



Social Security Choice

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Retirement Finance Reform Issues Facing the European Union

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Executive Summary

Changing demographics are forcing countries around the world to reexamine their public pension systems. The member states of the European Union are no exception. Indeed, the EU nations are among those facing the greatest social, budgetary, and economic challenges as a result of their aging populations. Therefore, EU members will be forced to rethink their public pension programs and move away from traditional pay-as-you-go (PAYGO) pension models to new systems based on savings and investment.

The need for pension reform has engendered heated political debate in Europe. In many ways that debate mirrors the debate over Social Security reform in the United States. This paper examines many of the issues involved in reforming European pensions and reaches the following conclusions:

- Long-run data from many countries show that the yield on market assets is sufficient to provide adequate retirement income at a reasonable cost. Indeed, such income is likely to be significantly higher than income that can be provided through PAYGO systems.

- A market-based system would not necessarily reduce the redistribution that some Europeans consider an important characteristic of EU pension programs. Moreover, those programs may be far less redistributive than commonly believed.
- Moving to a market-based pension system can help promote labor market flexibility by more closely linking contributions and benefits. In addition, a market-based system would eliminate incentives for older workers to leave labor markets prematurely.
- Although transition financing would be a complex issue, it is cheaper to move to market-based systems than to continue current PAYGO systems. It is possible to design a transition scenario that is a win-win situation for all generations.
- Administrative costs in a market-based system can be kept low.
- Market-based systems would increase asset ownership and give workers greater control of the wealth-producing assets of society.

Given those conclusions, EU member states should begin the transition to a market-based system of pensions as soon as possible.

There is a growing consensus among European leaders that pension reform is inevitable.

Introduction

European populations are aging rapidly, which promises major social, economic, and budgetary challenges for the European Union in coming decades. Meeting those challenges will require a comprehensive reform strategy to raise employment rates, improve government budget positions, and adapt social protection systems including pensions. Few of those issues will be as important or as difficult to resolve as comprehensive public pension reform. Indeed, pension reform faces serious economic and political hurdles in nearly every EU country. But despite the difficulties, there is a growing consensus among European leaders that pension reform is inevitable. In fact, at its meeting in Gothenburg, Sweden, last year, the European Council agreed that pension systems need to be modernized so that they (1) continue to meet their social objectives, (2) are financially sustainable, and (3) are responsive to changing societal needs.¹

Currently, all EU member states, with the exception of Great Britain, have pay-as-you-go (PAYGO) pension systems, similar in their basic structure to the U.S. Social Security system. Under a PAYGO system, there is no accumulation of reserves to pay future benefits. Rather, the PAYGO system acts as a simple transfer from workers to retirees. Taxes paid by current workers are not set aside, saved, or invested for those workers' retirement but are used to pay benefits to current retirees. When today's workers retire, they must, in turn, rely on the taxes of the next generation of workers to pay their benefits.

Such a system can be successfully maintained as long as there is a large number of workers and a small number of retirees. But in every EU nation except Ireland, the ratio of workers to retirees is shrinking dramatically.² In some countries, such as Austria and Belgium, the ratio of workers to retirees is already below 2:1. By 2025, nearly all the countries of Europe will have fewer than two workers supporting each retiree. Many countries, including Germany, will actually have more retirees than workers, a ratio of less than 1:1. As a result, European PAYGO systems are not sustainable in the long run.

How bad is the problem? Consider this:

- Payroll taxes for pensions already exceed

25 percent of wages in many countries, including Spain and Italy. In Germany, the combined payroll tax (for pensions, health care, and other forms of social insurance) exceeds 40 percent. This is already having a severe impact on employment and economic growth that will only get worse. By 2030 the payroll tax will have to exceed 50 percent, with the pension portion alone exceeding 25 percent.³

- Italy's public retirement system already consumes 14 percent of its gross domestic product and accounts for 37 percent of government expenditures.⁴ Unless changes are made to its pension program, Germany will have to increase its government spending by 5.5 percent of GDP within the next 20 years. The Organization for Economic Cooperation and Development projects that government retirement benefits will exceed 16 percent of GDP in Germany, France, and Italy by 2030.⁵
- Unfunded pension liabilities in Germany already exceed 100 percent of GDP. Bad as that is, France and Italy are in worse shape, with unfunded pension liabilities exceeding 200 percent of GDP. In most EU countries, the implicit debt of unfunded pension programs is two or three times greater than the explicit national debt.⁶

Successful pension reform, therefore, must move away from the PAYGO model toward a funded system based on saving and investment in real private capital markets. Of course, pension reform is an extremely complex issue, and moving toward investment-based pension systems is a challenging task. However, private investment can not only help ensure the financial sustainability of pension systems, it also can contribute to raising employment and savings rates, thus promoting a more dynamic economy with greater resources available for all citizens. In this way, pension systems can meet the social and financial goals established by the European Council.

How Much Is Enough?

One of the biggest issues in moving from a PAYGO pension system to one based on saving and investment is whether private capital

investment can yield the rate of return necessary to provide satisfactory retirement benefits. An answer to this question depends on several factors, including

- desired retirement benefit,
- whether or not benefits are adjusted for inflation,
- number of contribution years,
- number of distribution years,
- contribution rate while working, and
- real wage growth.

Because those factors will differ markedly from country to country, certain assumptions are made, each of which can be adjusted to reflect local conditions.

Desired Retirement Benefit

Usually benefits are defined as a basic amount, a flat rate, or a replacement of an individual's wages, the so-called replacement rate. For the purposes of this exercise, the replacement rate is used and is set at 70 percent; that is, after-tax benefits are 70 percent of an individual's last year's after-tax wage. As a rule of thumb, this rate is thought to keep an individual's standard of living roughly the same during retirement as it was just prior, because expenses, including taxes, tend to fall.

To Adjust Benefits to Inflation or Not

Benefits are assumed to be inflation adjusted. This poses a bit of a problem because it is not known what future inflation will be. Any inflation assumption does, however, help to quantify other factors that determine retirement benefits. These include, among others, accumulated wealth at the beginning of retirement, the required rate of return during the distribution phase, life expectancy at the onset of retirement, and the possibility of changing the inflation adjustment during retirement as an individual's consumption bundle changes. Whatever retirement benefit stream is considered, it must be financed by economic activity at that time. Inflation adjusting benefits results in retirees sharing more of the benefits of economic growth than if their retirement income were not adjusted to inflation. The appropriate inflation adjustment is subject to some debate and review. Recently, for example, some countries

have moved from wage to price inflation, the effect of which is to lower benefits.

Number of Contribution Years

The author assumes 44 continuous years of contributions. That is equivalent to an individual entering the work force at the beginning of his 22nd year and retiring at the end of his 65th year. If work is not continuous, the assumption is that contributions to the retirement account are. There is no "correct" assumption of contribution years, and the assumption can be adjusted. Indeed, 44 working years is longer than the current average in most EU member states. If it is adjusted down or up, then in most cases retirement years are correspondingly adjusted up or down and annual benefits are also adjusted down or up. These interactions are important and should be considered in any sensitivity analysis.

Number of Distribution Years

Life expectancy at age 65 is set at 20 years. At the end of the 20th year, the retirement account is depleted.

Contribution Rate While Working

The contribution is a constant 10 percent of each year's wage, well below the average rate in Europe.

Real Wage Growth

Wages increase at 1.1 percent annually, which is similar to growth rates in industrialized countries over the last 40 years.

An Example

Under these assumptions, a hypothetical worker starts with wages of 10,000.00 units of currency in year one and saves 1,000.00 units. In year two, saving is 1,011.00 units, and in the 44th year it is 1,600.66 units on a wage of 16,006.62 units. Therefore, it requires an annual real return of about 4.8 percent during accumulation and 2.8 percent during distribution to replace 70 percent of the last year's wage. The lower market return during retirement, a 200 basis point drop, reflects the rather common practice of reducing market risk at that time.

Successful pension reform must move away from the PAYGO model toward a funded system based on saving and investment in real private capital markets.

Whatever retirement benefit stream is considered, it must be financed by economic activity at that time.

Table 1
Average Annual Real Returns for Stock and Bond Markets of EU Member States and the United States (percent per annum)

	Average Annual Real Stock Return	Interval	Average Annual Real Government Bond Return	Interval
Austria	9.36	1970–2000	2.59	1993–2000
Belgium	11.69	1973–2000	4.79	1992–2000
Denmark	10.68	1970–2000	6.07	1990–2000
Finland	32.66	1988–1999	-2.73	1996–2000
France	11.36	1973–2000	8.27	1986–2000
Germany	11.70	1970–2000	6.74	1986–2000
Greece	6.47	1992–2000	n/a	n/a
Ireland	11.39	1988–2000	4.39	1993–2000
Italy	5.16	1973–2000	7.23	1986–2000
Luxembourg	15.87	1988–2000	n/a	n/a
Netherlands	14.06	1971–2000	7.43	1986–2000
Portugal	2.16	1988–2000	-0.31	1996–2000
Spain	4.79	1970–2000	0.85	1992–2000
Sweden	18.25	1980–2000	2.95	1992–2000
U.K.	8.06	1970–2000	7.62	1986–2000
U.S.	7.42	1970–2000	3.99	1970–2000

Sources: Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation: Classic Edition Yearbook*, 2001; and Elroy Dimson, Paul Marsh, and Mike Staunton, *The Millennium Book, A Century of Investment Returns* (London: London Business School and ABN AMRO, 2000).

Note: n/a = not available.

Is a 4.8 Percent Real Return Reasonable?

The starting point for answering this question is historical returns. Table 1 shows stock and bond market returns for the EU countries as well as the United States.

All equity markets except Portugal's earned the 4.8 percent return.⁷ (Spain qualifies because the actual required rate before rounding is less than 4.79 percent.) It should be pointed out that the investment intervals are not consistent, a result of data constraints.

Another data source, *Triumph of the Optimists*, covers fewer countries for the entire 20th century. Qualitatively, the reported equity market results are somewhat comparable, whereas the fixed income returns are less in all cases but one. Table 2 shows average annual inflation-adjusted equity and bond returns by country.

The U.S. interval of 1970–2000 in Table 1 was

chosen so as to be somewhat consistent with the EU intervals in the same table. The available annual real returns for many U.S. markets and underlying asset classes, as reported by Ibbotson Associates, is actually longer, going back to 1926. Using the period 1926–2000, the averages of the annual real returns for four common asset classes were

- large capitalization stocks, 9.7 percent;
- small capitalization stocks, 13.8 percent;
- long-term corporate bonds, 3.0 percent; and
- long-term government bonds, 2.7 percent.

Using these assets, one can construct a portfolio designed for the accumulation phase, such as a balanced fund of 70 percent stocks (90 percent large cap and 10 percent small cap) and 30 percent bonds (50 percent corporate bonds and 50 percent government bonds). This portfolio earned an average annual real return of 7.9 percent during the last three quarters of the 20th century, well in excess of

Table 2
Average Annual Real Returns for Stock and Bond Markets, 1900–2000

Country	Equity Return	Government Bond Return
Denmark	6.2	3.3
France	6.3	0.1
Germany (excludes 1922–23)	8.8	0.3
Italy	6.8	-0.8
Netherlands	7.7	1.5
Sweden	9.9	3.1
United Kingdom	7.6	2.3
United States	8.7	2.1

Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns* (Princeton, N.J.: Princeton University Press, 2002), p. 60.

the necessary 4.8 percent. Although it cannot be stressed enough that investment intervals are inconsistent across both countries and asset classes, some of the EU countries had not dissimilar results. A 7.9 percent average real rate of return, and then 5.9 during retirement, would have provided a replacement rate of 217 percent. That extraordinary replacement rate suggests that the saving rate may not need to be as high as 10 percent, or the contribution period as long (as discussed above), or the retirement period

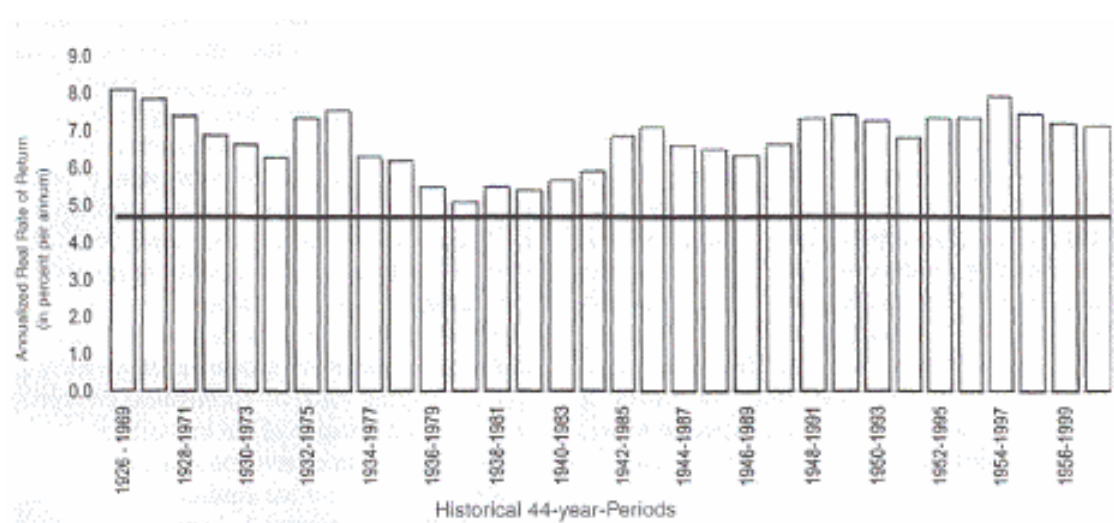
as short, or the percentage of stocks in the portfolio as great, or multiple combinations of the above variables and others.⁸

The 75 individual years of U.S. market data allow us to test whether markets provided the intended replacement rate for different cohorts or whether some were just lucky and most others retired with insufficient resources.

To test this, we looked at all thirty-two 44-consecutive-year periods during the 1926 through

Gambling and investing are fundamentally different.

Figure 1
Historical U.S. Balanced Portfolio Return



Source: Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation: Classic Edition Yearbook, 2001*, Tables C-1, C-2, C-3, C-4.
 Note: Assumes a portfolio comprised of 70 percent stocks (90 percent large cap, 10 percent small cap) and 30 percent bonds (50 percent corporate, 50 percent government).

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2000 interval, using data reported by Ibbotson Associates. The first was 1926 through 1969; the last was 1957 through 2000. All periods achieved the necessary average of the annual real rates of return; the lowest and highest were 5.09 and 8.09 percent, respectively. From this perspective, all cohorts achieved at least the 70 percent replacement rate, as indicated in Figure 1 by the horizontal line positioned at the 4.8 percent annual return.

Market Risk and Return

Even though this history suggests that a market-based retirement system can provide sufficient benefits at a reasonable contribution rate, there is risk. Markets can be volatile and uncertain in the near term, as very recent experience attests. At first glance, the stock market appears to be radically unpredictable, a roller coaster of up and down days that appear to have no pattern, form, or logic. If that is all markets are, it would be foolish to invest in them for an individual's retirement; it would be akin to gambling, to which investing in markets has been compared. But gambling and investing are fundamentally different.

In gambling—whether the lottery, the races, or roulette—total winnings cannot exceed total wagers. That is so because the state, the track, and the casino incur operating expenses associated with their betting games, and those expenses are paid from wagers. Bettors, therefore, will lose over time by at least the amount of operating expenses. Indeed, betting odds set by the house take into consideration the cost of running the business, including taxes.

Investing, on the other hand, is the owning of assets—construction equipment, computer programs, or electrical generators, for instance—that are usually employed to create goods and services that produce wealth. The stock prices of such assets fluctuate as investors constantly reassess their earning power. But over time, as wealth-producing assets earn more and more, stock prices rise. In gambling the bettor is expected to lose; investors are expected to win as economies and company earnings grow.

Accumulation, Distribution, and the Change in Market Returns

There is some concern that financial returns

suffer as retirees run down their accumulated savings. An opposite, but logically parallel, concern posits that as workers contribute to their accounts market returns experience a speculative bubble because of all of the new money going into the market. Both concerns focus on the impact of capital flows on the change in market prices.⁹

These concerns suggest that, with a relatively fixed supply of stock outstanding and given the law of supply and demand, an additional amount of buying on the part of the baby-boom generation, for instance, would cause stock prices to rise. Furthermore, as equity owners learned of this new demand they would be reluctant to relinquish their stock until prices rose to a higher level, setting a new equilibrium between supply and demand. This partial equilibrium theory of capital flows into the market and stock price changes is often referred to as the “buying power hypothesis.”

From the other side of the transaction, sometimes called the “selling pressure hypothesis,” the conclusion is the opposite. With all of the money coming out of the market—in this case caused by the distribution of wealth during retirement—given the relatively fixed supply of outstanding stock, by the law of supply and demand, prices must fall.

Since every transaction has both a buyer and a seller, analyzing the behavior of markets from only the buyer's or seller's perspective is a logical trap. No single transaction can take place at a price that both rises and falls—the two partial equilibrium conclusions presented above.¹⁰

Furthermore, money does not go into or out of the market—the secondary market, that is—during a transaction. The market is a place, physical or electronic, where participants exchange assets: stocks for cash, cash for stocks. The total amount of stock or money “in the market” before and after the transaction is exactly the same save for taxes and costs. All that has happened is a change of ownership. The underlying value of the business enterprise is not altered because of the transaction.

In support of this view, the annual dollar purchase of U.S. corporate equities is not statistically related to the annual change in U.S. stock prices as measured by the S&P 500 Index.¹¹ Other tests of capital flows and stock price movements using daily data, such as additions to or deletions from the S&P 500 Index, tend to

suggest that capital flows and stock price changes are only marginally correlated.

None of the foregoing suggests that stock price changes are unrelated to high trading volumes. Rather it posits that the volume offers no information as to the direction of the change. One last point related to market-based financing is that both contributions and distributions take place over many years, and, ultimately, they will net out.

Income Redistribution

Many Europeans believe that one objective of pension systems should be redistribution, across both age and income groups. Whether or not one accepts this premise, it is worth noting both that PAYGO pension systems may be less redistributive than commonly believed and that market-based systems do not necessarily preclude redistribution.

PAYGO systems redistribute across age groups by taxing workers through a payroll tax, or contribution, and distributing the proceeds to retirees. When young workers become elderly retirees, new young workers are taxed until they, too, retire and receive benefits provided

by the next generation of young workers. This arrangement of redistribution across age groups is now in some peril because the number of workers is shrinking relative to the number of benefit-eligible retirees, causing benefits to be reduced or contributions to be increased. Furthermore, the causes of this demographic reality, namely, increasing life expectancy and decreasing fertility rates, are not expected to change significantly in the foreseeable future.

Unless additional transfers are received from general government revenues, the amount that can be paid in benefits from PAYGO financing is the payroll subject to tax multiplied by the tax rate applied to that payroll. If the contribution rate is held constant, redistribution can increase in real terms by no more than the increase in inflation-adjusted payroll, which is determined by both the productivity and the supply of labor. Although the real increase in taxable payrolls varies by country, it is most often less than the return on capital, an alternative source of financing retirement benefits.

Using data reported by the Organization for Economic Cooperation and Development, the author compared real wage growth and capital returns for most of the EU countries (Table 3).

Although the real increase in taxable payrolls varies by country, it is most often less than the return on capital, an alternative source of financing retirement benefits.

Table 3
Comparison of Real Wage Growth and Equity Market Returns for EU Member States, Selected Time Periods (percent per annum)

Country	Equity Returns	Interval	Wage Growth	Interval
Austria	9.36	1970–2000	-0.24	1997–2000
Belgium	11.69	1973–2000	6.48	1986–2000
Denmark	10.68	1970–2000	1.59	1989–2000
Finland	32.66	1988–1999	1.89	1976–2000
France	11.36	1973–2000	2.68	1971–1997
Germany	11.70	1970–2000	0.36	1992–2000
Greece	6.47	1992–2000	2.37	1989–1998
Ireland	11.39	1988–2000	n/a	n/a
Italy	5.16	1973–2000	2.70	1971–1999
Luxembourg	15.87	1988–2000	n/a	n/a
Netherlands	14.06	1971–2000	2.00	1996–1999
Portugal	2.16	1988–2000	n/a	n/a
Spain	4.79	1970–2000	3.90	1965–1998
Sweden	18.25	1980–2000	3.80	1994–1999
U.K.	8.06	1970–2000	2.16	1961–2000

Source: Organization for Economic Cooperation and Development, *Database of Main Economic Indicators*, 2001.

Note: n/a = not available.

Market-based financing is the accumulation of wealth through systematic saving and investing in wealth-producing assets during an individual's working career and the systematic distribution of that wealth during retirement.

The time periods are not consistent because of data constraints. The comparison of wage growth and equity returns is illustrative but not complete. Market-based portfolios most likely would be invested in other assets as well, and there are administrative costs that would reduce effective returns.

PAYGO systems redistribute income through benefit formulas. Although formulas differ, the intended result is often similar: pay proportionally greater benefits to lower-income retirees. For example, if benefits were a flat amount for all retirees irrespective of their wage history, this formulation would pay proportionally more, relative to wages, to low-income workers.

In brief, actual redistribution is often different from what may be intended. Low-income workers often have less education than high-income workers. Therefore, they tend to enter the labor force at an earlier age and pay payroll taxes for a longer period than do high-income workers. Upon retirement, life expectancy for low-income workers is less than for their high-income counterparts. Those two factors mitigate the redistributive element of differential replacement rates. Indeed, it is possible that redistribution may go in the other direction, from low-income workers to high-income workers. Whether this is so or not depends on many details, including tax subsidies.

Last, a PAYGO contribution rate is normally a flat rate applied to the first unit of wage income. An income tax usually has higher tax rates for higher income groups and is applied after allowed deductions, which themselves decline as income rises. For the same reasons that income taxes are considered progressive, payroll taxes are often characterized as regressive. This dampens, in part, the redistribution objective of the benefit formula.¹²

Market-based financing is the accumulation of wealth through systematic saving and investing in wealth-producing assets during an individual's working career and the systematic distribution of that wealth during retirement. There is nothing about market-based financing that promotes or precludes redistribution, across either age or income groups. Redistribution is a function of system design, not of finance.

To illustrate, imagine a national retirement system consisting of one portfolio invested in market-based assets into which all workers pay contributions and from which all retirees

receive benefits. Further, imagine that workers have no property rights to their contributions and investment earnings, which allows the government to determine an individual's retirement benefit. In such an arrangement, an individual's accumulated wealth may not be related to his benefits in an actuarially fair manner. If an individual's benefits are less than they would have been under a separate account with full property rights and earning market rates of return, then a transfer of wealth has been made from him to someone else. If, on the other hand, his benefits are greater than would be the case in a purely private structure, the redistribution goes the other way. As long as an individual's benefit is not precisely computed at market rates, and as long as the government can define it, market-based financing can be redistributive across age as well as income groups.

Redistribution across income groups can be achieved even if there are separate accounts, personal property rights, and strict adherence to market-based returns and principles. Consider the hypothetical case in which the present pension contribution rate is 15 percent of wage income up to some limit, and benefit replacement rates are progressive, ranging from, say, 25 to 60 percent of an individual's last year's wage. At reasonable market rates of return, length of working years, and life expectancy at retirement, saving rates would need to be about 3 to 7 percent in order to fall within the above replacement rate range. The low-wage worker would save and invest 7 percent of wages, which would provide the 60 percent replacement rate, and pay the remaining 15 percent payroll deduction as an 8 percent tax. The high-wage worker would save just 3 percent, which would provide the 25 percent replacement rate, and pay a 12 percent tax. In both cases the payroll deduction is 15 percent and the replacement rate objectives are met, but the high-wage worker pays proportionally more in taxes, thereby subsidizing the low-wage worker.

Another redistribution option is to apply a progressive income tax on market-based retirement benefits. The proceeds from the tax could be used to increase benefits to lower-income retirees.

Although the above analysis is not an exhaustive treatment of how market-based systems can be redistributive, it nevertheless makes the point that they can be. Another way of thinking about this is to consider that the policy goals of redistribution are more achievable

when there is more to distribute. In the long run, market-based financing meets this need whereas PAYGO financing cannot, especially in the presence of the well-known demographic challenges that most countries face.

Labor Market Mobility

Labor market mobility—the ease with which workers are able to move from firm to firm or country to country—is an essential and fundamental element of an efficiently functioning economy that achieves a high level of employment. While this is true in all countries, labor mobility is especially important in countries participating in a monetary union since they no longer have recourse to discretionary monetary and exchange rate policies.

Employer-sponsored retirement pensions often are integral to an individual’s compensation. They can be a key factor in the decision to join or leave a firm or to move from one country to another. Likewise, government-sponsored systems can influence the mobility of labor, depending on how such systems are designed.

Whether a retirement system is employer or government sponsored, its design is frequently characterized in the simplest of terms such as defined benefit or defined contribution, PAYGO or market based. From this scant information, assumptions are often drawn concerning the remainder of the design. For example, one might conclude that a defined-contribution system would not have a guaranteed benefit, or a defined-benefit system would not have individual accounts. Inferences drawn from such little information may be incorrect and can needlessly limit other possible outcomes.

Another design approach is to consider the fundamental building blocks from which pensions are constructed and then build a system

using only those blocks that achieve the desired design. This is the equivalent of creating a mosaic from different colored tiles. A finite number of tiles can be assembled to create an almost infinite number of mosaics. The starting point in mosaics, as well as retirement architecture, is the individual building blocks.

Although subsets upon subsets undoubtedly exist, the following are the fundamental building blocks of retirement architecture.

With just these 10 building blocks, many different retirement architectures can be crafted, each with its own advantages and disadvantages. It should be kept in mind that individuals may participate in a number of pension schemes at the same time.

The following discussion provides a brief description of some of the more common approaches. *Italic* type indicates which building blocks are used for each design. A matrix summarizing these design options follows this discussion (see Table 4).

Design 1

This system approximates the U.S. 401(k) plan. Under 401(k) schemes, a plan sponsor, usually a company or union, oversees administration of a saving and investment program for its employees. Both offering the plan and participating are voluntary. Under such plans,

1. employees designate the amount they wish deducted from their pay;
2. employees select investment options offered by the plan sponsor;
3. the plan sponsor invests the designated amount, in many cases as of the contribution date;
4. deductions are pretax;
5. investment earnings are tax-deferred;

Building Blocks	
1. Defined contribution	2. Defined benefit
3. Voluntary	4. Mandatory
5. Market-based financing	6. PAYGO financing
7. Individual accounts	8. Government accounts
9. Personal property rights	10. Lack of personal property rights

Labor market mobility is an essential and fundamental element of an efficiently functioning economy that achieves a high level of employment.

Table 4
Plan Design Matrix

Building Blocks	Design 1	Design 2	Design 3	Design 4	Design 5
1. Defined contribution	✓	✓	✓	✓	
2. Defined benefit		✓	✓		✓
3. Voluntary	✓			✓	✓
4. Mandatory		✓	✓		
5. Market-based financing	✓	✓			✓
6. PAYGO financing or notional accounts			✓	✓	
7. Individual accounts	✓	✓		✓	✓
8. Government accounts			✓		
9. Personal property rights	✓	✓		✓	✓
10. No personal property rights			✓		

- 6. benefits are taxable;
- 7. employers often provide a matching contribution; and
- 8. employees often can change their portfolio holdings daily and receive that day's closing price.

Under Design 1 defined-contribution plans, at retirement the assets are used for benefit payments and there is no guaranteed level of income. The individual bears all risks. Should assets outlive the retiree, they may be passed along with other assets in an individual's estate. Should the retiree outlive the assets, retirement income must come from

other sources. Of the three levels—contributions, investment income, and benefits—only benefits are subject to tax; the others are exempt.

This design is helpful in achieving labor market mobility. Eligibility and vesting are close to immediate, assets are portable across employers and borders, and there is much investment choice, all of which leads to the structure's popularity and high level of participation. The 401(k) structure is responsive to changing work patterns—people no longer tend to stay with one company for life, and there is more phased entry to retirement.

This structure also enhances labor flexibility

Design 1	
1. <i>Defined contribution</i>	2. Defined benefit
3. <i>Voluntary</i>	4. Mandatory
5. <i>Market-based financing</i>	6. PAYGO financing
7. <i>Individual accounts</i>	8. Government accounts
9. <i>Personal property rights</i>	10. Lack of personal property rights

because the decision to retire is actuarially neutral. Early retirement means more but lower monthly benefits, and late retirement means fewer but higher monthly benefits. Early retirement does not increase pension costs, which it often does in national PAYGO systems. Indeed, reversing the fall in the effective retirement age is a priority in Europe. A funded system with personal property rights would eliminate early retirement as a cause of financial stress even if all workers retired early.¹³

Design 2

This design approximates some of the pension reform proposals put forward in many countries. The contribution is mandatory and is “carved-out” from the existing payroll tax so that there is no additional payroll deduction. Rather, the deduction has both a PAYGO and a market-based component. The individual accounts are an individual’s personal property and are treated the same way they are in Design 1. Under many of these proposals, however, if an individual outlives his assets or if his assets are not sufficient to meet a predetermined level of income, the government guarantees the difference. The government bears this risk, not the

individual. This attribute provides for a guaranteed benefit usually approximating the existing PAYGO pension benefit. Tax treatment of contributions, investment income, and benefits can be taxed or tax-exempt. Although some countries, such as Australia, tax those amounts, this is not common.

This design is friendly to labor mobility. Indeed, it closely resembles Design 1 except that it is mandatory and has a guaranteed provision. Administratively, it is a bit more complex, requiring multilateral coordination relative to the guarantee as workers move across borders.

Design 3

This combination represents many government PAYGO pension systems. Although those systems are generally considered to be defined benefit, that characterization is normally not complete. That is so because usually there is a defined-contribution element, and the defined benefit can be redefined.

This design includes a defined-contribution component, which is the amount deducted from wages. It is sometimes referred to as a defined “contribution” and at other times as a defined “tax.” According to one argument, from the

A funded system with personal property rights would eliminate early retirement as a cause of financial stress even if all workers retired early.

Design 2	
1. <i>Defined contribution</i>	2. <i>Defined benefit</i>
3. Voluntary	4. <i>Mandatory</i>
5. <i>Market-based financing</i>	6. PAYGO financing
7. <i>Individual accounts</i>	8. Government accounts
9. <i>Personal property rights</i>	10. Lack of personal property rights

Design 3	
1. <i>Defined contribution</i>	2. <i>Defined benefit</i>
3. Voluntary	4. <i>Mandatory</i>
5. Market-based financing	6. <i>PAYGO financing</i>
7. Individual accounts	8. <i>Government accounts</i>
9. Personal property rights	10. <i>Lack of personal property rights</i>

The defined benefit is not strictly certain because often there are no personal property rights assigned to a specific benefit. The government can redefine the benefit, as needed.

perspective of an employer, this represents a nonwage labor cost. However, a counterargument posits that the deduction, whether called a contribution or a tax, is a cost of labor since the burden occurs explicitly as a result of acquiring labor services. The defined benefit is based on a formula that is generally progressive and often complex. The defined benefit is not strictly certain, however, because often there are no personal property rights assigned to a specific benefit. The government, therefore, can redefine the benefit, as needed.

The financing is a transfer from workers through the payroll deduction to older retirees. In some countries, such as Italy and Sweden, notional accounts are common; such accounts do not have wealth-producing assets but are based on an accounting of what an individual's account would be worth if it did have such assets. This is very much the same as PAYGO financing because future taxes pay future benefits.¹⁴

This design may be neutral concerning labor mobility, but frequently the parameters of such systems operate in a manner that affects the mobility of labor. There is no particular reason why such a system must retard labor mobility, although it can. For example, benefits may be determined by just the last few years of wage income. If so, this can lead to an arrangement of lower reported wages in earlier years in consideration of higher reported wages in later years, just the ones subject to

Vesting periods can be long. In addition, transferring benefits when moving across borders may pose some difficulty.

Design 4

Quite a few employer-sponsored plans have this structure. The plan is voluntary on the part of both the employer and the employee; the contribution is defined, or determined, by the employee within specified limits; the account is notional in that the sponsor is not required to hold wealth-producing assets although it may choose to do so; and the account is individual although the employee may have limited or no property rights to the account balance. This structure is designed to provide increased retirement benefits to more highly paid employees and at the same time meet certain, often strict, tax laws. It is somewhat comparable to an individual account that does have wealth-producing assets, but only under the condition that the sponsor is able to pay the benefits. This structure has significantly higher risk than a funded account but may still be desirable under certain circumstances. For example, if tax laws do not allow additional tax-advantaged retirement saving in funded plans but do allow them in unfunded plans, then employers could offer such plans and employees could choose to participate. Employers make the implicit promise to pay benefits, but

Design 4	
1. <i>Defined contribution</i>	2. Defined benefit
3. Voluntary	4. Mandatory
5. <i>Market-based financing</i>	6. <i>PAYGO financing</i>
7. <i>Individual accounts</i>	8. Government accounts
9. <i>Personal property rights</i>	10. Lack of personal property rights

the benefit formula (a way of “gaming” the system). A worker who has entered into such an arbitrage arrangement may have less mobility in the later part of his career because he needs to book the higher reported wages in order to receive the higher retirement benefits.

there is no legal requirement to do so. Employees bear the risk.

This system can be a double-edged sword for labor mobility. For higher-paid employees, it can be an inducement to stay with the firm. But once an employee is in, portability is limited,

thereby adversely affecting an individual's ability to leave. If an employee cashed out of the plan and such a plan were not offered elsewhere, then the employee would incur a cost when leaving the firm for another.

Design 5

This combination of building blocks is close to many defined-benefit plans in European occupational schemes. The benefit is defined on the basis of a formula of an individual's earnings history and years of service with the employer; it is voluntary in the sense that the employer chooses whether to sponsor it or not; it employs market-based financing and is required to have a certain level of assets relative to estimated liabilities. Although individual accounts do not exist, individual benefits do (as determined by a benefit formula), and employees have rights to their benefits.

But because benefit formulas often favor later years' wages relative to an individual's wage history while at the sponsoring firm, as well as higher benefits that accrue solely because of staying with the firm, much could be lost if one were to leave prematurely. This element could retard labor mobility. In part because of this attribute, these plans have not grown as rapidly as defined-contribution plans,

is funded is the transition cost. It is often claimed that some people would be financially burdened because they would have to pay twice, once for their own retirement benefits through saving and investing and once for benefits for people who are already, or soon to be, retired. This burden would be so prohibitive, it is suggested, that market-based financing should be rejected even if it is meritorious on other grounds.

A variant of this argument suggests that it would be the government that would face the burden as payroll taxes were diverted to individual saving accounts, or if the government had to provide tax incentives to encourage people to enter funded schemes. Even if this were beneficial in the long run, it would cause financial stress in the short run, especially for those governments at present running fiscal deficits or servicing high debt loads.

Both lines of reasoning are correct, but they are not complete. They do not take into consideration all of the costs associated with the PAYGO structure. Any logical discussion of the costs of moving to a market-based system, either in whole or in part, must compare those costs to the costs of maintaining the PAYGO system, including retiring its unfunded liability.¹⁵

PAYGO systems rely on taxes, euphemistically termed "contributions," from workers to

Any logical discussion of the costs of moving to a market-based system must compare those costs to the costs of maintaining the PAYGO system including retiring its unfunded liability.

Design 5	
1. Defined contribution	2. <i>Defined benefit</i>
3. <i>Voluntary</i>	4. Mandatory
5. <i>Market-based financing</i>	6. PAYGO financing
7. <i>Individual accounts</i>	8. Government accounts
9. <i>Personal property rights</i>	10. Lack of personal property rights

which are not saddled with such a benefit penalty.

Costs Incurred in the Transition from an Unfunded to a Funded Pension System

An apparently intractable dilemma in shifting from a PAYGO pension system to one that

pay benefits to retirees. If the contribution rate is held constant, aggregate benefit payments can increase no more than the increase in payroll subject to the contribution, a function of labor productivity and the number of workers.

In addition, benefit payments to specific age groups depend on how many people are eligible to receive them relative to the number of workers contributing to the system at that time,

If the contribution rate is held constant, aggregate benefit payments can increase no more than the increase in payroll subject to the contribution, a function of labor productivity and the number of workers.

assuming, of course, that the benefit formula is unchanged.

Such a financing system requires the number of workers to be a consistent multiple of beneficiaries in order for the contribution rate not to rise significantly. Should the ratio of workers to beneficiaries fall, the system can face a serious problem of underfunding.

That is one of the realities that EU member states face. Given the near certainty of rising life expectancies and below-replacement birth rates, the difference between long-run contributions and benefits is estimated to be negative for the PAYGO systems of most EU member states. Countries that at present enjoy a surplus of contributions over benefits, such as the United States, will eventually enter a period of permanent deficits. Countries that already pay more in benefits than they receive in contributions will see their financial situation deteriorate even further. According to the World Bank, for most developed countries the sum of the negative cash flows is greater than explicit government debt.¹⁶

Because of differences in countries' contribution rates, benefit formulas, unfunded liabilities, and birth and mortality rates, as well as many other variables, no single formula works for all countries. But conceptually the transition is the same for each. I use the case of the United States to present the concept.

In its 2001 report Social Security's Board of Trustees projected that the Social Security program will enjoy a positive cash flow until 2016, after which time it turns negative. If benefits remain unchanged and are paid only from contributions at the present stipulated 10.6 percent of payroll (the retirement benefit portion only), then the payroll tax rate will have to rise steadily starting in 2016, ultimately increasing by almost 60 percent to 16.8 percent of payroll by 2075. Alternatively, the tax rate could increase immediately by 1.8 percent of payroll to 12.4 percent and remain stable at that rate for the next 75 years, for that is the amount as a percentage of payroll by which the actuaries estimate the system is out of actuarial balance. The 75-year horizon is used because that is the period over which the Social Security actuaries project the long-range financial condition of the system.¹⁷

The latter option assumes that the present cash flow surplus through 2015 and the 1.8 per-

cent of payroll addition to it would be immediately invested to finance future benefits. But as with most systems, these surpluses are spent on other government projects so funding rarely happens. The 1.8 percent solution, therefore, only delays the onset of negative cash flows from 2016 to 2022. The negative cash flow in 2016 is only 0.01 percent of GDP, but it progressively increases to about 1.7 percent of GDP by 2075. Although the actuaries do not project beyond 75 years, these trends are expected to continue indefinitely.

If negative cash flows were financed by debt, then debt would be issued starting in 2016 and every year thereafter with no end in sight. The present value of the debt issued within the 75-year period is U.S.\$3.1 trillion.¹⁸

Now assume the same 12.4 percent payroll deduction, but 2.8 percent is invested in wealth-producing assets and the remaining 9.6 percent remains as a payroll tax. For the young average-wage earner starting his career, 2.8 percent will afford the same benefits at retirement that Social Security provides, given a 5.5 percent real rate of return. I assume that all workers participate in the market-based system and that older workers' benefits are provided from both the PAYGO tax and the accumulated assets. Total benefits paid from both sources are equal to those specified in the present benefit formula.

Because some of the 12.4 percent contribution is diverted to markets, negative cash flows start earlier, in 2013. At the beginning of the transition almost all benefits are paid by the tax because little wealth has yet accumulated in the individual accounts. But as time passes, tax-financed benefits fall while wealth-financed benefits rise. By the end of the transition, all benefits are financed by each individual's accumulated wealth. At this point, the government's benefit costs are zero. In the interim, however, there are significant negative cash flows that are financed by debt just as they are in the PAYGO system.

In 2013, the first negative year, debt equals 0.01 percent of GDP. It rises to a peak of about 2.5 percent around 2040. The system begins to run a permanent positive cash flow about a decade later. The positive cash flow is used to retire the transition debt. In present value terms, the sum of the positive and negative cash flows is zero. The steady-state environment—that is, after all the debt is paid off—is a 2.8 percent

payroll contribution, no employee or employer payroll tax, benefits equal to those under the old system, and no unfunded liability.

What has happened through the transition is a tradeoff: eliminating the long-run unfunded liability while accelerating the timing of negative cash flows. The transition works because the rate of return on the accumulating assets is greater than the increase in payroll subject to the payroll contribution.

If the amount of debt required to meet benefits is considered too high in the PAYGO structure, then options exist for reducing the debt burden, such as cutting benefits, raising the age at which one is eligible to receive benefits, reducing the cost-of-living adjustment, extending the working life on which benefits are determined, reducing other government spending, or raising other taxes. If any of those options is exercised, assume the same option is exercised during the market-based transition. Here, too, debt issuance would be less. Indeed, applying any option equally to the PAYGO and market-based transitions will prove that the cost of the transition to a market-based system will be less than the cost of remaining with a PAYGO structure.

Administrative Costs in a National Defined-Contribution System

As the European Union contemplates retirement finance reform for its aging population, one consideration will be the administrative model that supports the system. Moving from PAYGO financing to market-based financing, whether in full or in part, will not meet success if administrative costs are prohibitive. Given that most countries have not yet addressed their potential administrative hurdles, there is little historical detail from which to learn.

In establishing the outline for an administrative structure, the first task is to determine basic system criteria. As one example, the following eight objectives may be considered necessary because they were central to the debate on U.S. retirement finance reform. Many of them are part of system designs in other countries, as well. These objectives are to

1. create individual accounts with assets

- owned by the account holder;
2. ensure reasonable costs for all participants, low- as well as high-income workers;
3. minimize employers' administrative burden;
4. provide the opportunity for workers at all income levels to invest in capital markets;
5. ensure that inexperienced investors will not suffer poor returns relative to experienced investors;
6. provide investment choice;
7. offer a solution for workers who make no investment choice; and
8. adapt automatically to changing technology and services offered by the financial services industry.

Not only were the above criteria well established in our nation's dialogue on retirement finance reform, they are part of the architecture of 401(k) plans. Because the 401(k) model shares so many of the same objectives, the argument could be made that it be the model for pension reform for the entire labor force. The problem with that suggestion, however, is that the government's record-keeping and accounting system that administers Social Security's defined-benefit system does not lend itself to the daily priced environment of the 401(k) plan. That is true in most other countries as well.

That fact leads to two options: either build a costly new record-keeping system designed to service the entire labor force with individual accounts, daily pricing, and frequent contributions—a significant undertaking—or work around the existing system. The author chose the latter because of cost considerations and the assumption that an efficient system would naturally evolve within several years after start-up. But this still left the challenge of dealing with the government's accounting system.

The U.S. Department of the Treasury has built a comprehensive system for the collection of Social Security taxes from employers, but there is no detailed record of individual taxes paid during the year in which they are paid and sent to the Treasury. That information is not communicated to the government and reconciled with the individual's name until about August of the following year. Such a lag from collection to reconciliation makes it virtually

Countries that at present enjoy a surplus of contributions over benefits will eventually enter a period of permanent deficits. Countries that already pay more in benefits than they receive in contributions will see their financial situation deteriorate even further.

Index fund investment management fees most likely would be less than two basis points, or two one-hundredths of one percentage point.

impossible to invest an individual's contributions at the time they are made because there is no way of matching the individual's contribution to the price paid. Moreover, it is not known when during the year the contributions were made. This record-keeping system, which is adequate for the Social Security defined-benefit system, is unworkable for an individual account, defined-contribution system. But it is all that currently exists for identifying individual payroll taxes. This record-keeping challenge needs a solution that incorporates the eight objectives specified above.

The solution is to structure investment options, not all of which require timely and detailed contribution data. This approach involves three investment levels.

At the first level, workers' savings are deducted from payroll and invested in a collective money market fund with a unit price set to one dollar. Workers own the assets of the fund although the accounting at the individual level is not completed until the following year when an individual's tax form is filed, which is the established reconciliation process. When the individual's assets are accounted for, units in the money market fund, including earned interest, are then posted to each worker's account.

The units are then invested in one of three balanced funds selected by the worker, or other investment options. Individuals who do not, or choose not to, make a selection have their assets invested in a default option, which is one of the balanced funds.

The account holder has the option after a start-up phase of about three years, a period required to build up sufficient assets to achieve economies of scale, of transferring some or all of his balance to an appropriate retail retirement account.

Level One Investment: Pooled Money Market Account

This pooled account would be a conservative fund similar to a large institutional money market fund. The funds would be held in this pool earning interest for all participants. Given that the timing of an individual's contribution is not known, all participants are assumed to fully invest on June 30. High-income workers, who normally pay all of their payroll tax early in the year, effectively subsidize low-income workers because high-income workers do not receive a

full interest credit. Workers who pay payroll taxes only at the end of the year benefit from this accommodation. In almost all cases these cross-subsidies are insignificant.

Level Two Investment: Balanced Funds and Other Options

When the individual account balance is determined, during the second year, it is converted to units and then invested in one of three balanced funds chosen by the worker. Balanced funds are diversified portfolios that are generally invested in stocks, bonds, and cash. The combined assets underlying successful private employer-sponsored defined-benefit plans are essentially balanced funds. One of the Level Two balanced funds may have an allocation that closely approximates those plans. This allows all workers, if they wish, to maintain an asset allocation similar to that provided to the employees of many sophisticated corporations. There would be another fund on each side of this fund: one for younger workers would be weighted more toward equities, and the other would be weighted more toward bonds for workers closer to retirement.

Although workers would have the option of choosing their balanced fund, some might not wish to make that decision. In that case, they would default to the middle fund. In other words, all workers, regardless of their income level or financial sophistication, would be able to invest in a well-diversified balanced portfolio suited to retirement savings. The portfolios would be managed by professional investment managers chosen through an open and competitive bidding process. Index fund investment management fees most likely would be less than two basis points, or two one-hundredths of one percentage point. The balanced funds would be valued daily and prices would be published in the popular press. Workers would only need to multiply their units, an amount that would remain constant for one year, by the daily price to monitor their account balance, all at no cost to the system. Workers could change their balanced fund choice once a year. That would allow some ongoing choice within Level Two while being sensitive to costs; changing investments is an expensive administrative feature.

Other options could be available as well. For instance, each of the asset classes that make up the

balanced funds could be available separately. Investors, therefore, could construct portfolios more suited to their needs than the three balanced funds. Increasing investment options does not necessarily increase costs. However, costs associated with explaining asset class characteristics, such as risk and volatility of returns, and answering other reasonable inquiries can materially increase administrative expenses. The age-sensitive balanced-fund option is designed to offer high risk-adjusted returns while keeping education costs within reason. The policymaker deciding on the ultimate array of investment options should be mindful of the trade-off between choice and the cost of education.

Level Three Investment: Rollover Option

After perhaps three years, a period required to successfully build up the assets in the Level Two account system to realize economies of scale, investors seeking more choice would have the option of rolling their investment funds out of the Level Two asset allocation funds into any qualified retirement investment account.

Those choosing Level Three would transfer assets to a qualified account with a professional financial services company meeting reasonable and specified standards. While investors would have a wider range of choice within Level Three, they would still be provided with reasonable investment guidelines. Level Three investment managers would act as the fiduciary for their fund offerings and would be subject to government oversight. This is consistent with many employer-sponsored plans, both defined contribution and defined benefit. Workers could choose to hire or fire firms in Level Three, or they could choose to leave Level Three and return to Level Two. This feature provides horizontal competition among retail providers across Level Three and vertical competition between Levels Two and Three, essentially between an institutional and a retail platform. Competition of this nature would ensure the highest level of service and the greatest number of functions and features at the lowest cost.

Record Keeping and Administration

The administration of an individual account system requires the development of a large-scale, customized record-keeping system with the capability to produce a highly efficient serv-

ice solution. The efficiency of the service application is dependent on the design and execution of the system. To date, no existing system meets all the requirements.

The requirements for supporting a national individual account system are complex, large-scale and capital intensive. This is a challenge of unprecedented scope. Nonetheless, the system itself is relatively straightforward. Development time could be minimized to allow focus on sizing and scaling the network and building the necessary interfaces to the Social Security Administration. Unlike mutual fund or 401(k) record-keeping systems, there would not be many unique product features or functions, thus significantly reducing complexity and cost. It is reasonable to assume that a system could be developed in 12–18 months to support these requirements. This estimate is highly dependent on the specifications of the chosen system. It should be considered a frame of reference, not an inviolable timetable.

The greatest challenge in building a record-keeping system to support the requirements of an individual account system is not the complexity of the application but the scale needed to support the high volume of participant inquiries, transactions, transfers, and report generation. To keep costs low, it is critical that most participants be able to use voice and Internet technology to obtain information and transact business. The greater the percentage of calls requiring a customer service agent, the higher the administrative cost incurred.¹⁹

Cost Model

On the basis of the plan design defined above, a cost model has been developed to project administrative costs under a range of assumptions. The unit cost factors are based on experience in the 401(k) business and have been adjusted in some cases to account for the scale of the individual account option. The requirements of a national system of individual accounts are unique, and, therefore, extrapolations from 401(k) experience pose some risks. Unlike the 401(k) structure, I assume that the Social Security Administration would provide the individual account record keeper with an accurate, timely, automated transmission of earnings' histories that would be used to calculate annual contribution data. These and any

To keep costs low, it is critical that most participants be able to use voice and Internet technology to obtain information and transact business.

Because costs are deducted from managed assets, and each account pays the same basis point amount, there is a built-in subsidy from larger to smaller account holders.

other expenses associated with reconciling tax records would be borne by Social Security and are not included in this cost model. It is also assumed that Social Security would maintain accurate and up-to-date employee address files, at its cost.

Cost Summary

On the basis of the design criteria outlined above and the unit cost assumptions, total administrative expenses to support an individual account system can be estimated for the first and subsequent years. Although costs would be expected to increase annually, driven primarily by employee compensation and benefits, assets would increase more rapidly. Costs as a percentage of assets, therefore, would fall over time. The author projects that steady-state asset-based costs could range from 20 to 40 basis points assuming 140 million participants and annual contributions of U.S.\$70 billion. This cost range should be taken as a guideline only. Employing different assumptions can materially alter total cost estimates.²⁰

Because costs are deducted from managed assets, and each account pays the same basis point amount, there is a built-in subsidy from larger to smaller account holders. That is, larger accounts pay a greater absolute amount than do smaller accounts.

Final Comments on Administration

Economies of scale are critical to the cost of administrative systems. Depending on the size of a country—annual saving, size of the labor force, accumulated wealth, number of benefit-eligible retirees, and the like—perhaps only one centralized system would be feasible. Indeed, in the case of very small countries, a single system for a group of such countries may be the only affordable solution.

Although many approaches to the administrative challenges inherent in an individual account system linked to a PAYGO system may be expensive, not all need to be. Under reasonable assumptions, a well thought out plan that meets many nations' retirement needs should be achievable. Given that local conditions would most likely drive the administrative platform design, final cost estimates cannot be dependably estimated until the design is determined.

Private Investment Accounts on Top of PAYGO Pension Systems

Another consideration offered in the general context of retirement finance reform is adding a market-based component, either voluntary or mandatory, to the traditional PAYGO pension system. Administrative issues aside, this option presents at least two hurdles: if it is voluntary, it is likely that not all workers would participate; and if it is mandatory, small firms with few resources could face significant administrative costs relative to the size of the enterprise. This last point is a major issue in the Social Security reform debate in the United States. Those caveats aside, the 401(k) defined-contribution system in the United States is, again, a useful model to consider because of its 20-year history and success.

The 401(k) plan is a defined-contribution employer-sponsored saving plan. The employee contribution, at a level determined by the employee but capped at U.S.\$10,500 in 2001, is treated as a pretax deduction from salary and paid into the plan by the employer. (The cap rises in annual increments to U.S.\$15,000 in 2006, and after-tax contributions may be made as well at any time.) Income tax is deferred on contributions and investment earnings until withdrawal. The employee's contribution is voluntary, and there may be a match by the employer, although not necessarily. Employees become eligible after meeting a service requirement that cannot be longer than one year. Once eligibility is reached, vesting of the employee's contribution, but not necessarily the employer's match, is immediate. Plan participants may direct their contributions to a wide range of investment options offered by the plan. Common options include money market funds, stock and bond funds, balanced funds, and individual stocks and bonds. If funds are withdrawn prior to age 59.5, a 10 percent penalty is paid in addition to income tax.²¹

Administration of the plans requires detailed record keeping and account maintenance, including separate accounting of pretax and after-tax contributions. Once employees choose their investments, the trustee—usually a bank or other financial services company—administers the plan. Administrative systems are highly automated and include voice response systems through which account holders can access their

account balances and make changes to their investment portfolios.

Each day, a computer program gathers all of the requests made by participants in the plan whether by the Internet, by automated voice response, or through customer service representatives. The computer compiles all of this information and relays it to a record-keeping function. The value of each account is calculated at the end of each business day, based on a 4 p.m. eastern standard time market close.

The trustee-custodian's fund accountant normally calculates net asset values by 5:30 p.m. EST every day. This information is transmitted to the pricing system and is used in calculating unit prices for that day. Prices are first reviewed and verified by the record keeper before being transmitted to the record-keeping system for processing. In most systems, information is processed overnight and is used to update participant balances for voice response and customer service requests the following day.

At the beginning of each business day, all financial activity within the accounts as calculated by the record-keeping system is summarized and reconciled by the record keeper. This information is then transferred to the trustee-custodian in time for instructions to be forwarded to investment managers. Participant requests for distributions, withdrawals, and loans are processed on the day they are received, and checks, confirmations, and loan proceeds are mailed directly to the participant within a few days of receipt of the request. Written confirmations of all financial transactions are typically sent to participants.

These plans are particularly useful to workers who change jobs frequently, because contributions are immediately and fully vested. When an individual changes jobs, the assets from the old plan may be rolled over to the new employer's plan or to an individual's own personal retirement account.

These plans started 24 years ago with the Revenue Act of 1978, which added section 401(k) to the act, hence the name. At year-end 2000, the U.S.-based Investment Company Institute, the U.S. Federal Reserve Board, and the U.S. Department of Labor estimated that total 401(k) assets were U.S.\$1.7 trillion with 42 million plan participants. These plans comprise about 41 percent of all U.S. private pension assets and about 55 percent of all U.S. private pension participants. As of 1997, Access

Research estimated that average administrative costs for these plans, including investment management fees, were 77 basis points.²²

Government Pension Regulation: Moral Hazard and Investment Choice

A common characteristic of regulation is that it is reactive. Normally, regulation responds to events as opposed to preempting them. This certainly has been true in the field of retirement finance in the United States and, perhaps, other countries as well. Yet there is enough global experience now to consider what broad regulatory structures are appropriate for different pension system models, all of which exist to provide financially secure retirement benefits. Different designs require different regulations. I cover three different market-based designs and the broad regulatory framework for each. The considerations could be relevant for EU countries that are considering moving toward greater reliance on funded pensions with individual accounts that establish a direct link between contributions and entitlements.

Design 1: Mandatory Government System

The first design is a government-mandated system in which all workers must participate, with individual accounts, personal property rights, market-based financing, and a stipulated formula for distributing wealth during retirement. Central to the design is the notion that the government would guarantee a minimum benefit if the individual account were insufficient. In other words, the government would make up the difference between the stipulated minimum benefit and that provided by the individual account.

A reasonable objection to the guarantee is that it incorporates a moral hazard. If an individual invests in high-risk securities and wins, retirement income is high. If he loses, he is protected by the guarantee. This asymmetric risk—he can win but cannot lose—is the moral hazard. It is a design flaw that is easily repaired with simple government regulation.

The government incurs a contingent liability by providing the minimum benefit. The probability that the government would have to honor

If an individual saved and earned the prescribed rate of return, the accumulated wealth would provide a minimum benefit that would closely approximate the current PAYGO benefit.

The probability of accumulating sufficient wealth to meet retirement needs is materially influenced by investment returns and time.

the liability is primarily a function of two variables: the investment policies and practices that govern the individual accounts and the minimum benefit itself.

The minimum benefit should be determined by assuming a below-market rate of return, perhaps the long-run imputed rate of return of the resident PAYGO system. That is, if an individual saved and earned this prescribed rate of return, the accumulated wealth would provide a minimum benefit that would closely approximate the current PAYGO benefit.

As to investment policies and practices, if individuals were allowed to invest in *any* asset class or take on any risk, the government could be exposed to significant liability with no offsetting assets. The regulatory solution to this is to restrict investment choice in consideration for the guarantee. Portfolios would be diversified across multiple asset classes, national borders, and time. They would be constructed to achieve high risk-adjusted rates of return, and would be managed by licensed investment advisory firms that would be required to follow government-promulgated investment guidelines. Individuals would not manage their own portfolios, but they could choose who did. Some of these issues are addressed in the discussion of Level Two and Level Three investment, included in this paper's administrative section.

Upon retirement, the distribution of an individual's accumulated assets would also be regulated so that an individual would not outlive his assets. This could be achieved through the required purchase of annuities or a scheduled distribution of assets based on life expectancy and return assumptions.

The regulatory nexus of this model is a straightforward quid pro quo: if he accepts the government safety net of a minimum guarantee, an individual gives up some investment choice and wealth distribution flexibility.

A variant of this model is a central fund or funds that are controlled or managed, or both, as opposed to just regulated, by the government.²³

Design 2: Voluntary Employer-Sponsored Defined-Benefit Plan

Although the objectives of this structure may be comparable to those of Design 1, the required government regulations are significantly different.

This is an employer-sponsored defined-benefit plan. The employer may choose to offer the plan or not, but if it does, it must offer the plan

to all employees. The employer determines the benefits and funds the plan to pay them. In offering the plan, the employer takes on a company liability; benefits must be paid from company assets if the plan's assets are insufficient. The plan's assets should be legally separate from the company. They should be held in trust for the benefit of participants and retirees only. Government regulations should establish minimum funding standards so that the plan will have sufficient assets to pay promised benefits. Third-party actuaries should be required to review the plan from time to time and report their findings to the participants. Fiduciaries should also be liable for their misconduct in some cases. They should act only on the behalf of the plan participants. In addition, the following should be addressed:

- **Transparency:** Plan sponsors should be required to communicate to participants all necessary information so that they can understand their rights and obligations. Sponsors should also be required to report to the government so that compliance is more ensured.
- **Fiduciary Standards:** Those responsible for the plan—including investment advisers, administrators, and people who direct the managing of assets—must exercise their duties solely for the benefit of plan participants and beneficiaries. Responsibilities include setting investment objectives, asset diversification, and controlling portfolio risk, to name but a few.
- **Eligibility, Rights, and Other Requirements:** The law should stipulate eligibility standards so that the employer may not determine these unilaterally. The plan should not discriminate against lower-income workers in order to favor higher-income workers. The vesting period should be specified after which time employees have rights that cannot be revoked. Benefit accrual rates should be regulated so that they are not materially back-end loaded. Regulations should stipulate the rules applying to the termination of a plan.

Unlike Design 1, Design 2 should not be subject to government regulation of investment policy or decisions. The reason is that there is no moral hazard. The sponsor has every incentive to manage the assets in a prudent (expert) manner. Otherwise, the company places itself in financial

peril for not meeting regulated funding levels.

The sponsor should not be able to deny earned benefits by terminating an individual's employment. Once earned, benefits must be paid whether an individual stays with the firm or leaves, voluntarily or involuntarily.

Design 3: Voluntary Defined-Contribution Plan

This defined-contribution plan could be employer sponsored, which normally is the case, or individually sponsored. If it is employer sponsored, all employees should be eligible soon after joining the firm. There would be no government-guaranteed minimum benefit. Investment choices should cover a wide range so that employees could create portfolios with materially different risk and return characteristics. There should be little or no government regulation of investment matters. The reason for this is that there is no moral hazard for there is no guaranteed benefit. Future benefits are solely determined by the amount of saving and investment returns. Individuals have every incentive to invest wisely. Sponsors should be able to provide investment guidelines and education if asked by their employees without being subject to liability for such advice unless it is intentionally misleading.

Even if investment guidance is allowed, there is a reasonable concern that important details may be left out such as return assumptions (historical data, for instance), risks, marketing costs, penalties for early withdrawal from a particular product, possible conflicts of interest, financial condition of all service providers, and the like. This concern can be met by requiring full disclosure of all relevant and material facts. Such disclosure should be written in easy-to-understand language so that individuals are able to make informed decisions.

The probability of accumulating sufficient wealth to meet retirement needs is materially influenced by investment returns and time. Government regulations should allow access to all well-functioning markets so as to increase the chance of earning high risk-adjusted returns. Regulations should also allow for tax-advantaged saving that is not dependent on employment. In the world of compounding returns, time is both friend and enemy. The sooner an individual is able to invest, the greater his or her accumulated wealth. Employment status should not determine the starting date. Nor should it pre-

clude an individual's tax-advantaged saving and investing if unemployed.²⁴

Issues Surrounding Asset Ownership in a Mandatory, Market-Based Retirement Plan: The U.S. Debate

In the debate in the United States on how best to provide safe and sustainable retirement benefits for an aging population, market-based investing has taken center stage. Almost all participants in our national dialogue now agree that saving and investing in wealth-producing assets are part of the solution to the very real demographic constraints inherent in a PAYGO system. What is not yet agreed upon, however, is the ownership of the accumulated assets.

There are numerous combinations of options relating to ownership or control, or both, of assets in funded systems. Ownership could be at the plan level of an employer-sponsored system so that assets are separate from the sponsor's balance sheet. Alternatively, the sponsor could own the assets. In typical defined-contribution systems, ownership is with the individual. But as previous sections of this paper have suggested, ownership does not necessarily mean control over contribution rates, investment decisions, or forms of distribution. Ownership, per se, does not necessarily convey these important rights.

In the United States, the ownership debate has focused on the question of who would own the assets. As the debate has progressed, two possible choices have emerged: the government or the individual worker. This limited option introduces three overarching issues: property rights, costs, and investment performance. The following is a brief review of the national dialogue as it has developed.

Most recipients of Social Security in the United States consider it guaranteed by the government. Often the guarantee is thought of as contractual in nature. From this perspective, one side of the argument suggests that the government should own the assets.

The argument assumes that if the PAYGO system were reformed to a market-based structure and the government owned the assets, then the guarantee would still hold and all that

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would have changed is the collateral that finances benefits. This would improve the financial condition of the system while protecting the individual from market risk, because the government would continue to guarantee to pay a predetermined level of benefits.

Contrary to this point of view, however, the benefit formula is not predetermined and then fixed permanently. Rather, Congress sets the formula, and Congress has changed it over time. For example, 1983 legislation specifically provided that

- up to half of Social Security benefits would be taxed,
- cost-of-living adjustments would be delayed,
- payroll tax rate increases would be accelerated,
- the eligible age for full retirement benefits would be raised, and
- early retirement benefits would be reduced.

Congress is able to change the benefit formula because benefits are, in fact, not guaranteed. The U.S. Supreme Court settled this point in the 1960 case of *Flemming v. Nestor* where in the Court held:

To engraft upon the Social Security system a concept of “accrued property rights” would deprive it of the flexibility and boldness in adjustment to ever-changing conditions which it demands and which Congress probably had in mind when it expressly reserved the right to alter, amend or repeal any provision of the Act.²⁵

From the worker’s point of view, predetermined retirement benefits are no more secure if market-based financing is implemented because the government owns the assets, and the government is not obligated by law to pay specific benefits. Benefit security is rather a function of “accrued property rights.”

The alternative to government ownership is individual ownership. In this arrangement, benefits are a function of total saving and investment returns. Here, too, benefits are not guaranteed because market returns cannot be known in advance. But whatever the market-based system ultimately provides, Congress

cannot alter such benefits except through taxation, a more transparent process than adjusting the benefit formula itself.

An argument against this structure is that the individual would be subject to market risk, which could be devastating. One response is that investment portfolios would be diversified, professionally managed, and subject to strict guidelines. (See the administration section, specifically Level Two.) In addition, the government could (and most likely would) guarantee a level of retirement income below which no one would fall. Although such a guarantee would expose the government to a contingent liability, it would be insignificant if it were calculated using a below-market rate of return. At the same time, the individual would know that a basic benefit level would be paid irrespective of accumulated wealth.

From a social protection point of view, the government guarantee in a market-based system requires a bit more detail. Social Security provides benefits that in the long run are comparable to those of a saving and investment structure that earns a submarket annual real rate of return, in some cases zero or below. The proposal here is that the government would guarantee the existing PAYGO pension formula within the market-based structure. With individuals receiving the market rate of return on their personal accounts, the government could guarantee such a benefit with little risk to future taxpayers, because the benefit has an imputed annual real rate of return that is materially below market rates. In other words, at the time of retirement, an individual purchases an annuity. If that annuity does not pay an amount equal to or greater than the government-guaranteed benefit, the government makes up the difference.

From a cost point of view, the position favoring government ownership submits that any system of individual accounts would be so expensive that the benefit of market-based financing would be forfeited. After all, millions of individual accounts would be prohibitively expensive. Therefore, to preserve the after-cost rate of return differential between market-based and PAYGO financing, the government must control or own the assets and have just one portfolio instead of numerous individual accounts.

There is no question that costs are an important variable affecting accumulated wealth.

Over a full working career of perhaps 40 to 45 years, a little bit taken out each year adds up. But at the end of the day, the administrative platform must be stipulated so that costs can be estimated. It is not enough to posit that a government-centric system is inexpensive and an individual-centric structure is expensive.

As far as the author has been able to determine, no administrative structure has been developed, including cost estimates, other than the one briefly discussed in the administrative section of this paper. This is not to say that this platform is the only one that would work, but it is one solution, and its costs are reasonable. They are certainly in line with those of other existing saving and investment systems such as mutual funds, 401(k) plans, and other national (either mandated or voluntary) market-based retirement plans.

Interestingly, it is argued that investment performance would suffer whether the individual or the government controlled the assets; but the reasons are entirely different.

The argument against government ownership focuses on the concern that investment decisions would be politicized. In his Senate Banking Committee testimony on July 21, 1998, Chairman of the U.S. Federal Reserve Alan Greenspan stated:

I don't know of any way that you can essentially insulate government decision makers from having access to what will amount to very large investment in American private industry. . . . I know there are those who believe it can be insulated from the political process, they go a long way to try to do that. I have been around long enough to realize that that is just not credible and not possible. Somewhere along the line, that breach will be broken.²⁶

When investment decisions move from attempting to achieve a high risk-adjusted rate of return to political concerns, it is often claimed that investment performance suffers. If so, this would cause the market-based system to be less efficient or more expensive.

Even if all assets were managed against an indexed benchmark, the government could stipulate the benchmark, therefore perhaps benefiting those firms that met the benchmark. If the government gave up its voting rights, this would

increase the influence of the remaining votes. Would the government allow a company that it owned to sell tobacco, sell prescription drugs at a price above generic drug prices, or lay off workers while relocating a manufacturing plant to a jurisdiction with lower labor costs?

International experience provides ample warning against allowing the government to directly invest in private capital markets. A recent study by the World Bank found nearly universal politicization of government investment policy, resulting in rates of return well below those earned by private-sector investments. Indeed, in many countries, returns from government investment were below what could be earned from ordinary bank deposits.²⁷ Individual accounts provide a far better and less risky route to funding.

Conclusion

Given demographic trends, the current PAYGO pension plans of EU member states are unsustainable. Major reform is, therefore, inevitable. Instead of raising already high taxes or taking the politically unpalatable step of cutting benefits, EU members should begin making the transition away from PAYGO pension programs to funded systems based on savings and investment. In short, workers should be given the opportunity to invest all or a portion of their pension taxes in private capital markets through individual accounts.

The evidence clearly shows that market investment can provide adequate retirement income at a reasonable cost. Indeed, such income is likely to be significantly higher than can be provided through PAYGO systems. At the same time, a market-based system would not necessarily reduce the redistribution that many Europeans believe is important. In addition, moving to a market-based pension system can help promote labor market flexibility by more closely linking contributions and benefits.

European pension programs are facing a major crisis. EU member states should begin reforming them as soon as possible.

Notes

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1. European Commission, Directorate General for Economic and Financial Affairs, "Public Finances in EMU-2001," *European Economy Reports and Studies*, no. 3, 2001.
2. William Poortvliet and Thomas Laine, "Privatization and Reform of Social Security Systems as a Global Trend: Part 1: The Underlying Problem," *Journal of the American Society of CLU and ChFC*, July 1997, p. 55.
3. Estelle James, World Bank, Testimony before the U.S. Senate Special Committee on Aging, September 10, 1996.
4. Poortvliet and Laine, p. 59.
5. Organization for Economic Cooperation and Development, *Aging Populations: The Social Policy Implications* (Paris: OECD, 1998), p. 22.
6. Ibid.
7. Elroy Dimson, Paul Marsh, and Mike Staunton, *The Millennium Book, A Century of Investment Returns* (London: London Business School and ABN AMRO, 2000).
8. Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation: Classic Edition Yearbook*, 2001.
9. See David R. Ranson and William Shipman, "Institutional Buying Power and the Stock Market," *Financial Analysts Journal*, September–October 1981.
10. Melissa Hieger and William Shipman, "Common Objections to a Market-Based Social Security System: A Response," Cato Institute Social Security Paper no. 10, July 22, 1997.
11. Ranson and Shipman.
12. European Corporate Financial Information System, Economic Policy Committee, "Progress Report to the Ecofin Council on the Impact of Aging Populations on Public Pension Systems." EPC/ECFIN/581/00-Rev.1, November 2000.
13. William G. Shipman, Testimony before the House Budget Committee Task Force on Social Security, U.S. House of Representatives, April 27, 1999.
14. European Central Bank, "Population Aging and Fiscal Policy in EMU," *ECB Monthly Bulletin*, July 2000.
15. William Shipman, "Facts and Fantasies about Transition Costs," Cato Institute Social Security Paper no. 13, October 13, 1998.
16. Samuel H. Williamson, "The Development of Industrial Pensions in the United States in the Twentieth Century," World Bank Policy Research Working Paper no. 1541, November 1995.
17. Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, Social Security Administration, *2001 Annual Report*.
18. Shipman, "Facts and Fantasies about Transition Costs."
19. John B. Shoven, *Administrative Aspects of Investment-based Social Security Reform* (Chicago: University of Chicago Press, 2000).
20. Shipman, Testimony.
21. *The Ernst and Young Tax Saver's Guide 2001* (New York: John Wylie and Sons, 2001), p. 98.
22. Personal communication with Spectrum Group, November 21, 2002.
23. E. Philip Davis, *Regulation of Private Pensions—A Case Study of the U.K.* (London: Pensions Institute, Birkbeck College, University of London, 2000).
24. Koen De Ryck, *Rebuilding Pensions: Recommendations for a European Code of Best Practice for Second Pillar Pension Funds* (Brussels: European Commission, 1999).
25. 363 U.S. 603 at 616.
26. Alan Greenspan, Testimony to the U.S. Senate Committee on Banking, July 21, 1998.
27. "Public Management: How Well Do Governments Invest Pension Fund Reserves?" World Bank, Washington, 2001.