaneous young and old share risk. When times are bad for the young and their wage earnings are low, the

elderly receive smaller social security benefits and vice versa when times are good. Indeed, we can describe this arrangement as one in which the young always pay the taxes associated with the high productivity outcome to the contemporaneous old, but receive a payment back from the elderly when productivity is low. This way of describing things views the elderly as providing the contemporaneous young with earnings insurance.

This example suggests that to evaluate the impact on the well being of future generations of the elimination of pay-as-you-go social security requires understanding the nature and degree of risk-sharing arrangements in the pre-existing system. Actually, there is a growing body of empirical evidence concerning intergenerational risk sharing in the United States (e.g., Abel and Kotlikoff, 1994, Altonji, Hayashi, and Kotlikoff, 1992, Hayashi, Altonji, and Kotlikoff, 1996). As it turns out, this evidence provides remarkably little support for the proposition that social security or other fiscal institutions are pooling risks across generations.

Simulating the Macro-Economic Effects, Welfare Changes, and Efficiency Gains from Social Security Privatization[14]

This section reports the results of four social security privatization simulations of the AK Model.[15] In these simulations, social security benefits are phased out slowly over time. However, the social security payroll tax is immediately permitting workers to save privately the money they would otherwise have contributed to social security. The simulations differ with respect to the method of financing social security benefits during the transition. Specifically, I consider paying for social security benefits during the transition through either a) a consumption tax, b) raising the extant progressive income tax, or c) using deficit finance for five years and

then raising either consumption or progressive income tax rates to pay not only for remaining annual social security benefits, but also to pay for interest on the accumulated government borrowing in the first five years of the transition.

The AK Model

The AK model calculates the time-path of all economic variables in its economy over a 150 year period. The model has 55 overlapping generations. Each agent lives for 55 years (from age 20 to age 75). There are three sectors: households, firms, and the government. Households (adult agents) decide how much to work and how much to save based on the after-tax wages and after-tax rates of return they can earn in the present and the future on their labor supply and saving, respectively. The work decision involves not only deciding how much to work in those years that one is working, but also when to retire. The AK model's consumption and leisure preferences which underlie these decisions were chosen in light of evidence on actual labor supply and saving behavior.

As agents age in the model, they experience a realistic profile of increases in wages. This age-wage profile is separate from the general level of wages, the time-path of which is determined in solving the model. Fiscal policies affect households by altering their after-tax wages, their after-tax rates of return, and, in the case of consumption taxes, their after-tax prices of goods and services. The model is equipped to deal with income taxes, wage taxes, capital income taxes, and consumption taxes. It is also able to handle progressive as well as proportional tax rates. Finally, and most importantly for this study, the model includes a pay-as-you-go social security system in which the perceived linkage between taxes and benefits can be set at any desired value.

All agents are assumed to have the same preferences, so differences in behavior across agents arise solely from differences in economic opportunities. Since all agents within an age cohort are assumed to be identical, differences in economic opportunities are present only across cohorts. In this study, the model's population growth rate is set at a constant 1 percent rate, with the population of each new cohort being 1 percent larger than that of the previous cohort.

The AK Model's production sector is characterized by perfectly competitive firms that hire labor and capital to maximize their profits. The production relationships that underlie firms' hiring decisions and their production of output are based on empirical findings for the U.S. The government sector consists of a treasury that collects resources from the private sector to finance government consumption and an unfunded, "pay as you go" Social Security system which levies payroll taxes to pay for contemporaneous retiree benefit payments. There is no money in the model, and thus, no monetary policy. There is, however, government debt, and the model can handle deficit-financed reductions in payroll and other taxes. It can also handle gradual phase-ins of one tax for the other. Finally, the model contains a Lump Sum Redistribution Authority -- a hypothetical governmental agency which can use lump sum taxes and transfers to redistribute among generations alive at a point in time as well as those who will be born in the future. The LSRA can be used (switched on) to study the pure economic efficiency effects of particular policy changes.

Although the model handles a great number of complex processes, it leaves out large portions of reality. The model's agents are heterogeneous only with respect to their age. There are no welfare recipients or millionaires, whose saving and work behavior might differ dramatically from that of the model's agents. The model does not include saving for purposes other than retirement, such as bequests. Nor does the model incorporate uncertainty either with respect to

individual or macroeconomic outcomes. These and other omissions suggest viewing the model's results cautiously.

Model Calibration

The pre-privatization economy features a progressive income tax that finances government consumption equal to 20 percent of output, a 12 percent social security payroll tax, zero linkage between social security benefits and taxes, zero initial official government debt, a 1 percent population growth rate, zero technological change, a Cobb-Douglas production function, and a CES utility function in consumption and leisure with intertemporal and intratemporal elasticities of substitution of .25 and .8, respectively, and a time preference rate of 1.5 percent.

The simulation phases out social security benefits in a linear manner over a 45-year period. This phase-out period starts 11 years after the payroll tax is eliminated, thus permitting all beneficiaries at the time of the reform to collect all their benefits. As mentioned, social security benefits during the transition are financed by either a proportional consumption tax, a progressive income tax, or initial deficit finance coupled with subsequent increases in either proportional consumption tax rates or progressive income tax rates. For each case we present results in which the welfare (utility) of initial generations is allowed to change in response to the privatization as well as results in which the welfare of initial generations is held constant. In the latter simulations, the government uses lump sum taxes and transfers to redistribute across generations during the transition so as to a) leave all generations alive at the time of the transition with precisely the same utility they would have enjoyed absent privatization and b) equalize the utility of all generations born after the policy is initiated.

Simulation Results

Figures 1 and 2 consider the case of using a proportional consumption tax to finance social security benefits during the transition. Figure 1's simulation does not compensate initial generations for any policy-induced changes in their welfare, whereas Figure 2's simulation provides full compensation. The top panel of Figure 1 and all other figures show macroeconomic policy effects. The bottom panel shows welfare effects.

As the top panel in Figure 1 makes clear, the privatization of social security can have very major macroeconomic effects. In this simulation, there is a 50 percent long-run increase in the economy's capital stock, a 16 percent increase in output, and a 10 percent increase in the real wage. In addition, the real interest rate falls by almost 300 basis points. These macro effects generate about a 10 percent increase in the welfare of generations born in the post-privatization long-run. For older generations alive at the time of the reform, the story is, however, different. Most of these generations lose as a result of privatization; i.e., they experience a decline in their remaining lifetime utility. For example, the oldest cohort alive at the time of the reform – the one born 54 years prior to the reform – experiences a 5 percent decline in remainining lifetime utility where utility changes are measured in terms of the percentage change in remaining lifetime consumption and leisure needed, in the old steady state, to produce the level of same level of utility arising under privatization. The reason the initial elderly are made worse off is clear. Under this privatization scheme, they are forced to pay consumption taxes which limits the amount of consumption they can finance out of their remaining lifetime resources.

As Figure 2 shows, the gains to the long-run winners from social security are large enough to compensate the initial losers and, consequently, end up with a Pareto improvement in which all those initially alive are unaffected by the reform and all those born after the reform experience a

4.5 percent increase in their welfare compared with the status quo. Although 4.5 percent is less than 10 percent, it still represents a very substantial improvement in the well being of future generations. The compensated privatization not only produces smaller long-run welfare improvements. It also produces smaller long-run macroeconomic effects. The intuition here is that compensating initial older generations permits them to consume more which lowers national saving, capital accumulation, and transitional output growth.

Figures 3 and 4 raise progressive income tax rates, rather than consumption tax rates, to finance social security benefits during the privatization transition. Note that the uncompensated simulation results are roughly similar to those arising when consumption taxation is used to finance transitional benefits. On the other hand, the compensated welfare gain to those alive after the reform is much smaller – only about 1.7 percent compared with 4.5 percent in the case of consumption tax finance. The reason is that progressive income tax finance entails much higher marginal tax rates during the privatization transition and, therefore, much greater economic inefficiency.

Figures 5 and 6 use consumption taxation to finance transitional social security benefits, but delay raising consumption tax rates until the sixth year after the reform is implemented. Hence, during the first five years of privatization, the government borrows to pay for social security benfits. As a comparison of Figures 1 and 5 show, the additional crowding out of saving arising from the short-term deficit finance in this transition leads to much smaller long-run increases in the capital stock, output, and the real wage. The compensated long-run welfare gain is also smaller – about 3 percent rather than 4.5 percent. Note that in the uncompensated transition (Figure 5), the use of deficit finance mitigates the reduction in welfare of initial older generations.

The final simulations, shown in Figures 7 and 8, repeat the simulations of Figures 3 and 4 in which progressive income taxation is used to finance transitional benefits, but also incorporate five years of deficit finance. Again, both the long-run macroeconomic improvements and welfare gains are reduced by the deficit finance. On the other hand, the short-run loss in welfare for initial older generations is reduced in the uncompensated simulation. Indeed, the bottom panel of Figure 7 indicates that using deficit finance plus progressive income taxation to finance transitional benefits generates close to a Pareto improvement .

Although these simulations are suggestive, much more detailed simulations are needed to really evaluate the efficiency gains from privatizing the U.S. system. Such simulations would include income and demographic heterogeneity across households. They would also model the current system in sufficient detail to produce, as an initial condition, the structure of net marginal social security tax rates reported in Table 1.

A Practical Guide to Privatizing Social Security in the United States

If the United States chooses to privatize its social security sytem, how should it do so? In particular, should it follow the Chilean model? In my view, the key to successfully privatizing social security in the United States is to make it clear, simple, universal, and fair. Clarity and simplicity rules out much of the Chilean approach. To be precise, it rules out providing recognition bonds to existing workers. Why? Because their calculation would entail using a complex formula that workers would not understand and, consequently, would likely mistrust. It also rules out using Chile's complicated and counterproductive method of regulating private pension funds. Finally, it rules out Chile's approach of privatizing not only retirement saving, but also the purchase of life insurance and disability insurance.

The criterion of universality argues against Chile's choice of making privatization voluntary. In the United States, allowing the public to opt out of social security on a voluntary basis would lead to adverse selection in which the federal government would end up stuck with high cost participants (those expecting to live longest). It would also require each worker to make a complicated actuarial decision concerning the advantages and disadvantages of opting out of the old system. Workers who chose not to switch would worry that they were making a mistake and were losing out to financially more sophisticated members of society. Workers who chose to switch would also wonder whether they had made the right choice or whether they had been bamboozled out of their benefits by shrew government officials.

Americans' perception of fairness also seems to rule out the Chilean approach to redistribution. This perception appears to require more progressivity in the provision of retirement income than simply providing all workers with a minimum guaranteed level of retirement income.

In contrast to the Chilean approach, the Personal Security System (PSS) is clear, simple, universal. It's also fair in the way that most Americans apparently define the term. PSS has four features. First, it privatizes all contributions to Old Age Insurance (the OAI part of OASDI), but *only* contributions to Old Age Insurance. Thus it leaves unchanged those contributions made to and benefits received from the Survivors and Disability portions of Social Security. Second, for married workers, the OAI contribution (68 percent of the OASDI total) is split 50-50 between each spouse; i.e., PSS has earnings sharing. These contributions are matched, on a progressive basis, with government contributions and are then invested by workers and their spouses in 401(k), 403(b), IRA, SRA, or Keogh accounts and subject to the same tax treatment, survivor provisions, and investment regulations as these accounts. Third, after the reform begins, social

security retirement (OAI) benefits are calculated by filling in zeros in the earnings records of all Social Security participants for years after the transition begins. This ensures that initial beneficiaries receive their full benefits, that existing American workers receive their full accrued benefits, and that young Americans entering the work force end up with no OAI benefit claims.[16] The reduction in benefits across generations is smooth; they're are no "notch babies." Fourth, a federal retail sales tax or a value added tax is used to finance transitional benefits.

The proposal would improve benefit-tax linkage, enhance survivor protection, eliminate, at the margin, the egregious subsidization of single-earner couples documented in Table 2, offset somewhat the enormous ongoing transfer of resources from the young to the old (see Kotlikoff, 1992), provide much better divorce protection to non working spouses, and eliminate the substantial uncertainty surrounding the manner in which we are going to resolve Social Security's long-term funding problem. It would also make the progressivity of the system transparent. All participants would understand the nature of the government's matching contribution and the fact that low contributors were being favored relative to high contributors.

The most serious concern with the proposal is its potential reduction in life span insurance. As discussed above, because of adverse selection, it may prove quite difficult for households to purchase reasonably priced nominal annuities when they reach retirement, let alone real annuities. The size of this loss may, however, be offset by implicit family annuity arrangements (see Kotlikoff and Spivak, 1981). The government could also ease the problem by issuing indexed debt and by requiring the purchase of annuities at, say, age 65. Another concern is that households would invest their PSS contributions poorly. One remedy here is financial education. Bernheim (1995) suggests that financial decisions may be highly responsive to financial education. Another remedy is forcing contributors to invest in large, diversified index funds. A

third concern is the cost of administering PSS contributions. However, since PSS contributions can be made to existing accounts, marginal administrative costs may be smaller than the average costs examined by Diamond and Valdes-Prieto. These costs may also come down over time in light of competition to provide PSS participants with fairly homogeneous index funds. A fourth concern is that redistributing between workers based, in effect, on their annual earnings (since this determines their annual contribution) is less desirable than redistributing to them based on their lifetime earnings. True. But this seems like a small price to pay compared with the value of being able to make transparent the system's actual method of redistribution.

Conclusion

At first glance, privatizing social security may seem to represent something of a shell game. But closer examination suggests that, in practice, privatizing social security can have important real effects. In the United States, privatizing social security would tighten actual as well as perceived benefit-tax linkage and substantially reduce labor supply distortions. It would also eliminate significant intragenerational inequities, including the differential treatment of one- and two-earner couples. Finally, privatization would clarify, once and for all, how our nation will deal with social security's long-term financing crisis.

Although privatizing social security is a hot academic topic, its success in the policy arena will depend on its clarity, simplicity, inclusivity, and fairness. The Personal Security System is clear, simple, inclusive, and fair. Like all policy proposals, it has its weaknesses. Nonetheless, it seems well worth a try.

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NOTES

1. Recent academic work on privatization of social security include Arrau (1990), Arrau and Schmidt-Hebbel (1993), Raffelheuschen (1993), Diamond and Valdes-Prieto (1994), Steuerle and Bakija (1994), The World Bank (1994), Feldstein (1995), Gustman and Steinmeier (1995), Imrohoroglu, Selahattin, Huang, and Sargent (1995), and Kotlikoff (1996).

2. See Diamond and Valdes-Prieto (1994) for an excellent description of Chile's privatization of social security.

3. The 15.3 payroll tax rate includes the Medicare (HI) tax.

4. For low-income workers covered by the earned income tax credit, the payroll tax's marginal distortion is even larger. Such workers lose 20 cents of their earned income tax credit for every dollar that they earn. Hence, their total effective marginal labor tax rate is 45 percent absent the social security payroll tax and 59 percent with the payroll tax. For such workers, the payroll tax raises their total effective marginal tax rate by 31 percent, but their labor supply distortion by 72 percent. Compared to workers who face the earned income tax credit, the incremental distortion from the payroll tax (which is proportional to the difference between .3481 and .2025) is 62.5 percent larger than the incremental distortion for workers who don't face the earned income tax credit (which is proportional to the difference between .1521 and .0625).

5. This discussion abstracts from disability benefits.

6. Boskin, et. al. (1987) is an earlier study of the marginal net rate of social security taxation which reaches similar conclusions.

7. Since social security tax payments and benefit receipts are both risky, discounting them at a risk-adjusted discount rate seems more appropriate than, say, discounting at the real return on short-term government debt. It's also worth noting that the U.S. equity market has yielded at least a six percent

real return over every 30-year holding period since 1929.

8. Note that since social security benefits are indexed, the real value of social security benefits would not be altered by the use of a retail sales tax or other form of consumption tax. Hence, those initial elderly whose consumption is solely financed by social security benefits would see no increase in their remaining lifetime net tax burden.

9. Note that the current system provides some crediting for early contributions through its wage indexation.

10. See Auerbach, Kotlikoff, and Weil (1992) and Auerrbach, Gokhale, Kotlikoff, Sabelhaus and Weil (1995) for a description of postwar changes in the resource-annuitization of the elderly.

11. A recent study by Juster and Laitner (1995) using TIAA-CREF data and participants suggests that the demand for annuities may be small even when they are fairly priced. However, their findings concern the residual demand for annuities given the receipt of social security benefits. Absent social security, the demand for annuities might be much greater.

12. After this paper was written, the U.S. Treasury did announce its plans to issue indexed debt.

13. The classic article on this issue is Merton (1983).

14. This section and the next draw heavily on Kotlikoff (1996b).

15. See Auerbach and Kotlikoff (1987).

16. The social security benefit formula is progressive, and workers with short earnings histories are, other things equal, treated as relatively poor. The reason is that social security benefits are based the average of workers' indexed monthly earnings, where the average is taken over the worker's entire workspan. Providing full accrued social security benefits as here proposed is, for this reason, more expensive.