NEW SYSTEMS FOR OLD AGE SECURITY:
EXPERIMENTS, EVIDENCE AND UNANSWERED QUESTIONS

by

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ABSTRACT

This paper describes structural reforms to their social security systems that countries have adopted during the past two decades. The new reform strategy is built around three "pillars" that jointly provide old age security: a public pillar that provides a social safety net, a privately managed funded pillar that handles peoples' mandatory retirement savings, and a voluntary pillar for people who want more consumption in old age. It contrasts three variations on the multi-pillar reform model that are being implemented in different countries—the Latin American model (in which individual workers choose the investment manager for their retirement funds), the OECD model (in which employers and/or union trustees choose the investment manager for an entire company or occupation), and the Swedish notional account model (a reformed pay-as-you-go first pillar that may be supplemented by a second funded pillar). Preliminary empirical evidence on the efficiency and growth impact of pension reform, mostly from Chile, indicates that the impact on national saving and financial market development, and through these on economic growth, has been positive and possibly large. However, problems concerning high administrative costs and regulations that distort financial markets remain to be resolved.

REFORMING SOCIAL SECURITY—HOW, WHY AND SO WHAT?

Over the next 35 years, the proportion of the world's population that is over age 60 will nearly double, from 9% to 16% (Figure 1). Due to rapid increases in life expectancy and declines in fertility rates, populations are aging much faster in developing countries than they did in industrial countries. As young working-age people near retirement—around the year 2030—80% of the world's old people will live in what today are developing countries. These countries will be shifting from systems of informal to formal old age security and, given their rapid aging, it is essential that they get this right from the start. At the same time, industrialized countries are trying to reform their existing systems to make them more sustainable and less costly.

Cross-sectional analysis shows that public spending on formal pension plans increases exponentially as populations age. It now exceeds 15% of GNP in some industrialized countries and will do so in many more countries as the demographic transition proceeds (Figure 2). With such large sums involved, how this money is generated and spent can affect the entire economy, by influencing factor supplies, productivity and therefore the size of the GNP pie. For example, high payroll taxes can lead to lower employment in the formal labor sector, while pre-funding pension expenditures can be part of a plan to increase national saving. As another example, countries with higher private pension spending and assets have lower public spending, and these two types of spending may have different effects on the broader economy (Figure 3). Therefore, two over-arching criteria should be used to shape and evaluate these programs: they should protect the old (in an equitable way) and they should promote (or at least not hinder) economic growth—which is important both for the old and the young.

In the past, most old age security systems established by governments were pay-as-you-go (PAYG) systems—taxing workers today to pay pensions to old people today. This paper argues that growing old is a predictable life experience that most of us will have with a high probability, so a large part of old age security can instead be provided by self-insurance—people saving for themselves, shifting consumption from their younger productive years to their older years when consumption exceeds income. Myopia among workers may require that retirement saving be mandatory. But relying to some extent on self-insurance and saving may reduce many of the incentive problems associated with tax and transfer PAYG systems, thereby having a positive impact on the over-all economy.

However, another part of old age security systems requires pooling risks and insuring or redistributing across individuals—because some people, due to factors beyond their control, will retire early with disabilities, die young and leave dependents, live longer than average and run out of resources, or earn very low lifetime incomes which are insufficient to support them both for their working and non-working lives. This is the rationale for providing old age security through a combination of mandatory self-insurance and insurance across individuals—in a multi-pillar system

that puts greater emphasis on saving, has separate financing and managerial mechanisms for redistribution and saving, and shares responsibility between the private and public sectors.

Over the past few years, many countries have indeed been adopting multi-pillar old age security systems. Although structural change is always difficult, the experience of these countries shows that it is possible, that it takes somewhat different forms in different places and it usually involves transition costs that are spread over several generations. Preliminary empirical evidence suggests a positive impact on efficiency and growth. But it also brings to the fore new problems—concerning high administrative costs and regulatory regimes that distort investment decisions—that remain to be solved.

Part I of this paper briefly describes the almost universal problems in traditional systems and sets forth a recommendation for the systems of tomorrow. Part II contrasts three structural reform models that are now being implemented—the Latin American model in which workers decide how their savings will be invested, the OECD model in which employers and/or union representatives control the investment strategy for an entire enterprise or occupation, and the Swedish model in which workers have large notional accounts, possibly supplemented by small funded accounts with real savings and investments in them. Methods countries have used for covering transition costs are discussed in part III. Parts IV and V examine empirical evidence on the positive efficiency and growth impact of these reforms, as well as the major new problems that have emerged. The Conclusion summarizes these recent policy and research developments.

I. Problems in Old Systems and Recommended New Systems

Most formal systems of old age security today are publicly managed, pay "defined benefits" according to a formula based on the worker's earnings and years of service, and are financed by payroll taxes on a pay-as-you-go (PAYG) basis —meaning that the contributions made by today's workers are used to pay the pensions of those who have already retired. However, it is now widely recognized that these systems generate many problems, including:

high and rising payroll tax rates that may increase unemployment;

evasion and escape to the informal sector, where productivity is lower;

early retirement, which reduces the supply of experienced labor;

misallocation of public resources, as scarce tax revenues are used for pensions rather than for education, health or infrastructure;

lost opportunity to increase long term saving;

failure to redistribute to low income groups;

unintended inter-generational transfers (often to high income groups);

and the growth of a large hidden implicit public pension debt, which makes the current system financially unbalanced.

As a result, existing systems have not always protected the old, they especially will not protect those who grow old in the future, they often have not distributed their benefits in an equitable way, and they have hindered economic growth. In addition, they are simply not sustainable in their present form.

Now, each of these problems is not found in every country, but they are found in most countries, both developing and industrialized. This suggests that these problems are not accidental, but rather they are inherent in the economics and politics of PAYG defined benefit schemes, which make it easy for politicians to promise short run benefits at the expense of large long run costs.

To avoid these dangers, the World Bank has been recommending and many countries have been moving toward a system that is partially defined contribution, funded and privately managed, rather than fully defined benefit, PAYG and publicly managed. Specifically, these new systems contain three pillars:

a mandatory publicly-managed tax-financed pillar for redistribution,

a mandatory privately-managed fully funded pillar for saving, and

a voluntary pillar for people who want more protection for old age.

The first pillar resembles existing public pension plans but it is smaller and focuses on redistribution—providing a social safety net for the old, particularly the old whose lifetime income

was low. The benefit formula can be flat (uniform for everyone or related to years of covered employment, as in Argentina and the U.K.), means- and asset-tested (as in Australia) or provides a minimum pension guarantee (as in Chile). The last alternative is obviously cheaper while the first provides additional co-insurance and redistribution to lower middle class workers. In some cases (Australia, Chile) this pillar is financed out of general revenues rather than a payroll tax. Because of its limited scope and broad tax base, tax rates to support this pillar are much lower than the public system requires in most countries today.

The second pillar differs dramatically from traditional systems. It links benefits actuarially to contributions as in a defined contribution (DC) plan, it is fully funded and privately competitively managed. (In a DC plan the contribution rather than the benefit is defined and the future pension depends on accumulated contributions plus investment returns. In a fully funded system assets are always sufficient to cover future liabilities.) Essentially, people are required to save for their old age, and this pillar handles their savings.

A third pillar, voluntary saving and annuities, offers supplemental retirement income for people who want more consumption in their old age.

The second pillar is the most innovative and controversial of the three, so it is worth examining the rationale for its characteristics. This rationale takes into account the behavioral reactions of workers, savers and politicians to incentives posed by alternative social security systems.

Why mandatory? The rationale here is myopia—a significant number of people may be shortsighted, may not save enough for their old age on a voluntary basis, and may become a burden on society at large when they grow old.

Why defined contribution (DC)? The close link between contributions and benefits in a DC plan should discourage evasion, escape to the informal sector and other labor market distortions, since people are less likely to regard their contribution as a tax. And those who do evade bear the cost in the form of lower benefits rather than passing the costs on to others and undermining the financial viability of the scheme. Since the pension is acquired on actuarially fair terms given the age and accumulation of the worker, DC plans are likely to deter early retirement and to raise the

normal retirement age automatically as longevity increases—without a collective decision that is often difficult for politicians to make.

Why fully funded? First, pre-funding makes costs clear up front so countries won't be tempted to make promises today that they will be unable to keep tomorrow. Second, it avoids large payroll tax increases that are needed in a PAYG system as populations age. Third, it prevents large inadvertent intergenerational transfers from young people to older workers. Once an unfunded system is set in motion, intergenerational transfers occur automatically as a result of the aging and maturation process, sometimes in ways that people did not expect and would not have chosen after an open discussion. For example, the early generations to be covered (including its rich members) gain, while later generations (including its poor members) lose—even though they did not even have a chance to participate in the political decision that produced this intergenerational contract. Full funding eliminates such undesirable transfers.

Third, funding may be used to help build long term national saving. These savings can enhance the productivity of future workers, they can be imbedded in consumer durables that provide a stream of future services, and they can be invested abroad, then redeemed to finance an inflow of consumer goods. Thus, saving can be an important ingredient of a long run strategy for providing additional domestic consumption when the dependency rate increases.

Why privately managed? This maximizes the likelihood that economic rather than political objectives will determine the investment strategy, thereby producing the best allocation of capital and the highest return on savings; and it helps countries (especially middle income countries) develop their financial markets. Empirical data show that publicly managed pension reserves typically earn low, even negative returns—largely because public managers are required to invest in government securities or loans to failing state enterprises, at low nominal interest rates that become negative real rates during inflationary periods. The hidden and exclusive access to these funds makes it easier for governments to run large deficits or to spend more wastefully than they could if they had to rely on a more accountable source of funds.

Competitively managed funded pension plans, in contrast, are more likely to be invested in

a mixture of public and corporate bonds, equities and real estate, thereby earning a higher rate of return. Private pension funds can enjoy the benefits of investment diversification, including international diversification, that enables them to increase their yield and reduce their risk, by protecting them from inflation and other country-specific risks. They build constituencies that help them resist political manipulation. They spur financial market development, by creating a demand for new financial instruments and institutions. (**But three caveats:** countries must have at least rudimentary capital markets before they can put the funded pillar in place; considerable government regulation and regulatory capacity are need in order to prevent fraud and excessive risk; and if this regulation is excessive or misdirected, financial markets and investment policies will not be optimal.

All three pillars co-insure against the many risks that old people face, in particular, against the generalized risk stemming from uncertainty about the future economy or polity—such as breakdowns of the government or the market, changes in relative prices of labor and capital, deterioration in the position of a particular country—by diversifying across types of management (public and private), sources of finance (from labor and capital) and investment strategies (equities and bonds, domestic and international). Risk diversification is especially important given the long time periods and great uncertainty involved. Whatever unpredictable disasters occur in the future—as they surely will—this diversified system is most likely to continue providing protection for the old, according to the old adage—don't put all your eggs in one basket. (See World Bank 1994 for more details about the problems of old systems and the recommended new system. For a quantification of the welfare gains from diversification see Pujol 1996).

II. How Have Countries Reformed?

During the past decade, with the pace accelerating during the past five years, several countries have adopted variations on this multi-pillar system. The three major variations are the Latin American (individual account) model, the OECD (employer-sponsored) model and the Swedish (notional

DC) model. We have learned from this experience that pension reform is possible, even in democracies, but it takes somewhat different forms in different countries, as a result of their different initial conditions and political economies.

For example, these different conditions led Argentina to choose a relatively large public pillar while in Peru there is no public pillar at all, at present. They led Chile and Australia to choose a much larger private pillar than Mexico and Argentina. They led the UK and Switzerland to build upon a history of employer-sponsored plans, Australia and Denmark to build upon widespread union-negotiated plans. And they led Sweden and Italy to adopt a DC plan in their structural reform, but to keep it largely PAYG.

One of the most important initial conditions that influences the shape of the reform is the implicit pension debt (IPD)—the present value of the pension promises that are owed to current pensioners and to workers according to their years of participation in the old system. The IPD is inherent in PAYG systems, where workers expect to get a specified pension in return for their contributions, but assets are not accumulated to cover this; instead the obligation is covered by implicit IOU's of the government. The IPD exceeds the conventional explicit debt (backed by government bonds) in many countries and exceeds 200% of GNP in some cases (Table 1). It is especially large in countries with high coverage, generous benefits and older populations. Although this debt is not always legally binding, it tends to be socially and politically binding; governments cannot easily renege on these obligations. Reform often converts (part of) the IPD into explicit debt, which creates a barrier to reform in countries that do not want to make their debt transparent. Most developing countries have small IPD's because of their low coverage rates, and are therefore in the enviable position of being able to change their systems to partial funding before the debt becomes unmanageable.

The Latin American versus the OECD models

Choice of investment manager: individual choice versus group choice. The Latin American model was pioneered by Chile in 1980 and, bolstered by its initial success, was closely followed by Argentina, Peru, Colombia, Mexico, Uruguay and Bolivia in the 1990's. It has just been adopted by

the first countries outside the region, Hungary and Kazakhstan. It is now under consideration in Nicaragua and El Salvador and is one of three options proposed by the Social Security Advisory Committee in the United States. In this model, each worker chooses the investment managers of their own individual DC retirement accounts.

By comparison, the OECD model built on the widespread existing employer-sponsored pension plans and made them the foundation for the second pillar. These plans simply became mandatory instead of voluntary in Australia, Switzerland, Denmark (and de facto by collective bargaining in the Netherlands) or an optional alternative to the state plan in the U.K. In this model the employer or a combination of employer and union trustees choose the investment manager for each company or occupational group as a whole. This enables them to benefit from economies of scale and financial expertise, and possibly to minimize marketing costs (although this has yet to be proven). However, in DC plans it introduces the principal-agent problem—where employer or union representatives choose the investment manager but workers bear the risk, the choice may not be in the worker's best interest and may not maximize net returns. For this reason, workers may ultimately demand more individual choice in OECD countries; they have already been given this choice in the UK and Australia.

Add-on versus diversion of contributions and size of the public pillar. As another important difference between the Latin American and OECD models—most of the OECD countries cited above had a modest public pillar with a small IPD and with little or no payroll tax financing when they started their new system, so they could simply retain it, often as a flat benefit, and start the second pillar on top of that. They had no trouble financing the transition because accrued rights were small and/or contributions to the second pillar were added on, rather than being diverted from the first pillar.

For example, Australia had a means- and asset-tested first pillar, financed out of general revenues, to which it simply added a mandatory occupational funded pillar financed out of payroll contributions. Denmark's flat benefit in the public pillar (now being downsized) was also financed out of general revenues. In the U.K. the state earnings-related pension had just been started a few

years earlier, when Thatcher decide to end it by encouraging employers and workers to opt out; the accumulated rights were still very small. Most workers in the U.K. are now simply eligible for the basic (flat) benefit. In Switzerland, employer-run plans that already existed in many firms became mandatory, on top of a compressed earnings-related public pillar which remained.

In contrast, the Latin American countries had bloated and often regressive benefit promises in public pillar to start out. Thus, to create space for the second pillar, the first pillar had to be greatly downsized and redesigned. In many cases (Chile, Bolivia, Mexico) it was given a very subsidiary role—providing a minimum pension guarantee to low income workers whose personal accumulations fell below a specified amount.

When a worker switched to the new system, he was given credit for his past service under the old system, while part of his future contributions were diverted to the new second pillar. These countries had to find the money to continue paying the promised benefits to current pensioners and older workers (the IPD) under the old system, while part of the payroll tax flowing in was diverted to funded individual accounts—a problem that has become known as "financing the transition." Most countries that reform in the future will have to solve this problem. (For further details on the Latin American and OECD reforms, see Bateman and Piggott forthcoming, Cerda and Grandolini 1997, Hepp forthcoming, Johson forthcoming, Mitchell 1996a, Rofman and Bertin 1997, von Gersdorff 1997, Palacios and Rocha 1997, Valdes-Prieto forthcoming and Queisser 1998).

The Swedish model: notional DC plans

What is the NDC? Many countries with large public pillars and implicit pension debts have found it exceedingly difficult to make the transition to a partially funded system with a mandatory private pillar—in part because of the financing problem but also because of the political interests associated with existing institutions. This explains the third group of reforming countries—those that feature notional defined contribution plans.

A notional defined contribution (NDC) plan is one in which the worker has an individual account that is credited with his contributions plus interest. However, the accumulation is notional rather than actual, since the money paid in by workers is immediately paid out to pensioners rather

than being invested; i.e. the system remains PAYG. Upon retirement, the notional accumulation is converted into a real annuity, supposedly on actuarially fair terms. Thus the NDC plan is essentially a reform of the first (PAYG public) pillar, although it has often been accompanied by a second (funded) pillar. This section focuses on what is and isn't accomplished by using the NDC as the first pillar.

The notional account system was developed by Sweden, although it has not yet been implemented there. It was adopted shortly thereafter by Italy, but with a long transition period. In both cases, the first pillar will be converted into a notional DC plan, buttressed by a redistributive or guaranteed pension. This will be supplemented by a small (2.5%) funded pillar in Sweden. The system is also being implemented by Latvia, which hopes to save enough money from reducing evasion and early retirement to eventually start a funded pillar. Poland plans to have a new system with a first pillar that is NDC and a second pillar that is funded, with investment managers chosen by the individual workers. Outside of Europe, China has a notional defined contribution system, de facto. While in principle China wants to start a second pillar made up of funded individual accounts, many cities have been unable thus far to finance the transition, so the individual accounts remain largely notional.

Labor market and equity effects. The NDC system was designed to capture some of the advantages described above of linking benefits closely to contributions within each cohort. Most important, it reduces idiosyncratic intra-cohort inequities and labor market distortions, including incentives to evade—providing the notional interest rate is close to the market interest rate. For example, early and late years of contributions receive the same rate of return and workers with flat and steep age-earnings profiles receive the same rate of return, while this is not true of most defined benefit systems, Most people would consider this more equitable. In addition, this pattern induces younger workers and workers with flat age-earnings profiles to stay in the system rather than trying to evade. In addition, it makes the system more sustainable since it avoids the selection problem that occurs when low return people evade and high return people remain in the system.

Further, the notional defined contribution system discourages early retirement and avoids

its negative impact on system sustainability, because workers automatically receive lower benefits if they choose to retire early; the costs are internalized rather than being passed on to others. For the same reason, it automatically adjusts the retirement age for increased longevity, thereby avoiding the difficult political decision to raise the retirement age that is periodically necessary in defined benefit plans.

However, the notional defined contribution system is not inherently redistributive, so it does not accomplish the crucial first pillar task of protecting low earners. For this purpose, a redistributive "0 pillar" must be added, creating a potential conflict with the NDC. If the redistributive component is large it may override the linkage between contributions and benefits that is responsible for these labor market improvements. In Sweden, for example, given the level of the guaranteed pension in the "0 pillar", the DC component will be irrelevant for many workers, including the majority of women.

Absence of funding and financial market effects. A bigger failing is that the NDC does not capture the benefits of funding, since there are no funds. That is, it serves as the first (PAYG) pillar, and may crowd out the opportunity for a large funded pillar. Intergenerational transfers remain, saving is not augmented and financial markets do not develop. Most important, as the dependency rate increases, the contribution rate would have to increase for newer cohorts, to keep the system solvent in the absence of pre-funding. These younger cohorts may have to "save" for their old age a much larger amount than is optimal for them, in order to cover benefits promised to older cohorts. In that case, the incentives for evasion and escape to the informal sector would be strong.

Sweden plans to build a buffer fund to reduce the need for large tax increases as its population ages. But this buffer fund will be a publicly managed overlay, since the individual accounts remain notional. This raises all the problems (summarized earlier) concerning political manipulation and poor allocation of publicly managed funds.

Choosing the notional interest rate and conversion rate to annuities. A key factor in NDC plans is—how are the notional interest rate and the conversion rate of notional capital into annuities determined? If the notional interest rate is higher than the market rate, it will be a costly guarantee

to the government. If it is less than the market rate, the contribution is more likely to be regarded as a tax so labor market distortions reappear and pressures may arise for an increase. Typically the interest rate is set equal to some exogenous rate, to insulate it from such political manipulation; nevertheless, the possibility remains that a future government will discard this connection and arbitrarily change the rate.

Most commonly thus far, the notional rate has been tied to the growth in the per capita wage (possibly Poland), the total or covered wage bill (Sweden and Latvia) or GDP (Italy)—supposedly an equilibrating device. If the wage bill increases so too do contributions and therefore the ability to impute interest will be high. However, this means that when the working age cohort is large and growing (e.g. the baby boomers) the imputed interest rate is high and the IPD increases rapidly, but when the working age cohort declines (generation X) so too does the notional interest rate. This generation must then pay a high contribution rate to cover the IPD and will receive a low notional interest rate—fertile grounds for evasion and questionable from the viewpoint of intergenerational equity. Thus, using wage bill growth as the notional interest rate does not appear to be an equilibrating device as the dependency rate changes (see Schwarz and Valdes 1998).

The conversion factor into annuities supposedly depends on expected longevity upon retirement. However, because the process is notional, it too is highly subject to political manipulation. For example, the government can decide to grant notional credit for non-contributing years (a common problem in old PAYG DB systems), it can impute a low or a high future interest rate into the calculation, and it can fail to adjust the conversion factor when life expectancy increases. The latter is a problem in China, where life expectancy of 10 years is assumed regardless of true life expectancy or retirement age. In the absence of market discipline, implicit taxes or subsidies can creep in and interfere with the labor market efficiency effects of the new system. Since both the conversion factor and the interest rate are set by the government, the NDC may be thought of as a PAYG DB in which the DB is defined in a new way.

In sum, the notional defined contribution system is attractive to countries that have very large implicit pension debts, especially those that are unwilling to incur an explicit fiscal deficit to

finance the transition and will therefore end up with a large earnings-related first pillar. In this context, it may be a politically convenient way to reduce benefits in inflated programs and to equalize the retirement age for men and women. This may lay the groundwork for savings that eventually enable the growth of a funded second pillar; but until that happens it should be recognized as a reform of the first pillar rather than an introduction of a multi-pillar system. (For details on the Swedish reform see Sunden 1998, on Latvia see Fox 1998, on Poland see Rutkowsky 1998, on Italy see Hamann 1997. For another comprehensive summary of recent structural and piecemeal reforms see Demurgic-Kunt and Schwarz 1997).

III. Financing the Transition

If countries with a large PAYG pension debt shift to a multi-pillar system that includes a funded component, some of the contribution usually is shifted to the individual accounts. This creates a financing gap between the remaining PAYG revenues and the expenditures needed to cover the IPD; some other revenue source must be found to cover this gap. Countries following the Latin American model have faced this transition cost problem, while those following the OECD model have not (because they had small public pillars and did not divert contributions) nor did the NDC countries (because they remain largely PAYG). How did the Latin American countries finance the transition? Three types of basic methods have been used: reducing the value of the IPD and the financing gap, finding alternative revenue sources to pay it off, and, finally, resorting to the general borrowing and taxation powers of the treasury.

Reducing the value of the IPD and the financing gap

1. Before making the transition, reform the old system by downsizing benefits, raising retirement age and penalties for early retirement, tightening eligibility for disability benefits, and changing the indexation method to price indexation, so the outstanding debt, whether implicit or explicit, will be smaller. Chile, Argentina and Uruguay followed this strategy, which may be indispensable to a good pension reform. This cuts the benefits that must be paid to those who stay

in the old system, it also cuts the compensation owed to those who switch to the new system, and it increases the probability that they will switch. Otherwise, you run the risk of casting in stone benefit promises that never should have been made in the first place, and making it more difficult for the government to escape from these promises.

2. Issue a recognition bond (as in Chile) or promise of a compensatory pension (as in Argentina) to each worker who switches to the new system, that acknowledges the value of the pension that he has earned thus far. This postpones the day when cash will be needed, since the recognition bond cannot be cashed until the worker retires and the compensatory pension is gradually paid off over the entire retirement period of the worker. Besides extending the pay-off period, the issuance of the recognition bond provides another opportunity to reduce the debt. Since it is a legally binding piece of paper it gives the worker greater certainty that the pension debt will eventually be repaid, and in return for reducing uncertainty the government can downsize the face value of or interest rate on the bond (as in Peru). The face value can be further reduced if workers have much more faith in the new than the old system; they (especially young workers) will then be willing to switch even with little compensation for their past service. By choosing the minimum terms that are need to convince the desired number of workers to switch, a government can substantially downsize the recognized debt and save considerable money in its transition costs (as in Hungary).

3. Keep some workers, and their contributions, in the old system. This may be accomplished by excluding some workers, such as the military or the police, from the new system (as in Chile), or by giving all workers a choice but making the new system attractive mainly to young workers (as in Argentina). Colombia has kept the old system operating side-by-side with the new and workers are permitted to switch back and forth. In Uruguay the new funded pillar is made compulsory only for rich and young workers, voluntary for the others. Since those remaining in the old system continue to contribute to it, this reduces the financing gap. The serious danger is that, in order to solve a short run cash-flow problem, these countries have increased their long term implicit debt by keeping participants in a financially unsound PAYG system; this solution may turn out to be non-sustainable.

4. Retain a large PAYG component in the new system, so that some of the revenue in-flow

continues to the public pillar. Argentina followed this strategy, by utilizing a flat benefit in its new public pillar, rather than the narrower minimum pension guarantee as in Chile. In Argentina, about 60% of the total contribution flows into the public pillar. In addition, workers can choose between a funded and a PAYG option for the second pillar. The inflow of funds to the first pillar and the PAYG second pillar helps to pay current pensioners and, eventually, the compensatory pension. But if the public pillar or PAYG second pillar offer benefits that are too generous (actuarially unsound), the reform will not be sustainable in the long run—a danger that Argentina faces.

Finding alternative revenue sources

5. Build a pre-existing primary surplus in the general treasury, that can be used to pay off part of the pension debt. Chile did this but most other countries are burdened with fiscal deficits rather than surpluses.

6. If there is a pre-existing surplus in the social security system, use it to pay off part of the debt. While the Latin systems generally did not have a surplus, the U.S. social security trust fund could be used in this way, if the U.S. were to make a transition.

7. If public enterprises are being privatized, use some of the proceeds to pay off the pension debt—a cancellation of long term assets against long term liabilities. This strategy is being followed by Peru, considered by Poland and Bolivia is also using privatization assets for pension reform. An existing unfunded pension debt generates uncertainty that reduces the market value of enterprises in the process of privatization, so paying off the pension debt may enable a higher price as public enterprises are privatized.

8. Reduce evasion and increase coverage, thereby increasing system revenues. This was part of Argentina's plan; however, the reduced evasion has not yet materialized. China is considering financing the transition by bringing all workers at township and village enterprises, a rapidly growing group, into the new partially funded system. Such coverage expansion would help to pay off the old IPD but simultaneously would create a new IPD, as the newly covered workers will eventually demand their pensions. If future benefits are generous, the short run gain comes at a high long run cost while is promised benefits are low and the cross-subsidy is high, evasion will be encouraged

among the newly covered workers. Thus, this strategy is most useful as a temporary financing device if the PAYG part of the new system is small and the newly covered workers will be maaking most of their contributions to and getting most of their pension from their individual accounts.

Using general borrowing and taxation

9. Issue general treasury debt to cover the remaining cash gap in the short run. Because of the fungibility of money we do not know to what extent resources for pension reform have come from debt versus other general revenue sources, but government borrowing has usually increased in the early years of the reform. In countries with a large IPD use of temporary debt finance is almost inevitable so that a heavy double burden of taxation is not imposed on the transition generation of workers. Since young and future workers will benefit most from the reform, it is appropriate that they should also pay part of the cost.

Some of this debt may be sold to the pension funds in the new second pillar; government debt and bank deposits have been the largest initial investments of the new pension funds. An important proviso is that the pension funds should not be compelled to purchase government bonds; bond sales should be open, transparent and should pay the market interest rate. However, all Latin American countries limit international diversification of pension fund investments, which virtually ensures large investments in government bonds.

Is this temporary debt finance problematic? Financial markets might react negatively if they were not previously aware of the size of the implicit pension debt, if they believed the obligation to repay it was “soft” and has now become “hard” and if this increases the expected default risk on regular bonds. Two pieces of evidence suggest that, so far, the financial market response has been positive. First, the IMF recently adopted the position that debt finance earmarked for a pension transition should be allowed beyond the permissible ceiling for other debt, because it is a swap of implicit for explicit debt in the short run and is intended to reduce the over-all debt, hence to improve fiscal solvency, in the long run. Second, Hungary’s credit rating from Moody’s improved after it adopted its pension reform, even though this required an increase in the explicit debt, for much the same reasons.

10. Eventually pay off this debt through taxation, or the object of increasing national saving will not be achieved (additional private saving will be offset by additional public dissaving if the implicit debt is simply changed to an on-going explicit debt). The redemption of the debt through tax revenues can be spread over a long period of time—but the longer the pay-off the slower the country will receive the benefits of increased national saving for productive investment.

The kind of tax that is used can greately affect the benefits of the transition (Kotlikoff 1996). In general, a consumptin or value-added tax will be lest distortionary and most growth-enhancing; but it may also be the most difficult to implement in developing countries and is prblematic brom an equity point of view if coverage is incomplete. As discussed above, frequently the payroll tax paid to the public pillar us used to finance part of the transition. It has been estimated that if half the current PAYG system were converted to a funded system the financing gap would be paid off by a payroll tax rate of about 1.5% for 70 years in the U.S (Gramlich 1996) and a roughly similar amount in China (Friedman, et al 1996).

Some of these measures have also been used to mitigate political opposition to reform. Bureaucrats and unions that helped to run the old system often do not want to phase it out. Maintaining a large PAYG pillar in the new system not only reduces transition costs, it also serves to palliate opponents of pension reform and therefore may facilitate passage of reform legislation. Borrowing to finance the transition reduces the costs to and therefore the opposition of middle-age workers. But a consequence is that the benefits of a full reform are not received and sustainability of the new system may be undermined. This conflict between pragmatism and principle, short run and long run, has been faced in almost all the reformingn countries.

V. Efficiency and Growth Effects of Reform: How Large Are They?

The chief theoretical argument for the recommended multi-pillar system is that it will have a positive effect on efficiency and growth, because the old system introduced or failed to remove distortions that will be eliminated by the reforms. A secondary argument is that it will enhance the financial sustainability of the old age system and thereby provide better protection for the old in the long run. And still a third argument is its better distributional effects, especially on inter-generational equity.

Efficiency and growth effects are notoriously difficult to quantify and prove, in part because relatively little experience and data are available and in part because, even if we had the data, it would be difficult to build models that capture all the complex dynamic interactions; that is, it is difficult to specify the counter-factual. Pension reform has several different potential efficiency effects; usually studies focus on one of these while ignoring or holding the others constant. For example, general equilibrium models that analyze labor supply effects often assume perfect capital markets and thereby limit the predicted increases in saving, and vice versa. In this section I summarize the limited empirical research that has been done on these topics, concentrating on the simulated effects in countries that have been considering structural reforms and econometric estimation of the actual effects in Chile, the main country that already has a track record. In general, the beneficial labor market effects come from the shift from defined benefit to defined contribution, the beneficial impact on saving comes from the shift from PAYG to funding and the financial market impact comes from private management of these funds.

First a brief comment on the distinction between efficiency and growth. Greater efficiency, for example, due to a reduction in labor market distortions, increases the level of output. If some of the increased output is plowed back into investment, as would often be the case, it also increases growth. Growth can also be increased without an increase in efficiency. For example, an increase in saving (and consequently growth) may simply indicate an inter-generational or life cycle

redistribution that does not increase efficiency because it does not make (or have the potential to make) everyone better off. However, such an increase is efficiency-enhancing if the initial saving rate was sub-optimal due to public or private myopia or to a tax wedge between private and social returns to investment. Both of these conditions are usually alleged as a justification for mandatory retirement saving plans, in which case they would expand both efficiency and growth. In the following pages I discuss both efficiency and growth effects, focusing on the former in the case of labor markets and the latter in the case of saving and financial markets. While measuring these effects is problematic, the available evidence indicates that they are positive, possibly large, and undoubtedly the financial sustainability of the system has improved.

Reduced labor market distortions: early retirement and informal sector

One problem in PAYG defined benefit (DB) systems is the possibility that the high payroll tax will lead to labor market inefficiencies (stemming from distorted decisions about labor force participation, hours worked, age of retirement, choice of job and location, degree of effort, form of compensation, etc.), while in a defined contribution (DC) system the contribution may be regarded as saving rather than as a tax. We have only fragmentary evidence about the effect of pension reform on most of these actions.

Perhaps most important, Wise shows that the age of retirement is very sensitive to the implicit social security tax on labor, stemming from the absence of actuarial penalties on early retirement. The loss of generous DB benefits during years when older men continue working induces most men to stop working before the age of 60 (Wise, 1997). Countries that have a larger actuarial adjustment in their systems, hence a lower implicit tax on labor, have higher labor force participation rates of older men. Funded DC plans automatically build in this actuarial adjustment, so, by extension, should deter early retirement and its negative impact on GNP and financial solvency of the scheme.

The distortionary labor market effects of traditional systems on younger workers may be larger in developing than in industrialized countries because escape to the informal sector is easier there, both for workers and employers. Productivity in the informal sector may be lower because firms have less access to product and credit markets, or because technological change is embodied

in capital in the formal sector and has an external effect on labor productivity throughout the economy (as in the endogenous growth literature). In addition, regulations that set a minimum wage and other benefits in the covered sector may lead to a wedge between wages and productivity in the formal versus the informal sectors. In simulations for a representative economy, Corsetti and Schmidt-Hebbel (1997) show that a payroll tax rate of 20% could cause a massive (47%) shift to the informal sector, thereby reducing the economy-wide growth rate by over 1% annually. In many Latin American countries the informal sector and small firms in the quasi-informal sector do indeed absorb more than half of the labor force (ILO 1996). Although many other forces are, of course, at work, a shift to a DC system might reduce these incentives for informality, because it closely links benefits to contributions.

What light is thrown on this issue by actual experience in Chile? Between 1980 and 1990, a period when the average share of informal employment in Latin America increased from 26% to 31%, this share dropped from 36% to 31% in Chile. Unemployment fell and wages rose. Edwards (1997) shows that, given reasonable assumptions about the elasticity of labor demand in the two sectors, the pension reform was responsible for a decline of 2.2%-3.6% in unemployment and a 5-8% increase in wages.

In evaluating these numbers and their applicability to other countries, it is important to realize that a shift to DC may not always have this salutary effect. For example, myopic workers may continue to evade contributions because they will not be able to access their mandatory savings for many years. In periods when investment returns are low, workers may be especially tempted to evade, preferring to consume or to invest in education, housing or consumer durables. In Chile, returns have been high (over 12% real during the first 15 years), encouraging compliance.

As another example, if the payroll tax for pensions is only a minor part of a large total payroll tax, the incentive to escape to the informal sector may remain strong. Indeed, this seems to be the case in Argentina, where the over-all payroll tax is high (Valdes-Prieto forthcoming). In contrast, a careful study in Chile, where the total payroll tax is relatively small, found that evasion had dropped to only 5% of potential contributors (Chamorro 1992, Schmidt-Hebbell 1997). (Chile

does not even attempt to cover the self-employed, who are the biggest evaders in other countries). It is difficult to be conclusive about this, because it is hard to separate evasion from normal labor force withdrawals and exogenous shifts into self-employment.

If escape to the informal sector occurs in a funded DC plan it does not have the same negative effects on system sustainability that it does in a PAYG DB plan, since the costs are simply borne by the evader in the form of lower benefits, rather than being passed on to others in the form of a higher contribution rate. This is a big plus. Nevertheless, it still creates the same problem for labor allocation and productivity and an even greater problem for the financial security of the evading workers who may not have an adequate pension and may become a charge on the public treasury when they grow old. So, while the initial evidence is encouraging, we need to analyze the data on evasion, wages and employment carefully, as other countries reform their systems, to determine how robust and generalizable are these results.

Increased long term national saving

A major rationale for pension reform that emphasizes fully funded plans is that it will increase long term national saving. This is important because empirically we observe that most savings stay in the country of origin and most of a country's productive investment comes from its own saving, despite the global capital markets that supposedly prevail.

When a country without a prior PAYG system institutes a multi-pillar system, consumption will decrease and saving will increase if the mandatory saving rate exceeds the voluntary rate. When a country with an existing PAYG system replaces it with a multi-pillar system, national saving increases if benefits are cut or taxes are increased, usually to cover transition costs. In both cases, putting part of the contribution into the worker's own mandatory saving account may be more politically acceptable and less economically distortionary than increasing saving through a high tax rate that goes into the general treasury. As mentioned above, this increase in saving is likely to enhance both efficiency and growth in many cases.

But again, there are reasons why this increased saving might not materialize. For example, mandatory saving may not increase total private saving if individuals find ways to offset them

against other voluntary saving or accumulated assets. In that case, capital may accumulate and returns increase in the mandatory pillar, but they may commensurably decrease in the voluntary pillar. With perfect capital markets, private saving will not increase at all, since people will simply borrow against their mandatory pension saving. A positive saving effect ultimately depends on the assumption that voluntary long term saving and assets are small and borrowing opportunities limited for substantial groups within the population. The low asset condition probably holds for most slow-growing economies, the limited borrowing condition for most developing countries, and both hold for low income households in most countries.

Public as well as private saving matter. On the one hand, pension reform may decrease public dissaving as governments no longer need to borrow to cover escalating pension costs, but on the other hand, it may increase public dissaving if the build-up of pension reserves relaxes fiscal discipline and makes it easier for governments to run large deficits. If the transition is fully financed by borrowing, government dissaving will offset private saving, and the expected increase in national saving will simply not transpire. But if it is financed through taxes or cutbacks in other government expenditures, public saving increases national saving further. Estimating the impact on public saving therefore requires modeling government behavior—how governments will behave after pension reform and how that might have behaved in the absence of reform.

A number of simulations have been run projecting the impact on saving of a shift to a fully funded scheme. Not surprisingly, the results turn out to be highly dependent on the assumptions, especially the assumptions about the crowd-out of voluntary by mandatory saving and the method of financing the transition. Underlining the importance of the former, simulations of a "representative economy" indicate that a tax-financed transition to a fully funded system in the presence of credit constraints (implying low crowd-out) will increase output by 22% and welfare by 16% in the long run, while the gain is only 2% without credit constraints (Cifuentes and Valdes-Prieto 1997).

In planning its mandatory occupation scheme, Australia assumed 50% crowd-out and higher for workers who already were covered by voluntary occupational plans. This implied that, in the long run, when the contribution rate reached 12%, national saving would increased by 1.5% of

GDP, thereby almost doubling the current net national saving rate which is 2.2% of GDP. (The gross national saving rate is about 15% of GDP). Australia, of course, had the advantage that the government did not have to borrow to pay off a pension debt since the second pillar was an add-on rather than a diversion of previous contributions. Although initially the tax-deductibility of contributions was projected to cause some government dissaving, in the long run the decreased burden on the means-tested public pension is expected to reduce government dissaving. One of the main effects of the reform may be to shift the allocation of private saving away from home ownership, which is now the predominant form because of investment, and toward other more productive forms (Bateman and Piggott forthcoming).

In his simulations for Mexico, Ayala (1996) assumes a 30-40% rate of crowd-out. If the transition is tax-financed or if it is debt-financed and Ricardian equivalence holds (so that private saving goes up to offset public dissaving), total saving goes up .4%-2.1% of GDP, a similar magnitude to that expected in Australia. But if the transition is debt-financed and Ricardian equivalence does not hold, the impact on total saving is much smaller, even negative in some years, although positive over-all during the next 30 years.

The only country that has had a mandatory saving plan long enough for saving effects to be estimated is Chile. Data from Chile are problematic and the savings ratio is erratic, complicating this analysis and making the results highly sensitive to the starting date for comparisons. According to Corsetti and Schmidt-Hebbel (1997), private sector saving as a percentage of GDP increased from almost zero in 1979-81 to 17% in 1990-92 while private consumption decreased commensurably. Their reduced-form two-stage-least-squares regressions attribute half of the decline in the private consumption ratio to the growth of Chile's funded pension plans and correlated developments such as capital market deepening. Time series regression analyses by Haindl Rondonelli (1996) indicate that pension reform accounts for 6.6 of the 9.9 percentage point increase in the national saving rate in Chile (from 16.7% of GDP 1976-80 to 26.6% 1990-94). Of the 6.6% increase, 3.1% was due to the direct impact of pension saving, 4.2% was due to the financial market deepening impact of pension fund size on other private saving, and a crowd-out effect of -.7% was

due to borrowing constraints. Using an error correction model, Morande (1996) also finds a significant positive effect of a pension fund dummy on private saving, 1960-95. He speculates that the financial market deepening caused by pension reform may have made voluntary saving less likely to be crowded out by and therefore less sensitive to fluctuations in foreign saving; and made the country's supply of investible resources less dependent on foreign capital.

Agosin, Crespi and Letelier (1996) are more skeptical because they find that the main source of increased private saving was private corporations, whose saving gradually jumped from 6% of GDP in 1978-85 to 23% in 1994—a response, they believe, to the non-availability of foreign credit and the privatization of public enterprises. (Of course, privatization was itself facilitated by the pension reform, illustrating the complex interactions among these variables). Voluntary saving of households was negative (about 4% of GDP) throughout this entire period, indicating consumer dissaving or borrowing. However, forced saving through the new pension system gradually grew to almost 4% of GDP, and this was not offset by greater voluntary dissaving (presumably because credit constraints had already been exhausted). This 4% magnitude is roughly consistent with the findings of Bosworth and Marfan (1994), that the pension reform increased saving 3% of GDP. The risk remains that the growth of consumer credit, possibly fueled by the pension reform, could increase consumer dissaving and offset some of these gains in the future (Holzmann 1996).

While these analyses focus on enhanced private saving, other studies emphasize the impact of pension reform on public saving and dissaving. Chile had to finance a pension transition, in part through deficit finance—which decreased national saving. The fiscal costs of the transition may have canceled out the positive effect on private saving initially (Agosin et al 1996). Observing that the pension-related deficits of the government (payments to pensioners left over from the old system plus redemptions of recognition bonds for new pensioners who had switched) were larger than the inflows to the new pension funds until 1989, Holzmann concludes that during the 1980's the new pension system had a negative effect on national saving. However, he appears to overlook the fact that redeemed recognition bonds became part of private pension saving and were not immediately consumed. Correcting for this point alone generates a positive savings effect as early as 1985.

More important, a simple accounting exercise neglects the disciplining impact that pension reform might have had on government behavior, particularly other taxes and expenditures. Chile ran an increasing surplus over this period, possibly to help cover the transition costs. Since 1987 the consolidated government budget has been in surplus, which quickly exceeded 5% of GDP. In addition, Chile accumulated a large budgetary surplus ex ante in preparation for the reform, thereby reducing its need for deficit finance. While we do not know how large the current or past surplus would have been otherwise, to the degree that the pension reform was financed by increasing general taxes, cutting other public spending or accumulating a prior surplus, transition costs did not decrease public saving. Moreover, the transition costs are short run while the increased private saving may persist in the long run. As a result of all these factors, total national saving in Chile is currently much higher than it was pre-reform.

Thus, preliminary evidence indicates that pension reform can have beneficial effects on long term national saving and capital formation—increasing it by 10 to 30% of the ex ante gross rate and even more of the ex ante net rate—especially if it is accompanied by a broader set of policies designed to constrain consumer and government borrowing.

Financial market development

One reason for favoring private management of pension funds is that this will develop a set of financial institutions—investment managers, insurance companies, and banks—that are essential for economic development. On the one hand, a funded pillar cannot get started without some minimum financial market capacity, but on the other hand, the funded pillar, if competitively managed and well-regulated, can be instrumental in enabling the financial market to grow in safety, size, depth and complexity. In developing countries, where private saving is already high, one of the main effects of a funded pillar may be to shift these savings out of land and jewelry and into long term financial market investments that are better for the broader economy, because of the development of these financial institutions.

Even in Australia it is expected that the financial market will grow as a result of the mandatory second pillar. For example, as noted earlier, some private saving may be redirected out of owner-

occupied housing into the financial markets. Insurance companies are expanding, developing a new line of products, including annuity products, to meet the anticipated demand stemming from pension funds (Bateman and Piggott forthcoming). In Switzerland also, growth of the life insurance industry, investment companies and mutual funds, have been spurred by mandatory funded pension plans. And corporate governance has been gradually changing, as institutional investors have demanded disclosure and better performance (Hepp forthcoming). All these changes are efficiency-enhancing.

But the strongest evidence for this expected growth effect comes from Chile. During the five years preceding the adoption of its new system, Chile prepared the groundwork by organizing a primary market for treasury bonds, reforming its laws governing mutual funds, corporations and securities, privatizing banks, authorizing a price-indexed mortgage bond market and liberalizing the provision of insurance and reinsurance (Valdes-Prieto 1997). After the new system was introduced, this process continued—financial markets became more liquid as the number of traded shares on the stock market and their turnover increased; demand was created for the equities of newly privatized state enterprises; information disclosure and credit-rating institutions developed; the variety of financial instruments including indexed annuities, mortgage and corporate bonds grew; and asset pricing improved. In several of the studies summarized above, financial market deepening associated with pension reform was given credit for the observed increase in private saving. Econometric analysis suggests that financial market efficiency induced by the reformed pension system (and other factors with which this was closely correlated) increased total factor productivity 1% per year, or half of the increase in total factor productivity, in Chile (Holzmann 1996).

Summary

In sum, a small but growing body of empirical evidence indicates that pension reform has produced positive efficiency and growth effects. That is, the impact on saving, productivity, output and welfare may be high relative to exogenous sources of growth and other policies available to increase growth.

Several caveats are essential in interpreting this evidence. First, given the high correlation

between pension reform and other reforms that are often simultaneous, the controversy surrounding the determinants of private saving and labor supply (e.g. which variables are endogenous?), the even greater uncertainty about the determinants of public saving (e.g. what is the counter-factual?), and the difficulties in modellling feed-back effects, all these econometric and simulation results are highly sensitive to model specification and the topic clearly requires additional evidence and research. In particular, the econometric analyses for Chile are subject to omitted variable bias and the simulation results depend heavily on assumptions about crowd-out, transition costs and rates of return. Second, the growth impact also depends on key policy decisions in setting up the new system, such as the question of how high the required contribution rate will be, what proportion of the multi-pillar system should be funded and DC, and how the transition will be financed. While debt finance may be necessary for political purposes, partial tax finance may be necessary to meet the economic objective of increased saving, and of course some taxes have better efficiency properties than others. Third, it is important to remember that, even if it claims to use a general equilibrium model, each study typically deals with only one possible source of growth, so many of these results are partially additive—the total growth effect is the sum of the separate effects on labor market distortions, early retirement, escape to the informal sector, capital accumulation, financial market development and other sources of growth. So if each separate effect increases GNP in amounts ranging from 1-10%, their sum may increase GNP much more.

IV. New Problems and Issues for Further Research

While many efficiency gains seem to have been achieved, the new systems have also created new problems that remain to be solved and related research that needs to be done. The major problems that have surfaced so far concern high administrative costs and financial market distortions due to regulations. A third area needing further study involves the distributional effects of pension reform. Finally, the analysis of annuities markets will become increasingly important as workers begin to retire under the new systems.

Administrative costs

The big advantage of private over public investment is the likelihood that it will produce a better allocation of capital, therefore higher returns for the fund and growth for the economy. However, decentralized systems also may charge high administrative fees, partly due to high marketing costs in competitive industries. In some cases marketing costs produce important side-benefits of consumer information and increased compliance, but this does not appear to be the case in most countries that have recently reformed.

Preliminary evidence indicates that workers are ill-informed, do not make decisions based on investment returns, and pension funds incur high sales commissions and other marketing costs to attract them. In Chile and most other Latin American countries fees are front-loaded, meaning that workers pay a one-time fee on new contributions rather than an annual fee based on assets. (This system was probably adopted because the new system had no assets initially). Specifically, this one-time fee is about 2 percent of wages, or 15-25 percent of new contributions, in virtually all cases, and about one-third of this is for marketing.

These numbers appear very high. To understand their impact on net returns, it is necessary to convert these one-time charges on contributions into their equivalents in terms of annual charges on assets, a conversion which depends on how large the assets are relative to the contributions. Obviously, for accounts that have small accumulated assets (young workers with few years of contributions), this fee will be high relative to assets. However, for accounts that have built up substantial assets over the years, the fee will be small relative to assets.

Simulations show that if the current fee schedule is maintained, the average Chilean worker who contributes for 40 years will pay the equivalent of less than 1 percent of assets per year. This is approximately the same amount mutual funds charge for voluntary retirement savings accounts in the U.S.; it is not excessive from the lifetime point of view, in comparison to a competitive market retail price for individuals. Moreover, it is not excessive in comparison to a less expensive system that produces much lower gross and net returns (e.g. publicly managed reserves in Singapore and the U.S. social security trust fund).Competition may bring costs down further in the long run.

However, this fee structure is an apparent problem in the early years of a new system, when all accounts are small. It is a real problem for workers who will be in the system for only 20-30 years, such as workers who were relatively old upon the date of reform; simulations show that these workers pay a much higher lifetime fee as a percentage of assets. It is a problem for transient workers who move in and out of the labor force, such as women, especially if their contributions are concentrated in their later years. The higher lifetime fee as a percentage of assets and hence the lower net return received by these groups is a matter of concern on equity grounds in a mandatory system. In addition, for workers who are very risk-averse, it is questionable whether to compel them to incur these costs with certainty while the benefits are uncertain. Besides the equity consideration is the practical consideration that high costs may lead these groups to evade. Moreover, it would be desirable to find ways to increase administrative efficiency for all workers, since this would increase their rates of return and replacement rates.

Some analysts believe that administrative costs would be lower under a group plan and hence favor choice by the employer or union. Such group plans may be better positioned to benefit from economies of scale in decisionmaking, greater financial expertise, and lower marketing costs. (On the existence of scale economies see James and Palacios 1995, Mitchell 1996b). This is one rationale given for employer and/or union choice of the investment manager in OECD countries. However, because employers or union representatives make the investment decision while workers bear the risk, such plans can also open the door to financial abuse and principal-agent problems: employers might choose investment managers or strategies that benefit them even if this implies lower returns for their workers.

For example, lower "wholesale" charges appear to be available for large group [401(k)] plans in the U.S. but not all employers have gone to the effort of obtaining these rates. In Switzerland employers tend to place retirement funds at banks with which they have had long-standing financial relationships, without exploring other options carefully (Hepp forthcoming). One of the worst cases of employer abuse of worker retirement funds was the Maxwell scandal in the U.K.; but individual choice also led to a scandal in that same country, as uninformed workers were induced to abandon

their employers' plans and purchase financially disastrous policies by unscrupulous insurance company salesmen (Johnson 19997). Basing the second pillar on occupational plans is especially a problem for mobile workers, who may end up with many small costly accounts unless these can be consolidated in one personal account—problems which weighed heavily in Australia and the new Hong Kong scheme.

Thus we have anecdotal evidence about costs and returns to group choice versus individual choice and a careful empirical study has yet to be done. Meanwhile, the principle-agent problem makes it likely that political pressures will develop to give workers the right to opt out of employer pension plans into their own personal retirement savings plan in most mandatory systems, and this has already happened in the U.K. and Australia.

A third alternative may be desirable in small countries whose markets cannot support many pension companies efficiently due to economies of scale, countries with undeveloped financial markets that want to attract investment expertise and minimize start-up costs, and countries with low contribution rates to the second pillar. Instead of open entry, the government might auction off operating rights to a limited number of investment companies, among whom workers then choose. The contract could specify the maximum risk, offer a reward for high returns, and choose the winners based on who charges the lowest administrative fees.

The voluntary Thrift Saving Plan for U.S. federal employees uses a competitive bidding process to choose its money managers, at a total cost of less than 10 basis points (.1%). An auction process was recently used in Bolivia, which expects to have much lower administrative costs than Chile as a result. Or instead of letting the fee be determined in an auction for a pre-specified number of winners, an alternative is to set a low fee ceiling and open entry to all qualified pension fund managers willing to abide by that limit. Sweden will use a variation on his theme for its new second pillar—centralized collection and record-keeping, while workers choose among mutual funds that have reached an agreement on fees with the central agency.

The dangers here are the difficulties in insulating the auction and investment process from political manipulation, corruption and collusion, and the importance of incorporating incentives for

good performance, when entry and price are limited. Otherwise, while these mechanisms may feature lower marketing expenditures, they may also feature lower investment returns, less consumer education and service. The advantages are that much lower costs, allowing a substantial increase in rates of return and replacement rates, can be achieved, if the process is well-handled.

Summing up: one could construct a continuum with considerable choice, competition, political insulation and relatively high administrative cost on one end (Chilean AFP's, UK, Australia, voluntary IRA's in the U.S.), with limited choice, competition and lower costs on the other end (Bolivia, Sweden, U.S. federal employees Thrift Saving Plan), each arrangement having different implications for political insulation, rates of return and other kinds of service. Countries could then choose which mix of costs and benefits they prefer. Many additional measures can be and are being considered to economize on costs and their effects should appear over the next decade. The impact of alternative institutional arrangements on administrative costs in the second (decentralized funded) pillar has heretofore received little attention. We could certainly benefit from careful analytic and empirical studies in this area.

Financial market distortions

Multi-pillar systems have justifiably been given credit for stimulating the growth of financial markets in middle income countries where this is an important ingredient of the recipe for economic growth. However, as these systems have been implemented, we also observe ways in which they have distorted the operations of financial markets.

This problem stems from the fact that policy-makers want workers to make investment decisions and bear the corresponding risk, but they also want to limit this risk to avoid a disaster. Relatedly, the government must set certain investment constraints and offer guarantees in order to overcome political opposition to reform. The contradiction here can potentially lead to malfunctioning markets, particularly if the pension funds are relatively large players in the market.

As examples of this ambivalence: In Chile and several other Latin American countries pension funds (AFP's) are heavily penalized if they deviate more than 2 percentage points from the group mean. This has been accused of leading to herding behavior, as each AFP tries to look very much

like the others. Rather than having a choice of different points on the risk-return frontier, stemming from differing asset allocations—as would be the case in a well-functioning financial market—workers have the much less meaningful choice among companies that provide the same asset allocation and risk-return mix. Also, workers are required to invest in one AFP instead of diversifying among several and thereby reducing their risk; of course, given the lack of meaningful portfolio differences among the AFP, the gains from diversification would be small in any event.

In Mexico all workers are required to enter the new system but those currently in the labor force are given the right to return to the old pay-as-you-go system upon retirement if this allows them to fare better. This insurance scheme was included to acknowledge the "acquired rights" of workers and therefore avoid a legal challenge to the reform efforts. However, it creates an obvious moral hazard problem—workers have an incentive to gamble with their pension funds, accepting too much risk, since they are substantially protected from loss. The Mexican authorities have avoided the moral hazard problem by greatly limiting the AFORES' choice of investment strategies: at least 65% of all assets must be invested in government bonds (currently the AFORES are 99% in bonds) and international investments are proscribed. Since workers have no real choice of portfolios, moral hazard is avoided; but the flow of funds through the AFORES to the financial market and the private sector is also avoided.

Bolivia initially intended to invest most of its revenues from privatization (targeted for pension reform) abroad, to protect it from excess government borrowing and other country-specific risk. However, in order to overcome union opposition to these reforms, the government had to take on the responsibility for paying off the implicit debt of the complementary pensions that unions had negotiated in the past. To cover these and other expenditures, the final arrangements decreed that initially almost all of the privatization assets would be invested domestically, in government bonds. In Uruguay, to help cover transition costs, AFP's are required to put at least 80 percent of their assets into special issue government bonds. While the risk-reducing benefits of international diversification and diversification into private sector securities is one of the rationales for pension reform, in fact most Latin American countries require or strongly encourage almost exclusive

domestic investments, with a heavy concentration in government bonds.

Regulations in Switzerland require a 4% nominal guaranteed rate of return in their second pillars, thereby leading to a very conservative investment strategy, consisting largely of bonds. Until recently, providers of second pillar pensions for civil servants in the Netherlands faced little competition, again leading to low rates of return that might have been off or at a corner of the risk-return frontier.

These distortions should not be exaggerated, because the guarantees and limits on competition and portfolio diversification are likely to fall through time, as the schemes mature. Chile started with rigid restrictions but has gradually opened up the system to greater diversification, including international investment. Mexico is now considering allowing each AFORES to offer more than one type of portfolio, together with worker diversification among different portfolios. Along similar lines, pension funds might be allowed to differentiate their asset allocation strategies and corresponding benchmarks (if available), applying different risk limits depending on type of portfolio chosen. For example, portfolios might be offered that concentrate in bonds, stocks, and international investments, with different degrees of risk implied by each (as in the U.S. federal employees Thrift Saving Plan). This would allow workers to choose their preferred point on the risk-return frontier and should help the financial markets to operate better, but it also requires substantial worker education as well as greater diversity of financial instruments than exists presently in many developing countries.

The distributional impact of pension reform

Although this paper has focused on the efficiency and growth impact of pension reform, an equally important topic is the impact of reform on equity. Because traditional pension systems are typically both inefficient and inequitable, they offer an opportunity to improve both. However, we do not know whether or the extent to which multi-pillar system have actually succeeded in achieving a better distributional outcome. Closer examination suggests that the devil is in the details and some of the results may be surprising.

For example, in Chile's public pillar, workers are eligible for a minimum pension guarantee

of about 27 percent of the average wage after 20 years of contributions, meaning that the government tops up the benefits of these workers to the guaranteed point if their own accumulation does not suffice. The main beneficiaries here will be low earners who worked only 20 years, disproportionately females, who have limited labor market attachment, while workers who remain in the formal sector for a full career are unlikely to receive this subsidy. In contrast, in Argentina a flat benefit of about 28 percent of the average wage is paid to all workers who have at least 30 years of contributions (plus an additional 1 percent for every year above 30 up to 45). The main recipients will be workers who spent most of their adult lives in the formal labor sector and (in sharp contrast to Chile) women are unlikely to qualify. In the U.K., which pays a flat benefit that is about half the size of Argentina's (as a proportion of the average wage) but does not set a required number of contributory years, the big gainers are people who work few years and live long lives, such as women. Switzerland's public pillar is earning-related and hence appears less redistributive than that in Argentina, but the payroll tax which finances it is levied on all earnings (that is, there is no ceiling on taxable earnings as there is in Argentina), which works in the opposite direction.

The setup of the second pillar also has distributional consequences. If flat fees per account are permitted, this reduces net returns for low earners more than for high earners. Flat fee were charged by Chilean AFP's initially but the unfavorable publicity they encountered was one factor leading them to drop this practice; it is now used by some AFORES in Mexico. If low income workers tend to choose more risk-averse investment strategies than high income workers, this will lead them to have lower replacement rates in the future. The distributional issue is explored further in a separate paper (James 1997) and certainly merits additional empirical research.

VI. Conclusion

Averting the Old Age Crisis (World Bank 1994), argued that old age security systems with a large funded defined contribution component, decentralized competitive management of these funds, and a social safety net, are most likely to promote economic growth, provide acceptable

income to the old, and reduce risk by diversification. During the past five years, the move toward multi-pillar systems has accelerated. With the aging of the global population, it has become increasingly important to choose a reliable and cost-effective method of old-age support. As economic growth slows and financial markets open, it has become increasingly important to raise productivity through improved incentives in the labor market and through the accumulation of capital which is then allocated to its most efficient uses. As income disparities have widened, it has become increasingly important to provide additional protection to low wage-earners who have grown old. A multi-pillar system that includes a mandatory publicly managed tax-financed defined benefit pillar for redistribution, a mandatory privately managed funded defined contribution pillar to manage peoples' retirement savings, and a voluntary pillar for people who are willing to pay for more security, has seemed to many countries most likely to accomplish these objectives.

Thus several Latin American, OECD and transition countries have already adopted multi-pillar systems, and they are under serious consideration in many more. Preliminary evidence from Chile, the only country that has had this system for long enough for empirical studies to be conducted, supports the existence of a positive growth effect, stemming from increased labor market efficiency, mobilization of long term saving and financial market development. This suggests that the reward may be worth the effort of a carefully planned reform that takes into account its impact on the broader economy.

It may be surprising to find so much variety among the countries that have adopted multi-pillar systems of old age security—indicating substantial room for country-specific conditions. It should not be surprising to find that the new solutions have created new problems, in this case high administrative costs and restrictions on financial market flexibility. Countries that are on the verge of reforming their social security systems can learn from the experience of the first-movers and make the late reforms even better.

Table 1: Implicit Pension Debt (IPD)[a] and Pension Reform.

Countries that have Not Reformed[b]	IPD as % of GDP	Reforming Countries[c]	IPD as % of GDP	Size of New Public Pillar[d]
Senegal	27	El Salvador	35	LO
Mali	26	Peru	37	LO
Burkina Faso	15	Colombia	40	LO
Venezuela	30	Mexico	42	LO
Cameroon	44	Bolivia	48	LO
Congo	30	Argentina	86	MED
Brazil	187	Kazakhstan	88	LO
Turkey	72	Chile	100	LO
Albania	67	Australia[e]	115	MED
China	63	United Kingdom[e]	184	MED
		Netherlands[e]	188	MED
Ukraine	141	Denmark[e]	189	MED
		Switzerland	189	MED
United States	113	Sweden	210	HI
Japan	162	Hungary	213	HI
Germany	157	Uruguay	214	HI
France	216	Poland	220	HI
Italy	242	Croatia	350	HI
Canada	121			

a: IPD is present value of accrued rights of pensioners and workers, under old system

b: *Sources*: Kane and Palacios, Finance and Development, June 1996, p.38
Robert Palacios for Albania
Cheikh Kane for Burkina Faso, Congo, Mali
Paul Van der Noord and Richard Herd, Pension Liabilities in the Seven Major Economies, OECD 1993 for OECD Countries.

c: Estimated by author based on current public expenditure. Details available upon request.
Hungary, Uruguay and Peru are taken from Kane and Palacios, Finance and Development, June 1996, p.38.

d: LO: minimum pension guarantee, financed out of general revenues (except Bolivia).
HI: large earnings-related public pillar, financed out of payroll tax.
MED: flat (or compressed) public pillar and means-testing, usually financed out of general revenues.

e: Old system featured universal benefits financed out of general revenues not out of earmarked payroll taxes. Hence, the IPD owed as repayment of past contributions, is less applicable.

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