New Models for Old-Age Security: Experiments, Evidence, and Unanswered Questions

Estelle James

The escalating costs of traditional social security systems are forcing countries to reevaluate the formal programs that provide income maintenance support to the aging. This article suggests a reform strategy built around three systems, or "pillars," to provide old-age security—a public pillar with mandatory participation, a private, mandatory savings plan, and a voluntary savings system. Three variations of this model are being implemented in different countries: the Latin American model, in which individual workers choose an investment manager for their retirement funds; the OECD model, in which employers, union trustees, or both 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 effects of pension reform, mostly from Chile, indicates that the impact on national saving and financial market development and, through these, economic growth, has been positive and possibly large. Problems concerning high administrative costs and regulations that distort investment decisions remain to be resolved, however.

In the next 35 years the proportion of the world's population that is more than 60 years old will nearly double, from 9.5 to 16 percent (figure 1). With rapid increases in life expectancy and declines in fertility rates, the population in developing countries is aging much more rapidly than are populations in industrial countries. By 2030, as today's young working-age people near retirement, 80 percent of the elderly will live in what today are developing countries, and it is essential that policymakers start to plan for the care of their aging populations.

Many of these countries now rely heavily on family assistance and private, voluntary old-age support. But cross-sectional analysis shows that public spending on for-
mal pension plans increases exponentially as populations age (figure 2). In some industrial countries, for example, it now exceeds 15 percent of gross domestic product (GDP) and will soon reach that level in many more countries as the demographic transition proceeds.

With such large sums involved, the way this money is generated and spent can affect the entire economy by influencing productivity, factor supplies, and therefore the size of the GDP. For example, high payroll taxes can lead to unemployment, deficit financing can fuel inflation, and prefunding pension expenditures can be part of a plan to increase national saving. Countries with larger private pension funds have lower public spending, and these two types of spending may have different effects on the broader economy (figure 3). Therefore, two 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 for both the old and the young.

In the past most government old-age security systems were pay-as-you-go plans; workers were taxed today to pay pensions to old people today. This article argues...
**Figure 2. Relationship between Percentage of the Population over 60 Years Old and Public Pension Spending**

Pension spending as percentage of GDP


**Figure 3. Relationship between Public Pension Spending and Private Pension Assets**

Actual-predicted pension/share of GDP

Source: World Bank data.
that because aging is a predictable life experience, saving during younger years can self-insure a large part of old-age security, shifting consumption from younger productive years to 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 for old age may reduce many of the incentive problems associated with tax and transfer pay-as-you-go-systems.

Another aspect of old-age security systems requires pooling risks and insuring or redistributing across individuals because some people 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 that are insufficient to support them during their working and nonworking lives. This is the rationale for providing a combination of mandatory self-insurance and insurance across individuals in a multipillar 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.

During the past few years, many countries have indeed been adopting multipillar 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 that 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—high administrative costs and regulatory regimes that distort investment—that remain to be solved.

Problems with Old Systems

Most formal systems of old-age security today are publicly managed, pay “defined benefits” (meaning a payout formula based on the worker’s earnings and years of service), and are financed by payroll taxes on a pay-as-you-go basis. It is now widely recognized that these systems generate many problems, including

- High and rising payroll taxes 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 opportunities to increase long-term saving
- Failure to redistribute to low-income groups
- Unintended intergenerational transfers (often to high-income groups)
- The growth of a large implicit public pension debt and financing gap that makes the current system unsustainable in many countries.
As a result, existing systems have not always protected the old and are particularly unlikely to protect those who grow old in the future. Moreover, they often have failed to distribute benefits in an equitable way and have hindered economic growth. In addition, they simply are not sustainable in their present form. Not each problem exists in every country, but they are found in most countries, both industrial and developing. This prevalence suggests that these problems are not accidental, but inherent in the economics and politics of pay-as-you-go defined benefit plans—the model preferred by politicians who find it simpler to promise short-term benefits at the expense of large long-term costs.

The Multipillar System

To avoid these dangers, the World Bank has been recommending and many countries have been moving toward a system in which some of an individual’s pension is financed by preretirement savings, which are privately managed. Specifically, these new arrangements contain three pillars:

- A mandatory, publicly managed, tax-financed pillar for redistribution
- A mandatory, privately managed, fully funded pillar for savings
- A voluntary pillar for people who want more protection in their 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 those 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 United Kingdom), it can be means- and asset-tested (as in Australia), or it can provide a minimum pension guarantee (as in Chile). The first alternative provides additional co-insurance and redistribution to lower-middle-class workers, while the last option is obviously cheaper. In some cases (Australia, Chile), the first pillar is financed out of general revenues rather than through a payroll tax. Because this pillar is of limited scope and has a broad tax base, the tax rates needed to support it 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 plan, is fully funded, and is privately and competitively managed. (In such a plan the contribution 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.

A third pillar, voluntary saving and annuities, offers supplemental retirement income for people who want more generous old-age pensions.
The most innovative and controversial of these arrangements is the second pillar, so it is worth examining the rationale for its characteristics:

- **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?** The close link between contributions and benefits in this plan should discourage evasion, escape to the informal sector, and other labor market distortions because 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. Because the pension is acquired on actuarially fair terms, given the age and accumulation of the worker, these plans are likely to deter early retirement and to raise the normal retirement age automatically as longevity increases—without involving the government in a difficult political decision.

- **Why fully funded?** First, prefunding makes the costs clear up front so that countries are not 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 pay-as-you-go 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. 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 have a chance to participate in the political decision that produced this contract. Full funding eliminates such undesirable transfers. And finally, funding may be used to help build long-term national savings. These savings can enhance the productivity of future workers, they can be embedded in consumer durables that provide a stream of future services, and they can be invested abroad and redeemed to finance purchases of consumer goods. Thus, saving can be an important ingredient of a long-term 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 source of funds for which they were more accountable.

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, which protects them from inflation and other country-specific risks and thus enables them to increase their yield and reduce their risk. Private pension funds build constituencies that help them resist political manipulation. They spur financial market development by creating a demand for new financial instruments and institutions. Three caveats obtain, however: countries must have at least rudimentary capital markets before they can put the funded pillar in place; considerable government regulation and regulatory capacity are needed 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, particularly the risk stemming from uncertainty about the future economy or polity—such as breakdowns of the market or the government, changes in relative prices of labor and capital, or a 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 based on the old adage “don’t put all your eggs in one basket.” (See World Bank 1994 for more details. For a quantification of the welfare gains from diversification, see Pujol 1996).

How Have Countries Reformed?

During the past decade, and particularly during the past five years, several countries have adopted variations on this multipillar system. The three major variations are the Latin American (individual account) model, the Organisation for Economic Co-operation and Development (OECD) (employer-sponsored) model and the Swedish (notional defined contribution) model. Experience with these variations shows that pension reform is possible, even in democracies, but that it takes somewhat different forms as a result of differing initial conditions and political economies.
For example, different conditions led Argentina to choose a relatively large public pillar, whereas Peru decided against a public pillar. Chile and Australia chose a much larger private pillar than Mexico and Argentina. The United Kingdom and Switzerland built on a history of employer-sponsored plans; Australia and Denmark built upon widespread, union-negotiated plans, and Sweden and Italy adopted a defined contribution plan that remains largely pay-as-you-go.

One of the most important initial conditions that influences the shape of the reform is the implicit pension debt—the present value of the pensions that are owed to current pensioners and to workers according to their years of participation in the old system. This debt is inherent in pay-as-you-go systems, where workers expect to get a specified pension in return for their contributions. But assets are not accumulated to cover this debt; instead, the obligation is covered by implicit government IOUs. In many countries, the implicit debt exceeds the country’s conventional explicit debt (backed by government bonds) and in some cases exceeds 200 percent of GDP (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. Countries that do not want to make their debt transparent frequently shy away from a shift to a funded pillar because it makes at least part of the implicit debt explicit. Most developing countries have little pension debt because of their low

### Table 1. Implicit Pension Debt during the Early 1990s

<table>
<thead>
<tr>
<th>Country</th>
<th>Implicit pension debt as a percentage of gross annual product</th>
<th>Percentage of population over 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senegal</td>
<td>27</td>
<td>4.3</td>
</tr>
<tr>
<td>Mali</td>
<td>26</td>
<td>4.9</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>15</td>
<td>5.0</td>
</tr>
<tr>
<td>Venezuela</td>
<td>30</td>
<td>5.6</td>
</tr>
<tr>
<td>Peru</td>
<td>37</td>
<td>5.8</td>
</tr>
<tr>
<td>Cameroon</td>
<td>44</td>
<td>5.8</td>
</tr>
<tr>
<td>Congo</td>
<td>30</td>
<td>6.1</td>
</tr>
<tr>
<td>Brazil</td>
<td>187</td>
<td>6.7</td>
</tr>
<tr>
<td>Turkey</td>
<td>72</td>
<td>7.1</td>
</tr>
<tr>
<td>Albania</td>
<td>67</td>
<td>8.1</td>
</tr>
<tr>
<td>China</td>
<td>63</td>
<td>8.9</td>
</tr>
<tr>
<td>Uruguay</td>
<td>214</td>
<td>16.4</td>
</tr>
<tr>
<td>Croatia</td>
<td>350</td>
<td>17.8</td>
</tr>
<tr>
<td>Ukraine</td>
<td>141</td>
<td>18.7</td>
</tr>
<tr>
<td>Hungary</td>
<td>213</td>
<td>19.3</td>
</tr>
</tbody>
</table>

*Note: Assuming a 4 percent discount rate.*

*Source: Kane and Palacios (1996); World Bank data for Albania, Burkina Faso, Congo, and Mali.*
coverage rates and are therefore in the enviable position of being able to change to a partially funded system before the debt becomes unmanageable.

**The Latin American versus the OECD Models**

Chile pioneered the Latin American model in 1980, and its initial success there led Argentina, Bolivia, Colombia, Mexico, Peru, and Uruguay to adopt similar plans in the 1990s. Hungary and Kazakhstan were the first countries outside the region to adopt the model, and it 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 his or her own individual defined contribution retirement account.

By comparison, the OECD model builds on existing employer-sponsored pension plans. These plans simply became mandatory instead of voluntary in Australia, Denmark, Switzerland, (and de facto by collective bargaining in the Netherlands); in the United Kingdom, employer-sponsored plans became an attractive optional alternative to the state plan. Under this model the employer or a combination of employer and union trustees chooses the investment manager for each company or occupational group. These plans thus benefit from economies of scale and financial expertise and possibly from lower marketing costs (although this has yet to be proven). The OECD model, however, introduces a principal-agent problem; that is, the employer or union representative selects the investment manager, but the 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 in OECD model plans may ultimately demand more individual choice.

For example, Australia is now permitting workers to put their retirement savings into special bank accounts. In the United Kingdom employers were initially permitted to opt out of the state earnings-related plan, but subsequently workers were given the right to opt out of their employer’s plan in favor of their own personal retirement plan. Unscrupulous insurance company salesmen then persuaded workers to purchase individual annuity plans, when, in fact, they would have been better off staying in the employer’s defined benefit plan. The incident, which led to lawsuits and a government inquiry, illustrates the point that worker choice makes consumer information imperative and opens the door to the probability that some mistakes will be made (Johnson, forthcoming; Whitehouse 1998).

In most of the OECD model countries cited above—unlike those in Latin America—a modest public pillar with a small pension debt and little or no payroll tax financing was already in place when the new system was adopted. Thus they could simply retain it and build the second pillar alongside the first. They had no trouble financing the transition because accrued rights were small and the 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, employer-based, funded pillar financed by payroll contributions. General revenues also financed Denmark’s flat benefit in the public pillar, now being reduced, while an occupational funded pillar is added. In the United Kingdom the state earnings-related pension had been initiated just a few years before Margaret Thatcher decided to end it by encouraging employers and workers to opt out; the accumulated rights were still very small. In Switzerland employer-run plans that already existed in many firms became mandatory alongside the public pillar.

In contrast, bloated public pillars in the Latin American countries meant that the first pillar had to be downsized and redesigned to create space for the second pillar. 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 implicit pension debt) 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.¹

The Swedish Model: Notional Defined Contribution Plans

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. In this plan the worker has an individual account that is credited with his contributions plus interest. The accumulation is notional, however, rather than actual, since the money paid in by workers is immediately paid out to pensioners rather than being invested; in fact, the system remains pay-as-you-go. Upon retirement, the notional accumulation is converted into a real annuity, supposedly on actuarially fair terms. Thus the notional defined contribution plan is essentially a reformed pay-as-you-go pillar (sometimes accompanied by a second, funded pillar). The problem of transition costs is substantially avoided.

Sweden developed this system, although it has not yet been implemented there. Shortly after Sweden acted, Italy adopted the system, but with a long transition period. In both cases, the first pillar is to be converted into a notional defined contribution plan, buttressed by a redistributive guaranteed pension. The system is also being implemented by Latvia, which hopes to save enough money from reducing
evasion and early retirement eventually to start a funded pillar. Poland plans a new system with a notional defined contribution first pillar and a funded second pillar. Outside of Europe, China has a notional defined contribution system, de facto. In principle China wants to start a second pillar made up of funded individual accounts, but many cities have been unable thus far to finance the transition, so the individual accounts remain largely notional.

The notional defined contribution system was designed to capture some of the advantages of linking benefits closely to contributions within each cohort. Most important, it reduces idiosyncratic intracohort 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 age-earnings profits receive the same rate of return as those workers with steep profiles; this equality is not true of most defined benefit plans. In addition linking benefits to contributions makes the system more sustainable and avoids the selection problem that occurs when low return people evade but high return people stay in the system.

Furthermore, the notional defined contribution system discourages early retirement because workers automatically receive lower benefits if they retire early; and the costs of early retirement are internalized rather than being passed on to others. For the same reason, it automatically induces workers to retire later as longevity increases, thereby avoiding the difficult political decision to raise the retirement age, a step that is periodically necessary in defined benefit plans.

The notional defined contribution plan is not inherently redistributive, however, so it does not accomplish the first pillar task of protecting low-wage earners. For this purpose a redistributive “O pillar” must be added that will guarantee a minimum pension to workers whose own defined contribution pension falls below a specified minimum. Such a guarantee assures a minimum pension even if the employee contributed very little. If the redistributive O pillar is large, it may override the link between contributions and benefits. In Sweden, for example, the high level of the guaranteed minimum pension in the O pillar makes the defined contribution component irrelevant for the majority of workers—especially women, who are more likely to have spent only a part of their adult lives in the labor force.

A bigger failing is that the notional system does not capture the benefits of funding, because there are no funds. That is, the system serves as the first (pay-as-you-go) pillar and crowds 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 to keep the system solvent in the absence of prefunding. These younger cohorts may have to “save” a much larger amount for their old age 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 for the first pillar as its population ages. But this buffer fund will be a publicly managed overlay, because the individual accounts remain notional. This situation raises all the problems, summarized earlier, concerning political manipulation and poor allocation of publicly managed funds. The pillar will be supplemented by a small second pillar funded at 2.5 percent of payroll.

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 for the government to fulfill. If it is less than the market rate, the contribution is more likely to be regarded as a tax, so labor market distortions are likely to 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, or the covered wage bill—supposedly an equilibrating device. If the wage bill increases, so too do contributions, and therefore the ability to impute interest will be high. This means, however, that when the working-age cohort is large and growing (for example, the baby boomers), the imputed interest rate is high, and the pension debt 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 pension debt 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 (see Schwarz and Valdes, forthcoming).

The conversion factor into annuities supposedly depends on expected longevity upon retirement. Because the process is notional, however, it too is highly subject to political manipulation. For example, the government can decide to grant notional credit for noncontributing years (a common problem in old pay-as-you-go defined benefit 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. In the absence of market discipline, implicit taxes or subsidies can creep in that interfere with the labor market efficiency effects of the new system. Because the government sets both the conversion factor and the interest rate, the notional defined contribution may be thought of as a pay-as-you-go defined benefit in which the benefit 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 pay off these obligations. It may be a politically convenient way to
reduce benefits in inflated programs and to equalize the retirement age for men and women (as in Latvia). In such cases it 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 as an introduction of a multipillar system. (For details on the Swedish reform, see Sunden 1998; on Latvia, see Fox 1998; on Poland, see Rutkowsky and others 1997; and on Italy, see Hamann 1997).

How Have Countries Financed the Transition?

When countries with a large pay-as-you-go pension debt shift to a multipillar system that includes a funded component, some of the contribution usually is shifted to individual accounts. Some other revenue source must then be found to cover the resulting financing gap between the remaining revenues and the expenditures needed to pay retirees. The only countries to have experienced this problem are those that have followed the Latin American model. How did these countries finance the transition? Three basic methods were used: reducing the value of the pension debt 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 Implicit Debt and the Financing Gap

The implicit social security debt and the gap between payroll taxes and expenditures can be reduced in several ways. First a country can take certain steps before the transition, such as downsizing benefits provided under the old system, raising the retirement age and the 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. Argentina, Chile, and Uruguay followed this strategy, which may be indispensable to a good pension reform. It cuts the benefits that must be paid to those who stay in the old system, as well as the compensation owed to those who switch to the new system, and it increases the probability that workers will switch. Otherwise, there is a risk that the government will pay excessive amounts for benefits that never should have been promised in the first place, and it will be more difficult than before to escape from these promises.

Second, the government can acknowledge the value of the pension earned thus far by issuing a recognition bond (as in Chile) or a promise of a compensatory pension (as in Argentina) to each worker who switches to the new system. This step postpones the day when cash will be needed, because 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. A legally binding piece of paper, the bond 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 more faith in the new system than in the old one; 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 needed to convince the desired number of workers to switch, a government can substantially downsize the recognized debt and save on its transition costs (as in Hungary).

Third, a government can 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). Argentina gave all workers a choice but made the new system attractive mainly to young workers. Colombia operates the old system side by side with the new one, and workers are permitted to switch back and forth. In Uruguay the new funded pillar is compulsory only for rich and young workers and is voluntary for others. The financing gap is reduced because those employees who remain in the old system continue to contribute to it. The serious danger with this option is that, in an effort to solve a short-run cash-flow problem, these countries have increased their long-term implicit debt by keeping participants in a financially unsound pay-as-you-go system; this solution may turn out to be unsustainable.

Fourth, a government can retain a large pay-as-you-go component in the new system, so that some revenues continue to flow into the public pillar. Argentina offers a moderate-sized flat benefit in its new public pillar rather than the narrower minimum pension guarantee used in Chile. In Argentina about 60 percent of the total contribution flows into the public pillar. In addition, workers can choose between a funded and a pay-as-you-go option for the second pillar. The inflow of funds to the first pillar and the pay-as-you-go second pillar help pay current pensioners and, eventually, the compensatory pension. But if either pillar offers 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

Governments can also pursue policies to offset the revenue gap. One way is to use an existing treasury surplus to pay off part of the pension debt. Chile took this path, but most countries are burdened with fiscal deficits rather than surpluses. Alternatively, countries that have a surplus in the social security system can use it to pay off part of the debt. The Latin systems generally did not have a surplus, but the U.S. social security trust fund could be used in this way, if the United States were to make a transition. In cases where public enterprises are being privatized, some of the pro-

ceeds can be used to pay off the pension debt—a cancellation of long-term assets against long-term liabilities. Peru followed this strategy, Poland is considering it, and Bolivia is also using privatization assets for pension reform.

Measures to reduce evasion and increase coverage will increase system revenues. Although Argentina’s plan incorporated such measures, no reduction in evasion has yet materialized. China is considering financing the transition by bringing all workers in township and village enterprises (a rapidly growing group) into the new partially funded system. This expansion of coverage would help to pay off the accumulated pension debt but simultaneously would create new debt to cover the newly enrolled workers who will eventually demand their pensions, and may lead to evasion in the interim. Thus, this strategy produces short-term revenues but runs the risk of undermining the long-run sustainability of the plan and its credibility unless the payroll tax and promised benefits are low.

Using General Borrowing and Taxation

General treasury debt can be used to cover the remaining cash gap in the short run. Because money is fungible, it is not clear to what extent resources for pension reform have come from debt as opposed to other general revenue sources, but government borrowing has usually increased in the early years of reform. In countries with a large implicit pension debt, the use of temporary debt finance is almost inevitable to mitigate the heavy double burden of taxation on the transition generation of workers. 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 government bond sales should be open, transparent, and carry the market interest rate. Pension funds should not be compelled to purchase government bonds. All Latin American countries limit pension funds’ overseas investments, however, which virtually ensures that they will have large investments in domestic 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, or if they believed the obligation to repay it was “soft” and has now become “hard,” and if either of these beliefs 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 International Monetary Fund 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 overall debt and will thus improve fiscal solvency in the long run. Second, for much the same reason, Hungary’s credit rating from Moody’s improved after it adopted its pension reform, even though the reform entailed an increase in the explicit debt.
Eventually, the debt should be paid off through taxation. Otherwise there will be no increase in national savings (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 payoff the slower the benefits of increased national saving for productive investment. It has been estimated that if half the current pay-as-you-go system in the United States were converted to a funded system, it would take 70 years to pay off the financing gap with a payroll tax rate of about 1.5 percent (Gramlich 1996); it would take roughly the same amount of time in China (Friedman and others 1996).

How Large Are the Efficiency and Growth Effects of Alternative Systems?

The chief theoretical argument for the recommended multipillar system is that it will have a positive effect on efficiency and growth because the old system introduced—or failed to remove—distortions that the reforms will eliminate. A second argument is that the multipillar approach will enhance the financial sustainability of the old-age system and thereby provide better protection for the elderly in the long run. A third argument is that it will improve intergenerational 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 with the data, it would be difficult to build models that capture all the complex dynamic interactions; that is, it is difficult to specify the counterfactual. 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 savings, 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 country that has the longest track record with a reformed system. In general, the beneficial labor market effects come from shifting to a defined contribution system from a defined benefit plan; the beneficial impact on savings comes from shifting to a funded old-age security plan from a pay-as-you-go system; and the financial market impact comes from managing these funds privately.

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, growth also increases. Growth can also be increased without an increase in efficiency. For example, an increase in savings (and consequently growth) may simply indicate an intergenerational or life cycle redistribution that does not increase efficiency because it does not make (or have the potential to make) everyone better off. But such an increase enhances efficiency if the initial rate of saving was suboptimal because of public or private myopia or because of 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.

Avoiding Labor Market Distortions

One problem in pay-as-you-go defined benefit systems is the possibility that the high payroll tax will lead to labor market inefficiencies (stemming from distorted decisions about labor force participation, age of retirement, hours worked, choice of job and location, degree of effort, form of compensation, and so on), whereas the contribution in a defined contribution system may be regarded as saving rather than as a tax. Only fragmentary evidence is available about the effect of pension reform on most of these actions. For example, Wise (1997) shows that the labor force participation rate of older men is highly sensitive to the implicit social security tax on labor, stemming from the absence of actuarial penalties on early retirement—the loss of generous defined benefits during years when they continue working induces most workers to stop working before they reach age 60. 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 defined contribution plans automatically build in this actuarial adjustment, so by extension they should deter early retirement and its negative impact on GDP and the financial solvency of the scheme.

The distortionary labor market effects of traditional systems may be larger in developing countries because escape to the informal sector is easier there, both for workers and their 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 discussed 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 percent could cause a massive (47 percent) shift to the informal sector, thereby reducing economywide
growth by more than 1 percent 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 at work, a shift to a defined contribution system, where benefits are closely linked to contributions, might reduce these incentives for informality.

What light does Chile's experience throw on this issue? Between 1980 and 1990, when the average share of informal employment in Latin America increased from 26 percent to 31 percent, it dropped from 36 percent to 31 percent in Chile. Unemployment in Chile 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 between 2.2 and 3.6 percent in unemployment and an increase of 5 to 8 percent in wages.

In evaluating these numbers and their applicability to other countries, it is important to realize that a shift to defined contribution may not always have this salutary effect. For example, myopic workers may continue to evade contributions because they will not have access to 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 (more than 12 percent real during the first 15 years), encouraging compliance of most workers. If the payroll tax for pensions is only a part of the total payroll tax, the incentive to escape to the informal sector may remain strong; again, this phenomenon did not apply in Chile, where the total payroll tax was relatively small. Indeed, preliminary evidence from Argentina suggests that evasion has not declined since the new system was established (Valdes-Prieto, forthcoming). In contrast, Chamorro (1992) and Schmidt-Hebbel (1996) found that only 5 percent of potential contributors in Chile had dropped out of the system. (Chile does not even attempt to cover the self-employed, who make up the largest share of 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.

Escape to the informal sector under a funded defined contribution plan does not have the same negative effects on the system's sustainability as it does under a pay-as-you-go defined benefit plan, because the costs are borne by the worker 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 workers who may not have an adequate pension and may become a charge on the public treasury when they grow old. So although the initial evidence from Chile is encouraging, it is important to analyze the data on evasion, wages, and employment carefully to determine whether these results are robust and generalizable.
Increased National Saving

A major rationale for fully funded pension plans is that they increase long-term national saving, with positive effects on growth and efficiency. Such saving is important because most savings stay in the country of origin and most of a country's productive investment comes from its own saving, despite the development of global capital markets.

When a country without a prior pay-as-you-go system institutes a multipillar system, consumption will decrease and saving will increase if the mandatory saving rate exceeds the voluntary rate. When a country with an existing pay-as-you-go system replaces it with a multipillar 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 high taxes that go into the general treasury.

But this increase might not materialize. Mandatory saving may not increase total private saving if individuals find ways to offset required saving by reducing voluntary saving or accumulated assets. In that case, capital may increase in the mandatory pillar but decline in the voluntary pillar. With perfect capital markets, private saving will not increase at all, because people will simply borrow against their mandatory pension saving. A positive saving effect ultimately depends on the assumptions that voluntary long-term saving and assets are small and that borrowing opportunities are 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 conditions for low-income households in most countries.

Public saving matters as well as private saving. On one hand, pension reform may reduce 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 occur. But if it is financed through taxes or cutbacks in other government expenditures, public saving increases national saving. Estimating the impact on public saving therefore requires modeling government behavior—how governments will behave after pension reform and how they might have behaved in the absence of reform.

Several simulations have projected 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 crowding out of voluntary 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 on consumers (implying
low crowd-out) will increase output by 22 percent and welfare by 16 percent in the long run, while the gain is only 2 percent without credit constraints (Cifuentes and Valdes-Prieto 1997).

In planning its new funded pillar, Australia assumed that half of the mandatory saving would be offset by reduced voluntary saving (the crowding-out effect) in the case of newly covered workers and even more for workers who already were covered by voluntary occupational plans. This assumption implied that when the contribution rate reached 12 percent, national saving would rise by 1.5 percent of GDP, almost doubling the current net national saving rate, which is 2.2 percent of GDP. (The gross national saving rate is about 15 percent of GDP.) Australia did not have to borrow to pay off a pension debt because the second pillar was an add-on rather than a diversion of previous contributions. Although the tax deductibility of contributions was initially 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 investment, because of tax inducements, and toward other, more productive, investments (Bateman and Piggott, forthcoming).

In his simulations for Mexico, Ayala (1996) assumes a 30–40 percent rate of crowding 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 rises by 0.4 percent to 2.1 percent of GDP, a magnitude similar to that expected in Australia. 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 overall during the next 30 years.

Only Chile has had a mandatory saving plan long enough to permit an estimate of its effects. Data from Chile are problematic, and the savings ratio is erratic, complicating the 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 percent in 1990–92, while private consumption decreased commensurately. 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 (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 percent of GDP in 1976–80 to 26.6 percent in 1990–94). Of the 6.6 point increase, 3.1 points were attributable to the direct impact of pension saving; the remaining 3.5 points were attributable to the financial market deepening caused by the pension fund (4.2 percentage points), offset slightly by a crowding-out effect caused by borrowing constraints (0.7 points). Using an error correction model, Morande (1996) also finds a significant positive
effect of a pension fund dummy on private saving from 1960 to 1995. 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, thus making the country’s supply of investible resources less dependent on foreign capital.

Agosin, Crespi, and Letelier (1996) are more skeptical; they find that increased private saving resulted from an increase in corporate saving, from 6 percent of GDP in 1978–85 to 23 percent in 1994—a response, they believe, to the lack 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 household saving was negative (about 4 percent of GDP throughout this entire period), indicating consumer dissaving or borrowing. Forced saving through the new pension system gradually grew to almost 4 percent of GDP, however, and was not offset by greater voluntary dissaving (presumably because credit constraints had already been exhausted). This 4 percent magnitude is roughly consistent with the findings of Bosworth and Marfan (1994) that pension reform increased saving by 3 percent 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).

Instead of focusing on enhanced private saving, other studies emphasize the impact of pension reform on public saving and dissaving. Chile financed 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, Crespi, and Letelier 1996). Observing that the pension-related deficits of the government (payments to pensioners 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 1980s the new pension system had a negative effect on national saving. He appears, however, 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 effect that pension reform might have had on other government taxes and expenditures. Chile ran an increasing surplus during this period, possibly to help cover the transition costs. Since 1987 the consolidated government budget has been in surplus, which quickly exceeded 5 percent of GDP. In addition Chile accumulated a large budgetary surplus in preparation for the reform, thereby reducing its need for deficit finance. How large the current or past surplus would have been otherwise is unknown, but 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 before reform.

Given the high correlation between pension reform and other policies that are often simultaneous, the controversy surrounding the determinants of private saving (for example, which variables are endogenous?), and the even greater uncertainty about the determinants of public saving (what is the counterfactual?), all these econometric and simulation results are highly sensitive to the model's specifications. Nevertheless, preliminary evidence indicates that pension reform can have beneficial effects on long-term national saving, especially if it is accompanied by broader policies designed to constrain consumer and government borrowing.

**Financial Market Development**

One reason for favoring private management of pension funds is that it will develop a set of financial institutions—investment managers, insurance companies, and banks—that are essential for economic development. A funded pillar, if competitively managed and well regulated, can enable 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 savings out of land and jewelry and into long-term financial market investments that are better for the broader economy.

Even in Australia the financial market is expected to grow as a result of the mandatory second pillar. As noted earlier, some private saving may be redirected out of owner-occupied housing into the financial markets. Insurance companies are expanding, developing new products, including annuities, to meet the anticipated demand stemming from pension funds (Bateman and Piggott, forthcoming). In Switzerland too, the 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 enhance efficiency.

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 the 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, forthcoming). Once the system was introduced, this process continued; financial markets became more liquid as stock market trades increased; demand was created for the equities of newly privatized state enterprises; information disclosure and credit-rating institutions developed; the variety of financial instruments grew, and asset pricing improved. In several of the studies summa-
rized 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 pension reform (and related factors) increased total factor productivity 1 percent a year, or half of the increase in total factor productivity (Holzmann 1996).

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, because specifying the counterfactual is difficult, these results are highly sensitive to the assumptions that are made. In particular, the econometric analyses for Chile are subject to omitted variable bias, and the simulation results depend heavily on assumptions about crowding 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, the proportion of the multipillar system to be funded and defined contribution, and how the transition will be financed. Debt finance may be necessary for political purposes, but some degree of tax finance is necessary to meet the economic objectives, 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—that is, 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 GDP in amounts ranging from 1 to 10 percent, their sum may increase GDP much more.

New Problems and Issues for Further Research

Although many efficiency gains seem to have been achieved, the new systems have also created problems that must be solved and related research that needs to be done. The problems involve high administrative costs, financial market distortions, and distributional effects.

Administrative Costs

The big advantage of private investment over public is the likelihood that it will produce a better allocation of capital and therefore higher returns for the fund and growth for the economy. Decentralized systems also may charge high administrative
fees, however, partly because of high marketing costs in competitive industries. Costs sometimes produce important side benefits, such as 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 and do not make decisions based on fees or investment returns, and that pension funds incur high sales commissions and other marketing costs to attract them. In Chile and 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 initially had no assets.) Specifically, this one-time fee is about 2 percent of wages or 15–20 percent of new contributions, and about one-third of this fee is for marketing.

These numbers appear very high. To understand their impact on net returns, these one-time charges on contributions must be converted into their equivalents in annual charges on assets, a conversion that 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), the one-time fee will be high relative to assets. For accounts that have built up substantial assets over the years, however, 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 a year. This is approximately the same amount mutual funds charge for voluntary retirement savings accounts in the United States; 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 (such as publicly managed reserves in Singapore and the United States social security trust fund). Competition may lower costs further in the long run.

Nonetheless, 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 to 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, because they may never have a chance to accumulate 40 years of contributions. 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. On both equity and efficiency grounds, it is questionable whether the government should compel all workers, including those who are very risk-averse, to incur these costs with certainty while the benefits are uncertain. Besides the equity consideration is the practical consideration that high costs may lead those groups most affected to evade. Moreover, it would be desirable to find ways to
increase administrative efficiency for all workers to increase their rates of return and replacement rates.

Some analysts believe that administrative costs would be lower under a group plan, and they thus 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 (for a discussion of scale economies see James and Palacios 1995; Mitchell 1996a). This is one reason why employers or unions choose the investment manager in OECD model countries. 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 their choice implies lower returns for their workers.

For example, lower “wholesale” charges appear to be available for large group [401(k)] plans in the United States, 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 longstanding 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 United Kingdom; 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, forthcoming). 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.

Anecdotal evidence about costs and returns to group choice versus individual choice is available, but a careful empirical study has yet to be done. Meanwhile, the principal-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; this has already happened in the United Kingdom and Australia.

A third alternative may be desirable in small countries where economies of scale do not allow markets to support many pension companies efficiently, in countries with undeveloped financial markets that want to attract investment expertise and minimize start-up costs, and in 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 United States federal employees uses a competitive bidding process to choose its money managers, at a total cost of less than 10 basis points (0.1 percent). An auction process was recently used in Bolivia, which as
a result expects to have much lower administrative costs than Chile does. Another alternative is to set a low fee ceiling and open entry to all qualified pension fund managers willing to abide by that limit. Sweden plans to use a variation on this 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 in incorporating incentives for good performance when entry and price are limited. Moreover, these mechanisms may feature less consumer education and service along with lower marketing expenditures. The advantages are that much lower costs, allowing an increase in net rates of return and replacement rates of as much as 20–40 percent, can be achieved if the process is well handled.

To sum up, one could construct a continuum with considerable choice, competition, political insulation, and relatively high administrative costs on one end and limited choice and competition with lower costs on the other end, with 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. Thus 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. Society could certainly benefit from careful analytic and empirical studies in this area.

**Financial Market Distortions**

Multipillar systems have justifiably been given credit for stimulating the growth of financial markets in middle-income countries and thus promoting economic growth. As these systems have been implemented, however, they have distorted the operations of financial markets in various ways.

This problem results because policymakers 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 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. Although the risk-reducing benefits of international diversification and diversification into private sector securities is one of the rationales for pension reform, in fact most countries require or strongly encourage domestic investments, with a heavy concentration in government bonds.

This ambivalence can be seen in Chile and several other Latin American countries where pension funds are heavily penalized if they deviate more than 2 percentage
points from the group mean. As a result, funds have been accused of herding behavior, as each 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 of companies that provide the same asset allocation and risk-return mix. Because workers are required to invest in one fund instead of diversifying among several and thereby reducing their risk, the lack of meaningful portfolio differences among them means that 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 may return to the old pay-as-you-go system upon retirement if they will fare better under it. This option was included to acknowledge the “acquired rights” of workers and therefore avoid a legal challenge to the reform efforts. But it creates an obvious moral hazard problem: workers have an incentive to gamble with their pension funds, accepting too much risk because they are substantially protected from loss. The Mexican authorities have avoided the problems by greatly limiting the choice of investment strategies: at least 65 percent of all assets must be invested in government bonds (currently the funds have 99 percent of their assets in government bonds) and international investments are proscribed. Because workers have no real choice of portfolios, moral hazard is avoided; but the flow of pension funds 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 excessive government borrowing and other country-specific risk. To overcome union opposition to the reforms, however, the government had to pay 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, pension funds are required to put at least 80 percent of new assets in special issue government bonds.

Regulations in Switzerland require a 4 percent 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 pension fund to offer more than one portfolio, together with worker diversification among different portfolios. Another possibility under consid-
eration is to allow pension funds to differentiate their asset allocation strategies and corresponding benchmarks (if available), applying different risk limits depending on the type of portfolio chosen. For example, the Thrift Saving Plan in the United States offers portfolios that concentrate on bonds, stocks, and international investments, with different degrees of risk implied by each. This choice allows workers to pick 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 currently exists in many developing countries.

The Distributional Impact of Pension Reform

Although this paper has focused on the efficiency and growth effects 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. Which multipillar systems have actually succeeded in achieving a better distributional outcome is not known, however. 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 lower 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 United Kingdom, which pays a flat benefit 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.

The setup of the second pillar also has distributional consequences. If flat fees per account are permitted, net returns are reduced for low earners more than for high earners. Flat fees were charged by Chilean funds initially, but the unfavorable publicity they encountered was one factor leading them to drop this practice. Some funds in Mexico now use flat fees. If low-income workers tend to choose more risk-averse investment strategies than high-income workers, they will 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.
Conclusion

Averting the Old Age Crisis (World Bank 1994) argued that old-age security systems with a large funded defined contribution component, decentralized competitive fund management, 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 multipillar 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 up, it has become increasingly important to raise productivity through improved incentives in the labor market and through the accumulation of capital that can be allocated to its most efficient uses. To reduce income disparities, it has become increasingly important to provide additional protection to low-income wage-earners who have grown old. A multipillar 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 the most likely way to accomplish these objectives.

Thus several Latin American, OECD, and transition countries have already adopted multipillar systems, and they are under serious consideration in many more. Preliminary evidence from Chile, the only country that has had this system in place 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.

Countries with a large implicit pension debt and an accompanying set of social security institutions are having trouble overcoming political opposition and financing the transition, however. Developing countries are fortunate in that they are at a relatively early stage and can choose a preferred multipillar system almost from the start, before these obstacles arise.

Notes

Estelle James is lead economist in the Development Economics Research Group at the World Bank. She would like to acknowledge the assistance of Robert Palacios, who gathered the data for figure 3, and Cheikh Kane, who collaborated with Mr. Palacios in the preparation of table 1.

1. For further details on the Latin American and OECD reforms see Bateman and Piggott (forthcoming); Cerda and Grandolini (1997); Hepp (forthcoming); Johnson (forthcoming); Mitchell (1996b); Palacios and Rocha (1997); Quiesser (1998); Rofman and Bertin (1997); Valdes-Prieto (forthcoming); Von Gersdorff (1997); and Whitehouse (1998). For another summary of structural and piecemeal reforms see Demirgüç-Kunt and Schwarz (1997).
References

The word “processed” describes informally reproduced works that may not be commonly available through library systems.


