"Rethinking Pension Reform: Ten Myths About Social Security Systems"

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EXECUTIVE SUMMARY

In 1994, the World Bank published a seminal book on pension reform, entitled *Averting the Old Age Crisis*. The book noted that "myths abound in discussions of old age security."[1] This paper, prepared for a World Bank conference that will revisit pension reform issues five years after the publication of *Averting the Old Age Crisis,* examines ten such myths in a deliberately provocative manner.

The problems that have motivated pension reform across the globe are real, and reforms are needed. In principle, the approach delineated in *Averting the Old Age Crisis* is expansive enough to reflect any potential combination of policy responses to the pension reform challenge. But in practice, the "World Bank model" has been interpreted as involving one specific constellation of pension pillars: a publicly managed, pay-as-you-go, defined benefit pillar; a privately managed, mandatory, defined contribution pillar; and a voluntary private pillar. It is precisely the private, mandatory, defined contribution component that we wish to explore in this paper.

The ten myths examined in the paper include:

Macroeconomic myths
- Myth #1: Individual accounts raise national saving
- Myth #2: Rates of return are higher under individual accounts
- Myth #3: Declining rates of return on pay-as-you-go systems reflect fundamental problems
- Myth #4: Investment of public trust funds in equities has no macroeconomic effects

Microeconomic myths
- Myth #5: Labor market incentives are better under individual accounts
- Myth #6: Defined benefit plans necessarily provide more of an incentive to retire early
- Myth #7: Competition ensures low administrative costs under individual accounts

Political economy myths
- Myth #8: Corrupt and inefficient governments provide a rationale for individual accounts
- Myth #9: Bailout politics are worse under public defined benefit plans
- Myth #10: Investment of public trust funds is always squandered and mismanaged

The paper debunks these myths, implying that the arguments most frequently used to promote individual retirement accounts are often not substantiated in either theory or practice. It therefore concludes that policy-makers must adopt a much more nuanced approach to pension reform than that offered by the common interpretation of *Averting the Old Age Crisis*.

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[1] The World Bank, *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth* (Oxford University Press: Oxford, 1994).

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Peter R. Orszag and Joseph E. Stiglitz[2]

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INTRODUCTION

Averting the Old Age Crisis, the World Bank's path-breaking publication on pensions, trenchantly notes that "myths abound in discussions of old age security."[3] This paper examines ten such myths in a deliberately provocative manner. Our hope is not only to spur debate during this "New Ideas About Old Age Security" conference, but more broadly to ensure that policy-makers understand the complexity of pension reform.

It is testimony to the power of *Averting the Old Age Crisis* that many of today's myths at least partially emanate from that report's unmasking of yesterday's. Yet the rejection of one extreme is not the affirmation of the other, and the pendulum seems to have swung far, perhaps too far, in the other direction. The complexity of optimal pension policy should caution us against believing that a similar set of recommendations would be appropriate in countries ranging from Argentina to Azerbaijan, from China to Costa Rica, from Sierra Leone to Sweden. We are reminded of the joke about the professor who kept the same questions each year but changed the answers. Ironically, that joke may offer us some sound guidance. In response to the question "What should we do about our pension system?" we should be wary of offering a single answer across the globe.

The answer to "what should we do about our pension system?" is also unlikely to be "nothing." The problems that have motivated pension reform across the globe are real. In many developing countries, soaring deficits -- gaps between pension fund obligations and revenues -- not only threaten economic stability, but also crowd out necessary investments in education, health, and infrastructure. Too often, the benefits of pension programs have accrued to those already privileged; forcing poor farmers to finance the largesse of the urban elite is surely not sound economic policy. Furthermore, the structure of the pension programs in many cases has served not only to undermine macroeconomic stability, but also to weaken the functioning of labor markets and to distort resource allocations. In other words, reforms have been and are needed. And

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[3] The World Bank, *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth* (Oxford University Press: Oxford, 1994).

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while countries may be able to muddle through in the short run, averting a crisis in the long run will not be so simple.

Defining the "three pillars"

The necessity of serious reforms in many countries tells us nothing about which specific reforms should be undertaken in which countries. Unfortunately, evaluations of such reform options have too often been clouded by a set of myths that have dominated public discussions and derailed rational decision-making. The purpose of this paper is to dispel those myths -- or, at the very least, to raise questions concerning their general validity.

In principle, the "three pillars" delineated in *Averting the Old Age Crisis* are expansive enough to reflect any potential combination of policy measures -- especially if the second (funded) pillar incorporates both privately and publicly managed systems. But in practice, the "World Bank model" has been interpreted as involving one specific constellation of the pillars: a publicly managed, unfunded, defined benefit pillar; a privately managed, funded, defined contribution pillar, and a voluntary private pillar. For example, Weaver (1998) writes that *Averting the Old Age Crisis* advocated "a three-tier model in which the role of public pensions would focus on a minimal poverty reduction role, complemented by a fully-funded, mandatory defined-contribution savings second tier…and a third tier of voluntary savings."[4] That interpretation -- especially the inclusion of a *privately managed, defined contribution* component -- is common among policy-makers and pension analysts, regardless of whether it fully reflects the nuances of *Averting the Old Age Crisis* itself.[5] And it is precisely the private, defined contribution pillar of that "best practice" model that we wish to explore.

Over the past decade, following the seminal reforms in Chile in the early 1980s, and with support from the World Bank, many nations have moved away from a public defined benefit pension system and toward a private defined contribution one. Important reforms in this direction have occurred in, among other places, Argentina, Bolivia, Columbia, Hungary, Kazakhstan, Latvia, Peru, Poland, Sweden, and Uruguay.[6] The focus throughout the paper will therefore be on whether this type of shift -- to a private

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[4] R. Kent Weaver, "The Politics of Pensions: Lessons from Abroad," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), page 200.

[5] The popular interpretation may be understandable, since many of the Bank's leading pension scholars could easily be misinterpreted as advocating it. For example, Robert Holzmann writes that the Bank recommends "a multi-pillar pension system -- optimally consisting of a mandatory publicly-managed unfunded and a mandatory, but privately managed funded pillar, as well as supplemental voluntary private funded schemes." See Robert Holzmann, "A World Bank Perspective on Pension Reform," paper prepared for the Joint ILO-OECD Workshop on the Development and Reform of Pension Schemes, Paris, France, December 15-17, 1997. Similarly, Estelle James writes that the second pillar should be "a mandatory, privately managed scheme….[The scheme] should be privately and competitively managed (through personal retirement savings accounts or employer-sponsored pension plans) to produce the best allocation of capital and the best return on savings." See Estelle James, "Outreach #17: Policy Views from the World Bank Policy Research Complex," August 1995, pages 2-3.

[6] In Hong Kong, Croatia, and Venezuela, multi-pillar systems are scheduled to begin next year.

defined contribution (individual account) pension system -- is as universally beneficial as many of its proponents claim.

Framework

Many of today's myths emanate from a failure to distinguish four aspects of a pension system. In particular, most discussions of individual account systems conflate privatization, prefunding, diversification, and the distinction between defined benefit and defined contribution pensions. As Geanakoplos, Mitchell, and Zeldes (1998, 1999) and others have emphasized, the failure to distinguish clearly the different aspects of individual account proposals has obscured many underlying realities.[7]

- Privatization. Privatization is the replacing of a publicly run pension system with a privately managed one.

- Prefunding. Prefunding means accumulating assets against future pension payments. As discussed below, prefunding can be used in a broad or narrow sense.

- Diversification. Diversification involves allowing investments in a variety of assets, rather than government bonds alone.

- Defined benefit versus defined contribution. Defined benefit plans assign accrual risk to the sponsor; conditional on a worker's earnings history, retirement benefits are supposedly deterministic. Defined contribution plans, on the other hand, assign accrual risk to the individual worker; even conditional on an earnings history, retirement benefits depend on the efficacy with which contributions were financially managed.

Any combination of these four elements is possible. Indeed, *in practice, all of these elements contain spectra of choices -- making it particularly important to examine specific institutional details. An idealized model is likely never to be realized in practice and choices are inevitably characterized by degrees of gray rather than being black or white.* For example, a public system is one that is organized and administered primarily by the government; a private system is one that is organized and administered primarily outside the government. Yet a public system may involve some private firms: for example, a private firm may be chosen as the money manager for a public trust fund. Similarly, a private system likely involves some public role, at the very least in enforcing

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[7] John Geanakoplos, Olivia S. Mitchell, and Stephen P. Zeldes, "Would a Privatized Social Security System Really Pay a Higher Rate of Return?" in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), also available as NBER Working Paper Number 6713, August 1998; and John Geanakoplos, Olivia Mitchell, and Stephen P. Zeldes, "Social Security Money's Worth," available as NBER Working Paper Number 6722, September 1998, and in Olivia S. Mitchell, Robert J. Myers, and Howard Young, *Prospects for Social Security Reform* (University of Pennsylvania Press: Philadelphia, 1999). Also see the discussion in Michele Boldrin, Juan Jose Dolado, Juan Franscisco Jimeno, and Franco Peracchi, "The Future of Pension Systems in Europe: A Reappraisal," *Economic Policy*, forthcoming.

its rules.[8] Prefunding is also a matter of degree -- pensions can be partially prefunded. (Further complicating the picture is an important distinction between "narrow" prefunding and "broad" prefunding that we discuss below.) Diversification is also not a dichotomous variable -- degrees of diversification are possible. Finally, the distinction between defined benefit and defined contribution plans is not as pure as it may initially appear. Indeed, a defined benefit plan could be thought of as a defined contribution plan combined with an appropriate mix of options to eliminate the residual risk to the worker. Hybrids between defined benefit and defined contribution plans are not only possible in theory, but exist in reality.[9]

Analytical foundations

Before examining the myths, four further background points are worth highlighting to inform our subsequent analysis of individual accounts:

- Inherent features versus imperfect implementation. A key issue surrounding both public defined benefit systems and individual accounts is which elements are inherent to the system, and which elements are merely common in how that system has been implemented in practice. That is to say, we observe that system Z is not working properly. Should we propose a switch to system Y, or instead work on improving system Z? Surely, comparing an idealized version of Y to an as-implemented version of Z is not likely to prove insightful. A first step may therefore be to compare the inherent (idealized) features of Y and Z, and then to examine whether political economy constraints differentially affect the two models (in terms of their idealized versus expected implementation features). Many of the myths arise from mixing comparisons between inherent and as-implemented features. Our initial focus is on inherent features, for it is these inherent features that would tend to make one system or the other universally applicable. Statements about historic tendencies regarding implementation must be treated with much more caution than inherent features, especially since the historic tendencies in one nation are not necessarily reflective of those in another country.

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[8] As Hugh Heclo writes in the U.S. context, "even today's reform option known as 'full privatization'…would use government bureaucracies to compel workers to contribute a given percentage of their earnings to a qualified retirement plan; regulate the retirement plans available for workers' contributions; regulate conditions for the withdrawal of those contributed funds; and operate means-tested governments programs…Labeling all this as a strictly 'private' system (rather than a different form of government retirement policy) obscures the consensus about essential purpose presupposed in the reform debate." See Hugh Heclo, "A Political Science Perspective on Social Security Reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), page 70.

[9] The cash balance plans becoming more prevalent in the United States are one example. It is also interesting that many analysts assume that retirees under a defined benefit pay-as-you-go system would partially share in any positive long-term productivity shocks. Such an assumption changes the nature of the system from a pure defined benefit one to an amalgam of defined benefit and defined contribution systems, with the accrual risk arising from productivity and demographic variables rather than financial markets.

- *Tabula rasa* choices versus transformation choices. In evaluating the effect of pension reform, initial conditions are important. In particular, one must be careful not to confuse the issue of whether a *shift* to individual accounts would be socially beneficial with the separate issue of whether, in a *tabula rasa* sense, an individual account system would have been preferable to a public defined benefit system in the first place. In other words, the social effects of transforming a mature pension system into a system of individual accounts may be substantially different than the social effects of the *initial* choice between a public defined benefit system and a individual accounts. Very few nations face that initial choice; almost all have some form of old age insurance program. Indeed, out of the 172 countries included in the 1997 edition of *Social Security Programs Throughout the World,* only six (Bangladesh, Botswana, Malawi, Myanmar, Sierra Leone, and Somalia) lack an old age, disability, and survivors program.[10] It should be noted that some of the extant programs have relatively low coverage; in considering whether to *expand* an existing system, the *tabula rasa* perspective is once again relevant. But for many countries, initial choices have largely been made. It is of little practical import at this point to re-examine those initial choices. A more important objective is to examine potential reforms that would improve the future functioning of pension systems, taking into account the transition costs that would be embodied in any such shift.

- Inter-generational analysis. Politicians are known for focusing exclusively on the short run, ignoring the long-run costs (or even viability) of public programs. In analyzing transitions and reforms, however, we have to be careful not to be make the opposite mistake: focusing exclusively on the long run, and ignoring short-run costs. Consider, for example, a reform that leads to higher steady-state output and consumption, but only at the cost of reduced welfare for intervening generations. When some generations are made worse off, and some better off, we face a complex welfare calculus -- how to weigh the gains of one generation against the losses of another.[11]

- Ultimate focus on welfare. In a similar vein, we need to keep in mind our ultimate objective. Savings and growth are not ends in themselves, but means to an end: the increase in well-being of members of the society. Thus, we could perhaps induce people to save more by exposing them to more risk. But that need not improve their welfare. For example, risk-averse individuals might respond to increased variance in the real return of their pension plan by increasing their saving rates.[12] The increased risk, however, would make them unambiguously worse off. Even the future

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[10] Social Security Administration, *Social Security Programs Throughout the World 1997*, pages xxxvii-xlii and xlv. Botswana is apparently in the process of implementing a pension scheme.

[11] Precisely to avoid having to make tradeoffs across these generations, economists typically look for Pareto improvements -- reforms which make *everyone* better off, while making no one worse off. Almost all proposed reforms, however, fail to meet this test. The situation therefore becomes much more complicated.

[12] The conditions under which this effect occurs are complicated, and were widely discussed in the earlier literature analyzing the impact of (mean-preserving) increases in risk. See, for example, Peter Diamond and Joseph Stiglitz, "Increases in Risk and in Risk Aversion," *Journal of Economic Theory,* 1974:8, 337-60; Michael Rothschild and Joseph Stiglitz, "Increasing Risk, II: Its Economic Consequences," *Journal of Economic Theory*, 1971: 3, 66-84.

generations that benefit from the higher wages associated with a larger capital stock may be worse off!

The myths

With these background points in mind, we can now turn our attention to the myths. To help delineate the issues, we divide our ten myths into three broad areas: macroeconomic effects; microeconomic efficiency; and political economy. The myths in each area are:

Macroeconomic myths
- Myth #1: Individual accounts raise national saving
- Myth #2: Rates of return are higher under individual accounts
- Myth #3: Declining rates of return on pay-as-you-go systems reflect fundamental problems
- Myth #4: Investment of public trust funds in equities has no macroeconomic effects

Microeconomic myths
- Myth #5: Labor market incentives are better under individual accounts
- Myth #6: Defined benefit plans necessarily provide more of an incentive to retire early
- Myth #7: Competition ensures low administrative costs under individual accounts

Political economy myths
- Myth #8: Corrupt and inefficient governments provide a rationale for individual accounts
- Myth #9: Bailout politics are worse under public defined benefit plans
- Myth #10: Investment of public trust funds is always squandered and mismanaged

Our purpose in exploring these myths is not to argue that individual accounts are always and everywhere a bad idea. Rather, it is to clarify that many of the arguments advanced in their favor are not necessarily valid, and that pension policy therefore requires a more nuanced approach than that implied by a single "optimal" constellation of pillars. In particular, a second pillar that relies exclusively on a privately managed, defined contribution approach may not be appropriate for many countries. The optimal approach is likely to vary across countries, depending on differential attitudes toward risk-sharing, inter-generational and intra-generational redistribution, and other factors.

MACROECONOMIC MYTHS

We begin with myths in the macroeconomic arena, for these are perhaps the most vigorously propagated and also the ones in which a broad array of economists agree that popular slogans are misleading.

Myth #1: Private defined contribution plans raise national saving

It is common to assert that moving toward a system of "prefunded" individual accounts would raise national saving.[13] To analyze the validity of this claim, we must introduce another distinction in addition to the ones delineated in the Introduction: "Prefunding" can be used in a narrow or broad sense. In its narrow sense, prefunding means that the pension system is accumulating assets against future projected payments. In a broader sense, however, prefunding means increasing national saving.[14]

Prefunding in the narrow sense need not imply prefunding in the broader sense. For example, consider a system of individual accounts that is prefunded in the narrow sense. If individuals offset any contributions to the individual accounts through reduced saving in other forms, then total private saving is unaffected by the accounts. In other words, in the absence of the individual account system, individuals would have saved an equivalent amount in some other form. If public saving is also unaffected, then national saving is not changed by the narrowly prefunded set of individual accounts -- and so no prefunding in the broad sense occurs.[15] Similarly, consider a "partially prefunded" public system with a trust fund. If the presence of that trust fund causes offsetting reductions in non-pension taxes and/or increases in non-pension benefits, and if private behavior is unaffected by the public pension system, then the public system would not affect public saving or national saving, and thus would not be prefunded in a broad sense (even though it is prefunded in the narrow sense). In summary, narrow prefunding can be a misleading

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[13] For example, Estelle James writes that a privately managed second pillar should be "fully funded…to boost national saving." See Estelle James, "Outreach #17: Policy Views from the World Bank Policy Research Complex," August 1995, page 2. In the U.S. context, Martin Feldstein has written, "In a privatized Social Security system based on mandatory contributions, individuals (and their employers on their behalf) would be required to make contributions to individual savings accounts…that would be invested through mutual funds into diversified portfolios of stocks and bonds….For most [workers], mandatory contributions to individual savings accounts would add dollar for dollar to national savings and capital accumulation." See Martin Feldstein, "The Case for Privatization," Foreign Affairs, July/August 1997, pages 28-29.

[14] The distinction between narrow and broad prefunding is similar to the distinction between "apparently funded" and "ultimately funded" pensions highlighted by Valdés-Prieto. See Salvador Valdés-Prieto, "Financing a reform toward funding," pages 193-194, in Salvador Valdés-Prieto, ed., *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997).

[15] The evidence from Chile on the impact of pension reform on national saving is somewhat mixed. The national saving rate rose substantially from the early 1980s to the mid-1990s, but it is unclear precisely how much of that increase should be attributed to the pension reform. See, for example, the discussion in Stephen Kay, Testimony before the Subcommittee on Social Security of the Ways and Means Committee, U.S. House of Representatives, September 18, 1997.

guide to broad prefunding. Furthermore, narrow prefunding has no macroeconomic implications; only broad prefunding offers the potential for macroeconomic benefits.

Privatization and broad prefunding are distinct concepts, and privatization is neither necessary nor sufficient for broad prefunding. To see why, consider a pay-as-you-go system in which each individual's benefits are directly tied to contributions. Each individual has an account with the social security administrator, showing contributions at each date. These contributions are then translated into benefits using actuarial tables.

Now assume the government decides to prefund these accounts in the narrow sense, transferring to each the full value of the cumulative contributions. The social security system thus becomes completely prefunded in the narrow sense. But to finance the contributions, the government borrows from the public. National saving is therefore constant: all that has happened is that the government has altered the form of the debt.[16] Such a switch should not have any real effects on the macroeconomy. To be sure, the implicit debt under the old system has become explicit. But in and of itself, that has no economic ramifications. *A debt-financed privatization does not involve any macroeconomic consequences -- it does not engender broad prefunding -- assuming the new explicit debt follows the same time path as the old implicit debt.*[17] The key is what is happening to the sum of implicit and explicit debt; transforming one into the other does not effect broad prefunding.[18]

Conversely, broad prefunding can be accomplished without privatization. In particular, the government can accumulate assets in anticipation of future benefit payments due under the public defined benefit plan. Such prefunding does not have to take the form of private market investments, about which many analysts have expressed political economy concerns (e.g., that the government would interfere unduly in private asset markets). Interestingly, those who argue that a public system cannot prefund have often pointed to the United States as their example of a country that has failed to do so. And yet over the past year, despite the lack of agreement on almost everything else,

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[16] Another issue that carries national saving implications -- admittedly in the "as-implemented" category -- is whether early (pre-retirement) withdrawals are allowed from individual accounts. In many cases, substantial political pressure may be applied to allow such early withdrawals. Yet succumbing to such pressures could reduce both narrow and broad prefunding. In the United States, for example, Samwick and Skinner (1997) show that nearly $50 billion in pension assets were distributed prior to age 59 1/2 in 1990, and that roughly half of those early distributions were spent rather than rolled over into other retirement accounts. See Andrew Samwick and Jonathan Skinner, "Abandoning the Nest Egg? 401(k) Plans and Inadequate Pension Saving," in Sylvester Schieber and John Shoven, editors, *Public Policy Toward Pensions* (MIT Press: Cambridge, 1997).

[17] Robert Holzmann notes that "…a redistribution of total debt between implicit and explicit liabilities should have little effect on the pure interest rate. It affects the capital stock and national saving only marginally…" See Robert Holzmann, "Fiscal Alternatives of Moving from Unfunded to Funded Pensions," OECD Development Centre Technical Papers No. 126, August 1997, page 35.

[18] Note that we are assuming that from a macroeconomic perspective, implicit and explicit debt are equivalent. For further discussion of whether implicit unfunded liabilities are equivalent to explicit public debt, see Richard Hemming, "Should Public Pensions be Funded?" International Monetary Fund, Working Paper 98/35, March 1998, pages 15-16. Note that in asserting that *changes* in the sum of implicit and explicit debt do affect national saving, we are assuming that the conditions required for neo-Ricardian equivalence fail.

policy-makers in the United States have largely agreed to protect Social Security surpluses from the demands of the rest of the budget -- in other words, to ensure broad prefunding. Similarly, Bateman and Piggott (1997) argue that Malaysia's Employees Provident Fund has contributed significantly to national saving -- accounting for between 20 and 25 percent of national saving in the 1980s.[19]

Note that this myth highlights the *tabula rasa* point above. A large academic literature exists on whether the introduction of a pay-as-you-go social security system reduces national saving.[20] But that is a fundamentally different issue from whether shifting an *existing* pay-as-you-go system to one of individual accounts would raise national saving. It is entirely possible that the introduction of a pay-as-you-go system reduces national saving (as some studies suggest), but that a shift to individual accounts would not raise national saving.

The fundamental point is that broad prefunding and privatization are distinct concepts, and conflating them confuses rather than informs the debate.[21] It is also important to keep the concepts of narrow and broad prefunding distinct; they are too often confused. The fundamental issue involved in broad prefunding is, given the inherited level of implicit and explicit debt, the optimal policy of paying it off. This optimization problem does not depend on how or why the debt was acquired, and it is not affected by the introduction of narrowly prefunded individual accounts.[22]

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[19] Hazel Bateman and John Piggott, "Mandatory retirement saving: Australia and Malaysia compared," Salvador Valdes-Prieto, *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997), page 342. Bateman and Piggott cite M. Asher, "Income Security for the Old Age: The Case of Malaysia," National University of Singapore, 1992, unpublished manuscript.

[20] For references to the existing literature on pay-as-you-go systems internationally, see George Mackenzie, Philip Gerson, and Alfredo Cuevas, "Pension Regimes and Saving," International Monetary Fund, Occasional Paper No. 153, 1997. For references to the existing literature on the United States, see Martin Feldstein, "Introduction," in Martin Feldstein, ed., *Privatizing Social Security* (University of Chicago Press: Chicago, 1998).

[21] An interesting question arises as to whether an additional dollar of narrow prefunding undertaken through a public trust fund is more or less likely to increase national saving (broad prefunding) than a dollar of narrow prefunding undertaken through private accounts. Two effects seem plausible: Narrow prefunding may engender offsetting changes in other government spending or taxes, or offsetting changes in private saving. Some believe that narrow prefunding undertaken through public trust funds is more likely to involve offsetting changes of the former type, while narrow prefunding undertaken through individual accounts (and therefore more "tangible," as many proponents of such accounts often argue) is more likely to involve offsetting changes of the latter type. Even if true -- and the question is hard to resolve, since counterfactuals are difficult to study precisely -- public saving would be lower, but private saving higher, under narrow prefunding through a trust fund relative to narrow prefunding through individual accounts. The net effect on national saving -- public plus private saving -- would still be unclear.

[22] This proposition can be put somewhat more formally. For any program of gradual conversion of a public pay-as-you-go system to a narrowly prefunded individual account system, a set of taxes exists which would convert the public pay-as-you-go system to a narrowly prefunded public system and which would leave aggregate consumption and output at each date (in each state of nature) unaffected relative to the individual account system.

The conclusion is that the tradeoffs involved in *how* to prefund -- for example, through a public or private approach -- are distinct from the tradeoffs involved in *whether* to prefund.[23]   Indeed, Heller (1998) and Modigliani, Ceprini, and Muralidhar (1999) argue that a prefunded, public, defined benefit system may be preferable to a prefunded, private, defined contribution system.[24]   Automatically linking privatization and broad prefunding, rather than examining each choice separately, fails to reflect the full range of policy options.

Myth #2: Rates of return are higher under individual accounts

A second myth is that rates of return would be higher under individual accounts than under a pay-as-you-go system.   For example, the *Financial Times* last spring reported that the "rate of return [on individual accounts] would be higher — perhaps 6 to 8 per cent on past stock market performance, against the roughly 2 per cent the social security system will produce."[25]   Similarly, Palacios and Whitehouse (1998) argue that the higher rate of return under a private scheme "is an important reason for reform."[26]   As in Myth #1, this myth conflates "privatization" with "prefunding." But in addition, most simple rate-of-return comparisons conflate "privatization" with "diversification."

As Paul Samuelson showed 40 years ago, the real rate of return in a mature pay-as-you-go system is equal to the sum of the rate of growth in the labor force and the rate of growth in productivity.[27] In the decades ahead, fertility rates are expected to remain relatively low, and the world's population is expected to age. World population growth is expected to slow from 1.7 percent per year in the 1980s and about 1.3 percent per year currently to 0.8 percent per year, on average, between 2010 and 2050.[28]   As a result, global labor force growth is also expected to slow, putting downward pressure on the rate of return under mature pay-as-you-go systems.   Assuming productivity growth of 2 percent per year, the long-run real rate of return on a hypothetical global, mature pay-as-you-go system would be about 3 percent per year.

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[23] It is perhaps also worth noting that there is no general theorem that asserts that social welfare will be increased by undertaking broad prefunding, as Samuelson's original paper on the consumption loan model illustrates quite vividly. Broad prefunding involves intergenerational tradeoffs of the type discussed in the introduction.

[24] Peter Heller, "Rethinking Public Pension Initiatives," International Monetary Fund, Working Paper 98/61, April 1998, pages 27-28; Franco Modigliani, Marialuisa Ceprini, and Arun Muralidhar, "A Solution to the Social Security Crisis From an MIT Team," Sloan Working Paper 4051, July 1999.

[25] Nicholas Timmins, "The biggest question in town: America faces critical choices over the future of its most popular spending programme," *Financial Times,* March 20, 1998, page 23.

[26] Robert Palacios and Edward Whitehouse, "The role of choice in the transition to a funded pension system," World Bank Social Protection Division, 1998**,** page 5.

[27] Paul Samuelson, "An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money," Journal of Political Economy, December 1958, pages 219-234.

[28] These projections are taken from the U.S. Bureau of the Census. See *Statistical Abstract of the United States 1998* (Government Printing Office, Washington: 1998), Table 1340.

In a dynamically efficient economy without risky assets, the real interest rate must exceed the growth rate.[29] Therefore, in a dynamically efficient economy, individual accounts -- even without diversification -- will *always* appear to offer a higher rate of return than a pay-as-you-go system. But appearances can be deceiving. The simple rate-of-return comparison, even without the diversification issues discussed below, is fundamentally misleading for two reasons: administrative costs and transition costs.

- Administrative costs. The simple rate-of-return comparison usually compares gross rates of return, even though administrative costs may differ even under idealized versions of the two systems and, ceteris paribus, higher administrative costs reduce the net rate of return an individual receives. Myth #7 addresses administrative costs in more detail. As that section explains (admittedly on an as-implemented basis), administrative costs are likely to consume a non-trivial share of the account balance under individual accounts -- especially for small accounts. Such administrative costs imply that on a risk-adjusted basis, once the costs of financing the unfunded liability under the old system are incorporated (see below), the rate of return on a decentralized private system is likely to be *lower* than under the public system.

- Transition costs. Since individual accounts are financed from revenue currently devoted to the public social security system, computations of the rate of return under individual accounts need to include the cost of continuing to pay the benefits promised to retirees and older workers under the extant system. Assuming that society is unwilling to renege on its promises to such retirees and older workers, the costs remain even if the social security system is eliminated for new workers and replaced entirely by individual accounts. Since the payments to current beneficiaries are not avoided by setting up individual accounts, the returns on individual accounts should not be artificially inflated by excluding their cost.

The fundamental point is a simple one. If the economy is dynamically efficient, one cannot improve the welfare of later generations without making intervening generations worse off. Reform of pension systems must thus address equity issues both within and across generations.[30] The fundamentally inter-generational nature of

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[29] See, for example, Giancarlo Corsetti and Klaus Schmidt-Hebbel, "Pension reform and growth," in Salvador Valdes-Prieto, *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997), page 130. Dynamic efficiency requires that no generation can be made better off without making other generations worse off. (For a fuller articulation, see David Cass, "Optimum Growth in an Aggregate Model of Capital Accumulation," *Review of Economic Studies*, July 1965, pages 233-240.) An economy which is dynamically inefficient could "dissave" and reduce its capital stock, increasing consumption for the current generation and every subsequent generation. While the conditions for dynamic efficiency have been widely discussed in hypothetical economies with no land, the issue typically not even germane in the "real world" with land. Consider, for example, an economy with zero growth. Dynamic inefficiency would then require a negative real interest rate, which would produce the absurd result of land with infinite value! Also note that the conditions for dynamic efficiency in a stochastic setting are complicated. See, for example, Andrew Abel, Gregory Mankiw, Lawrence Summers, and Richard Zeckhauser, "Assessing dynamic efficiency: theory and evidence," *Review of Economic Studies*, volume 56, 1989, pages 1-20.

[30] Ironically, there are cases in which a switch to a pay-as-you-go system can increase the welfare of earlier generations without making later generations worse off. Indeed, that was Samuelson's fundamental insight

the tradeoff involved in moving to individual accounts has been emphasized by many authors, including Breyer (1989).[31]

The comparison of rates of return is thus misguided because *higher returns in the long run can be obtained only at the expense of reduced consumption and returns for intervening generations.*

An example may be helpful in making this point more explicitly.[32] Imagine a simple pay-as-you-go system, under which one generation pays $1 while it is young and receives $1 while old. Generation A is old in period 1 and therefore receives $1. That $1 is paid for by Generation B, which is young in period 1. Then in period 2, Generation B is old and receives $1, paid for by Generation C, which is young in period 2, and so on. The table below presents the operation of the system.

The Simplified Pay-as-you-go System				
	Generation			
Period	A	B	C	D
1	+$1	-$1		
2		+$1	-$1	
3			+$1	-$1
4				+$1

Assume further that the market interest rate is 10 percent per period. Now consider the system from the perspective of Generation C during period 2:

- Under the pay-as-you-go system, Generation C pays $1 during period 2 and receives $1 back during period 3. The pay-as-you-go system's rate of return is zero (which also follows from the assumption of zero productivity growth and zero population growth).

- Under an individual accounts system, Generation C would invest the $1 contribution and receive $1.10 in period 3. The rate of return would appear to be 10 percent.

It would therefore appear that a switch from the pay-as-you-go system to individual accounts would produce substantially higher returns for Generation C --

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in his consumption loan paper: In the reversal from a pay-as-you-go system to a fully funded one, it is possible that every generation could be worse off. To be sure, our concerns about existing systems are somewhat different -- Samuelson focused on Ponzi schemes that were viable in the long run, but most real-world systems do not seem to share that property. Some type of reform is inevitable.

[31] F. Breyer, "On the Intergenerational Pareto Efficiency of Pay-as-you-go Financed Pension Systems," *Journal for Institutional and Theoretical Economics*, 1989.

[32] This simplified example and much of its discussion is taken from Peter R. Orszag, "Individual Accounts and Social Security: Does Social Security Really Provide a Lower Rate of Return?" Center on Budget and Policy Priorities, March 1999, available at http://www.cbpp.org.

10 percent rather than 0 percent. But if Generation C put $1 into individual accounts during period 2, that $1 could not be used to finance the benefits for Generation B. Yet Generation B's benefits must be paid for somehow, unless society is willing to allow Generation B to go without benefits.

Assume that Generation B's benefits are financed through borrowing and that the interest costs are paid for by the older generation in each period. With an interest rate of 10 percent, the interest payments would cost 10 cents per period. The net benefit to Generation C during period 3, therefore, would be $1 ($1.10 from its individual accounts minus 10 cents in interest costs). Thus, Generation C would earn a zero rate of return, just as under the pay-as-you-go system, once the interest costs are included. Indeed, for Generation C and each generation thereafter, *the extra return from the individual account is more apparent than real: it is exactly offset by the cost of the debt that financed Generation B's benefits.*

Other assumptions about financing the debt do not alter the basic conclusion that the simple rate-of-return comparison is misleading. For example, if benefits were financed by borrowing but the interest costs were paid for by the younger generation rather than the older generation in each period, Generation C would enjoy a 10 percent rate of return. But Generation D and all subsequent generations would receive a zero rate of return; these generations would pay $1.10 while young and receive $1.10 when old. (The $1.10 paid when young would consist of $1 in deposits into the individual accounts and $0.10 in interest costs on the funds borrowed. The $1 in deposits, at a 10 percent interest rate, would produce $1.10 in benefits when old.) The higher return for Generation C would in effect be paid for by requiring all future generations to earn a zero rate of return on a larger contribution base ($1.10, rather than $1).

Finally, note that if the transition costs were financed through tax revenue rather than debt, the rate of return will indeed increase -- although that is purely a function of the broad prefunding, not the privatization.[33] We must once again be careful not to confuse broad prefunding with privatization: The higher rate of return would result regardless of whether the additional funding is routed through individual accounts or a public trust fund, as long as the trust fund were allowed to hold the same type of assets as individual accounts. *It is the additional funding, not the individual accounts themselves, that is crucial to producing the higher rate of return.*

In the U.S. context, the misleading nature of the simple rate-of-return comparison is dramatically illustrated by the report of the 1994-1996 Advisory Council on Social Security. The members of the Advisory Council were unable to reach agreement on the role of individual accounts. The Council split into three factions, each with a significantly different set of recommendations regarding individual accounts, from no

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[33] The rate of return calculation is somewhat quirky in this regard, because it also ignores the opportunity costs of the additional tax revenue. If those funds had earned the market rate of return, alternative measures of returns -- for example, the present value of benefits relative to the present value of contributions, would show no change under additional funding under the household optimization, uniform preference ranking, stable price, and spanning conditions explored in Geanakaplos, Mitchell, and Zeldes (1999).

individual accounts (under the Maintain Benefits plan) to relatively large individual accounts (under the Personal Security Accounts plan). The simple rate-of-return comparison -- which emphasizes that the historical rate of return on the stock market is substantially higher than current and future rates of return on Social Security contributions -- would suggest that these plans should produce significantly different rates of return. But despite the sharply different treatment of individual accounts in the three proposals, *their estimated rates of return are very similar.* Consider, for example, an average two-earner couple born in 1997. According to projections made by the Social Security actuaries and published in the Advisory Council report, the real rate of return for such a couple would be between 2.2 and 2.7 percent per year under the Maintain Benefits plan, depending on the share of the Social Security Trust Fund invested in equities; 2.2 percent per year under the Individual Accounts plan; and 2.6 percent per year under the Personal Security Accounts plan.[34]

To those accustomed to using the simple rate-of-return comparison and who assume individual accounts produce a much higher rate of return, these results must come as a shock. Yet the similar rates of return across plans with very different approaches to individual accounts, especially when the returns are adjusted for differences in risk, is precisely what one *should* expect when the analysis is undertaken in a rigorous manner.

Rate of return comparisons for *specific individuals* may also reflect the redistribution component of different systems. To be sure, current systems entail considerable redistribution, a result of which is that some individuals (those who are "paying" for the redistribution) receive a lower rate of return than they would in a system which does not involve such redistribution, even if the aggregate returns are the same under the two systems. We may or may not believe that such redistributions are desirable or deserved. If the redistributions are not desirable, they -- and not necessarily the public system that currently embodies them -- should be abolished.[35] In other words, as emphasized in the introduction, the fact that the public systems *as implemented* have been less than ideal means that they should be changed, not necessarily dramatically scaled back. As Boldrin, Dolado, Jimeno, and Peracchi (1999) write with respect to pension programs in Europe, "Their use as camouflaged redistributional devices, motivated by rent-seeking and political purposes, has turned into an abuse, and, in about three decades, almost lead to their financial bankruptcy. We insist on the fact that, in the justifiable and commendable process of getting rid of such redistributional distortions, one does not want to 'throw away the baby with the dirty water.' PAYG public pension systems do serve a useful purpose, which should be salvaged and enhanced by a deeper reform of the European Welfare State."[36]

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[34] Advisory Council on Social Security, *Report of the 1994-1996 Advisory Council on Social Security*, Volume I: Findings and Recommendations, January 1997, Table IRR4.

[35] Some may argue that the only feasible way to abolish the redistribution would be to convert the program from a public one to a private one. Even if that were true, however, the choices involved would then become substantially more complicated than a simple rate-of-return comparison would suggest.

[36] Michele Boldrin, Juan Jose Dolado, Juan Franscisco Jimeno, and Franco Peracchi, "The Future of Pension Systems in Europe: A Reappraisal," *Economic Policy*, forthcoming, page 27.

Risk and diversification

Risk issues raise further complications for the simple rate-of-return comparison. Most simple rate-of-return comparisons conflate privatization and diversification. The two need not go together; one can imagine private accounts that are restricted to risk-free financial assets, and public systems that invest in risky assets.

Diversification should produce higher average financial returns over long periods of time. But individuals generally dislike risk; a much riskier asset with a slightly higher rate of return is not necessarily preferable to a much safer asset with a slightly lower rate of return -- so some adjustment to observed rates of return is necessary. And if capital markets are perfect, the higher mean return from diversification should merely compensate for additional risk (assuming that the portfolio holds a sufficient number of different risky assets). In other words, in efficient markets, returns are commensurate with risk.

For example, by many common measures, stocks are relatively risky -- at least over the short run. The S&P 500 index in the United States has declined (in nominal terms) by more than 10 percent in eight of the past 70 years.[37] (In inflation-adjusted terms, the number of years of substantial decline is larger.) Moreover, individual stocks are considerably riskier than broad portfolios such as the S&P 500; many stocks decline even in years when the market rises overall. And the recent turmoil in developing country financial markets provides more than ample evidence of short-term variance: Relative to the end of 1996, for example, stock market capitalization fell by 40 percent in Indonesia, 55-60 percent in Malaysia and Thailand, and 35-40 percent in South Korea and Singapore by early 1998.[38] Stock returns also tend to be risky in the sense of being high when the marginal utility of consumption is low, and vice versa.

The risks embodied in stocks are highlighted by analysis that Gary Burtless of the Brookings Institution has conducted. Burtless studied the replacement rates that workers would have achieved (i.e., the percentage of their previous wages that their retirement incomes would equal) if they had invested two percent of their earnings in stock index funds each year over a 40-year work career and converted the accumulated balance to a retirement annuity upon reaching age 62. Workers reaching age 62 in 1968 would have enjoyed a 39 percent replacement rate from those investments (i.e., the monthly benefit from their retirement annuity would equal 39 percent of prior wages). By contrast, the replacement rate for workers retiring in 1974 -- only six years later -- would have been only 17 percent, or less than half as much.[39] While these precise estimates can be criticized, the central point that emerges from them cannot be: stock returns embody

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[37] Council of Economic Advisers, *Economic Report of the President 1997* (Government Printing Office: Washington, 1997), page 113. It should be noted that bonds also have risk in real terms. The U.S. Treasury Department has recently begun issuing inflation-indexed bonds that protect investors against such risk.

[38] Peter Heller, "Rethinking Public Pension Initiatives," International Monetary Fund, Working Paper 98/61, April 1998, page 11.

[39] Gary Burtless, Testimony before the Committee on Ways and Means, Subcommittee on Social Security, U.S. House of Representatives, June 18, 1998, available at www.house.gov/ways_means/.

substantial variation from year to year.[40] This issue will be re-examined from a broader international perspective (in a paper written by Max Alier of the IMF and Dimitri Vittas of the World Bank) during the conference's session on annuities.

If we are willing to assume that markets are fully efficient, we do not need to bother with risk adjustments -- we can merely assume that all properly risk-adjusted returns on sufficiently diversified portfolios are equal. If we are *not* willing to assume that markets are fully efficient, however, we must undertake complicated risk adjustments. For example, it is hard to know precisely how risk adverse individuals are. "Risk" also may depend on a wide variety of factors. For example, over long enough periods, stocks may not be particularly risky relative to nominal bonds.[41] Another critical question is whether the observed equity premium merely reflects risk, or whether it includes a component of super-normal returns on stocks even on a risk-adjusted basis.[42] A related question is how to make projections of the risk premium.

Other complicating factors exist for risk adjustments to public versus private systems. For example, *diversification undertaken through a public defined benefit system involves less financial risk for any given individual than diversification undertaken through a private defined contribution system*. The reason is that a public defined benefit system can spread risk across generations in a way that is not possible under a private defined contribution program. In other words, while the public program can attain any profile of risk (and diversification) that the private program can, the converse is not true. To be sure, government guarantees on returns under a private defined contribution system (see Myth #9) facilitate some degree of inter-generational risk sharing. But note that they do so only by transforming the pure private defined contribution system into a mixed private defined contribution-public defined benefit system.

Full risk analysis of a public defined benefit system relative to individual accounts would entail evaluations of not just diversification, but also a wide variety of other risks inherent in the typical as-implemented forms of the two systems. For example, defined benefit systems are usually progressive and therefore provide a form of lifetime earnings insurance.[43] If lifetime earnings are lower than expected, the replacement rate is higher

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[40] For a discussion of these calculations, see Henry J. Aaron and Robert D. Reischauer, *Countdown to Reform* (Century Foundation Press: New York, 1998), pages 32-36. Aaron and Reischauer discuss a version of the calculations that assumes that six percent of earnings are invested in the stock market rather than the 2 percent contribution rate assumed in the figures given above. With a six percent contribution rate, the replacement rates are higher but the large gap between the benefits of those who reach age 62 and retire in 1968 and those who reach 62 and retire in 1974 remains.

[41] Jeremy Siegel, *Stocks for the Long Run* (McGraw Hill: New York, 1998).

[42] Rajnish Mehra and Edward Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics*, March 1985, pages 145-161.

[43] It is often asserted that differential mortality rates by income imply that on a lifetime basis, seemingly progressive systems are not actually progressive. In the United States, at least, that statement is somewhat misleading. For example, Steuerle and Bakija find that even accounting for differential mortality rates, the lifetime rate of return on contributions is higher for lower-income workers than for higher-income workers. On the other hand, net transfers in absolute dollars are indeed higher for higher-income workers retiring in the past and present. It is not clear whether "progressivity" should be evaluated on a relative or absolute

than expected, at least partially cushioning the blow in retirement of the lower-than-expected earnings. Furthermore, even under a non-progressive defined benefit plan, pensioners do not face accrual risk, although many systems often included under the "defined benefit" heading still contain residual risks of various kinds (e.g., real risks arising from imperfect indexation, or demographic risks from the adjustment of benefits depending on the status of public finances).[44] Finally, once we depart from an idealized comparison and examine the political economy of the two systems, a variety of political risk issues arise with respect to public systems that may or may not be less extreme under private systems (see further discussion in Myth #9 and Myth #10). In any case, the simple rate-of-return comparison ignores these complicated risk issues.

Myth #3: Declining rates of return on pay-as-you-go systems reflect fundamental problems with those systems

Another myth surrounding reform of public pay-as-you-go systems is that observed declines in rates of return on pay-as-you-go systems are indicative of some fundamental flaw in those systems. Instead, that decline reflects the natural convergence of a pay-as-you-go system to its mature steady-state.

The Samuelson formula gives the rate of return on a *mature* pay-as-you-go system. In the early years of such a system, however, beneficiaries receive a substantially higher rate of return than the formula would suggest. Consider Generation A from the example above. That first generation in the pay-as-you-go system received $1 in benefits but had not contributed anything to the system. Generation A's rate of return thus was infinite.

In a similar vein, early beneficiaries under the Social Security system in the United States received extremely high rates of return because they received benefits disproportionate to their contributions. They contributed for only a limited number of years, since much of their working lives had passed before Social Security payroll contributions began to be collected. The earliest beneficiaries under Social Security — those born in the 1870s — enjoyed real rates of return approaching 40 percent.

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dollar basis. Furthermore, even on a net transfer basis, the intra-generational transfers are expected to be reversed (i.e., become progressive) in the near future. See Eugene Steuerle and Jon Bakija, *Retooling Social Security for the 21st Century* (Urban Institute Press: Washington, 1994), pages 115-126. Other studies find mixed results for the progressivity of the Social Security system on a lifetime basis. See, for example, D.M. Garrett, "The Effects of Differential Mortality Rates on the Progressivity of Social Security," *Economic Inquiry,* Volume 33, July 1995, and J.E. Duggan, R. Gillingham, and J.S. Greenlees, "Progressive Returns to Social Security? An Answer from Social Security Records," Department of the Treasury, Research Paper No. 9501, 1995.

[44] As noted above, a defined benefit program could be thought of as a defined contribution program combined with appropriate financial options. In principle, the government could issue the options independently of the pension system, allowing individuals to create synthetically a defined benefit pension out of an otherwise defined contribution system. Yet there may be benefits -- for example, in terms of bailouts -- to bundling the options solely with the pension system.

Average annual rate of return for U.S. Social Security retirement and survivors benefits for those born in selected years	
Year of Birth	Average annual rate of return
1876	36.5%
1900	11.9%
1925	4.8%
1950	2.2%

Source: Dean Leimer, "A Guide to Social Security Money's Worth Issues," *Social Security Bulletin*, Summer 1995, Table 3.

This decline in rates of return from the earliest groups of beneficiaries is a feature of any pay-as-you-go system, under which the early beneficiaries receive very high rates of return because they contributed little during their working years. The rate of return for subsequent beneficiaries necessarily declines. As the system matures, that decline in rates of return may be attenuated or exacerbated by changes in productivity and labor force growth rates.

Two other points are worth noting. First, the decision to provide benefits at the beginning of the program to those who did not contribute over their entire lives -- to make the system a pay-as-you-go one rather than a funded one -- may be understandable in terms of political exigencies, but may or may not make much sense in terms of inter-generational welfare policy. Nonetheless, that decision in almost every country of the world has already been made. Unless we are now willing to let existing retirees or older workers suffer because earlier generations received a super-normal rate of return, we are forced to bear the consequences of that decision regardless of whether the pension system is privatized. Second, and relatedly, the super-normal rates of return enjoyed by early beneficiaries are the mirror reflection of the sub-market rate of return on the mature system. As Geanakoplos, Mitchell, and Zeldes (1998, 1999) emphasize, the net present value of the pay-as-you-go system across all generations is zero. If some generations receive super-market rates of return, all other generations must therefore receive sub-market rates of return. Again, the introduction of individual accounts does not change that conclusion.

Myth #4: Investment of public trust funds in equities has no macroeconomic effects or welfare implications

Many analysts of pension reform believe that investing a public trust fund in equities rather than government bonds would have no macroeconomic or social welfare effects. The argument is simply that such diversification is merely an asset shift, and does not change national saving. It therefore may alter asset prices or rates of return, but not the macroeconomy. As Alan Greenspan has stated:

If social security trust funds are shifted in part, or in whole, from U.S. Treasury securities to private debt and equity instruments, holders of those securities in the

private sector must be induced to exchange them, net, for U.S. Treasuries. If, for example, social security funds were invested wholly in equities, presumably they would have to be purchased from the major holders of such equities. Private pension and insurance funds, among other holders of equities, presumably would have to swap equities for Treasuries. But, if the social security trust funds achieved a higher rate of return investing in equities than in lower yielding U.S. Treasuries, private sector incomes generated by their asset portfolios, including retirement funds, would fall by the same amount, potentially jeopardizing their financial condition. This zero-sum result occurs because of the assumption that no new productive saving and investment has been induced by this portfolio reallocation process… At best, the results of this restricted form of privatization are ambiguous. Thus, the dilemma for the social security trust funds is that a shift to equity investments without an increase in domestic savings may not appreciably increase the rate of return of social security trust fund assets, and to whatever extent that it does, would likely be mirrored by a comparable decline in the incomes of private pension and retirement funds.[45]

Note that this argument is not really one about whether public trust funds should be invested in equities. Rather, it is about whether social security funds should be shifted into equities through any mechanism -- either through public trust funds or private accounts. In other words, the issue is purely one of whether *diversification* per se is beneficial. Interestingly, proponents of private accounts often hail the diversification potential of such accounts as a substantial social benefit, yet simultaneously claim that diversification undertaken through a public trust fund would yield no benefits. At least from a strictly economic perspective, that dichotomy does not seem to make much sense. To be sure, *how* to best accomplish diversification involves numerous issues, including both administrative costs and political economy issues, that are addressed below (see Myths #7 and #10). For now, we focus on the effects of diversification absent such administrative cost or political economy concerns. For convenience, we therefore examine diversification undertaken through a public trust fund.

Underlying our examination of this myth is a fundamental theory -- the public sector analogue to the Modigliani-Miller theorem -- that provides conditions under which public sector financial structure makes no difference. The conditions were developed in a series of papers by Stiglitz.[46] Given perfect capital markets and the ability of individuals to reverse the actions of government financial policies, such policies have no real effects.

Given imperfections in the financial markets, however, Stiglitz also shows that government financial policy -- including its approach to investing its trust funds -- could

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[45] Alan Greenspan, Remarks at the Abraham Lincoln Award Ceremony of the Union League of Philadelphia, Philadelphia, Pennsylvania, December 6, 1996.

[46] Joseph Stiglitz, "On the Irrelevance of Corporate Financial Policy," *American Economic Review*, December 1974, pages 851-866; Joseph Stiglitz, "On the Relevance or Irrelevance of Public Financial Policy: Indexation, Price Rigidities, and Optimal Monetary Policy," in R. Dornbusch and M. Simonsen, editors, *Inflation, Debt, and Indexation* (MIT Press: Cambridge, 1983), pages 183-222; and Joseph Stiglitz, "On the Relevance or Irrelevance of Public Financial Policy," *Proceedings of the 1986 International Economics Association Meeting*, 1988, pages 4-76.

have important real effects. More recently, economists have highlighted imperfections or non-convexities such as learning costs, minimum investment thresholds, or other factors. In the presence of such imperfections and assuming that pensioners assume some of the accrual risk from the government's financial policies (which means that the pension system is not a pure defined benefit plan), diversification can produce real welfare gains and possibly macroeconomic effects. The key insight is that given the imperfections, many individuals do not hold equities -- and government diversification can effectively eliminate the non-convexities, producing a welfare gain.[47]

For example, Diamond and Geanakoplos (1999) examine a model in which there are two types of consumers: savers and non-savers. The non-savers participate in a social security program, and the government therefore "invests" on their behalf. Transferring some of the social security trust fund into equities -- in other words, diversification -- produces a welfare gain for these non-savers. "Our major finding is that trust fund portfolio diversification into equities has substantial real effects, including the potential for significant welfare improvements. Diversification raises the sum total of utility in the economy if household utilities are weighted so that the marginal utility of a dollar today is the same for every household. The potential welfare gains come from the presence of workers who do not invest their savings on their own."[48]

Similarly, Geanakoplos, Mitchell, and Zeldes (1999) argue that if a non-trivial share of households lack access to capital markets, diversification (either through a trust fund or individual accounts) could raise welfare for these households. They conclude that $1 of equity may be worth $1.59 to such constrained households.[49] The myth of neutral diversification thus arises from the implicit assumption that all households are at interior solutions in terms of their financial portfolios; the papers explore the ramifications of having at least some households at corner solutions. In a somewhat different approach that nonetheless reaches similar conclusions about the non-neutrality of diversification, Abel (1999) finds that diversification could raise the growth rate of the capital stock in a defined benefit system.[50]

Finally, it is also interesting to note that from a risk perspective, the socially optimal system may be a diversified, *partially* funded one. Merton (1983), Merton,

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[47] Another implication of the failure of the public sector analogue to the Modigliani-Miller theorem is that a movement of government trust funds out of bonds and into stocks could increase interest rates on the government bonds. The higher interest costs to the government could then at least temporarily raise net interest costs (e.g., if most of the short-run returns from holding equities are in the form of unrealized capital gains rather than dividends). And the higher net interest costs could then require additional reliance on distortionary taxation -- which could then affect labor supply. In effect, one could think of an investment restriction that the public trust fund hold only government bonds as a tax imposed through the pension system. Lifting the investment restriction then shifts the tax to a different base (all taxpayers).

[48] Peter Diamond and John Geanakoplos, "Social Security Investment in Equities I: The Linear Case," unpublished draft, April 1999.

[49] John Geankoplos, Olivia S. Mitchell, and Stephen Zeldes, "Social Security Money's Worth," in Olivia S. Mitchell, Robert J. Myers, and Howard Young, eds., *Prospects for Social Security Reform* (University of Pennsylvania Press: Philadelphia, 1999).

[50] Andrew B. Abel, "The Social Security Trust Fund, the Riskless Interest Rate, and Capital Accumulation," prepared for the NBER conference on Risk Aspects of Investment-Based Social Security Reform, January 15-16, 1999.

Bodie, and Marcus (1987), and Dutta, Kapur, and Orszag (1999) show that combining an unfunded component (with a rate of return tied to earnings growth) with a diversified, funded component (with a rate of return tied to a market index) may reduce risk relative to a completely funded system.[51] The intuition is simply that partial funding provides access to an asset -- the human capital of the young -- that is not normally tradable on the financial markets, thereby providing further diversification relative to the set of assets available on financial markets. Boldrin, Dolado, Jimeno, and Peracchi (1999) study the historical correlations among annual GDP growth, earnings growth, bond returns, and stock returns in the United States, Germany, United Kingdom, France, Italy, and Japan -- and find that the correlations in all countries are substantially less than one, and often negative. They conclude that "diversification of risk provides an additional reason to invest in both human and physical capital."[52]

MICROECONOMIC MYTHS

Myth #5: Labor market incentives are better under private defined contribution plans

A common claim regarding individual accounts is that they provide better labor market incentives than traditional (defined benefit) social security systems. For example, Estelle James has written, "The close linkage between benefits and contributions, in a defined-contribution plan, is designed to reduce labor market distortions, such as evasion by escape to the informal sector, since people are less likely to regard their contribution as a tax."[53] Sylvester Schieber, Carolyn Weaver, and other supporters of the Personal Security Account proposal within the 1994-1996 Advisory Council on Social Security in the United States wrote that "individual accounts would…create a direct link between the tax contributions workers make and the benefits to which they are entitled, eliminating much of the complexity of the current system and alleviating labor market distortions."[54] Similarly, in analyzing Social Security in the United States, Martin Feldstein has written that, "The extra deadweight loss that results from these very unequal links between incremental taxes and incremental benefits would automatically be eliminated in a privatized funded system with individual retirement accounts."[55]

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[51] Robert Merton, "On the role of social security as a means for efficient risk sharing in an economy where human capital is not tradeable," in Zvi Bodie and John Shoven, eds., *Issues in Pension Economics* (University of Chicago Press: Chicago, 1983); Robert Merton, Zvi Bodie, and Alan Marcus, "Pension Plan Integration as Insurance Against Social Security Risk," in Zvi Bodie, John Shoven, and David Wise, eds., *Issues in Pension Economics* (University of Chicago Press: Chicago, 1987), and Jayasri Dutta, Sandeep Kapur, and J. Michael Orszag, "A Portfolio Approach to the Optimal Funding of Pensions," May 1999.

[52] Michele Boldrin, Juan Jose Dolado, Juan Franscisco Jimeno, and Franco Peracchi, "The Future of Pension Systems in Europe: A Reappraisal," *Economic Policy*, forthcoming.

[53] Estelle James, "Pension Reform: An Efficiency-Equity Tradeoff?" in Nancy Birdsall, Carol Graham, and Richard Sabot, eds., *Beyond Tradeoffs* (Brookings Institution Press: Washington, 1998).

[54] Joan T. Bok, Ann L. Combs, Sylvester J. Schieber, Fidel A. Vargas, and Carolyn L. Weaver, "Restoring Security to Our Social Security Retirement Program," *Report of the 1994-1996 Advisory Council on Social Security, Volume I: Findings and Recommendations* (Washington, DC, 1997), page 105.

[55] Martin Feldstein, "Introduction," in Martin Feldstein, ed., *Privatizing Social Security* (University of Chicago Press: Chicago, 1998), page 8.

Any differential labor market incentives of individual accounts result from differences in both risk and redistribution. It is therefore important to note:

1. We are ultimately interested in welfare, not labor supply. It is possible to design structures that accentuate labor market incentives but reduce welfare. To do so would be to confuse means with ends. For example, if individuals were very risk averse, imposing a large random lump sum tax on individuals in the latter part of their lives may induce both more savings and more labor supply, since individuals would work harder as a precaution against this adverse contingency. Yet such a tax could have large adverse effects on welfare.[56] A particular example of this point is the changes in risk associated with a movement from defined benefit to a defined contribution system. A mean-preserving increase in risk could lead to greater labor supply but would be undesirable from a welfare perspective.[57]

2. A key tradeoff exists between redistribution and incentives. It is usually possible to provide stronger incentives only at the cost of less redistribution. Redistribution typically creates labor market distortions.[58] As Diamond (1998) argues, "economists have raised the issue of the extent to which the payroll tax distorts the labor market. Suggestions that switching to a defined-contribution system will produce large efficiency gains are overblown…Any redistribution will create some labor market distortion, whether the redistribution is located in the benefit formula or in another portion of the retirement income system."[59]

3. More generally, given other distortions in the labor market (e.g., a progressive tax system), assessing how specific provisions of a pension program affect the efficiency of the labor market is a complicated matter.[60] As one example, the redistributive

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[56] Joseph E. Stiglitz, "Utilitarianism and Horizontal Equity: The case for random taxation," *Journal of Public Economics*, 18 (1982), 1-33.

[57] Michael Rothschild and Joseph Stiglitz, "Increasing Risk, I: A Definition," *Journal of Economic Theory*, 1970: 2, 225-243; and Michael Rothschild and Joseph Stiglitz, "Increasing Risk, II: Its Economic Consequences," *Journal of Economic Theory*, 1971: 3, 66-84.

[58] Whether redistribution should be undertaken through the pension system or other means (such as the income tax system) is a serious question. If the redistribution is better undertaken through alternative mechanisms, then a complete analysis of defined benefit versus defined contribution pension systems must also take into account the distortions engendered by the alternative redistribution mechanism.

[59] Peter Diamond, "The economics of Social Security reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), page 62. Relatedly, Heller (1998) argues, "since DC-type schemes by themselves do not redistribute income intragenerationally or provide safety nets, income security measures need to be developed to complement a DC scheme…Authorities should ask whether it is more efficient and cost-effective to build such redistributional/safety net elements directly into the social insurance system, rather than make them a separate pillar." Peter Heller, "Rethinking Public Pension Initiatives," International Monetary Fund, Working Paper 98/61, April 1998.

[60] For example, Peter Diamond has noted that in the presence of a progressive income tax, a defined benefit pension system may have better incentives than a defined contribution system. For example, a defined benefit system may involve low, or even negative, taxes during the times in a worker's career in which the income tax is relatively high (e.g., later in the career). Since the distortion from a tax increases with the square of the tax rate, and since the variance in the *overall* labor tax is minimized under a defined benefit system under these assumptions, it is possible that a defined benefit system has better labor market characteristics than a defined contribution one. He concludes that "comparing defined contribution and

aspects of the Social Security program in the United States increase the return to working among the poor who, given the phase-outs associated with various other welfare programs, often face very high marginal tax rates.[61]

4. The distortion imposed by the payroll tax is not measured by the payroll tax itself, but rather by any difference between the net present value of marginal benefits and the marginal tax.[62] Similarly, the labor supply of those who do not fully value mandatory retirement savings -- those who would not on their own have saved as much -- will generally be affected by such a program, but it is wrong to infer that the mandatory savings program necessarily reduces labor supply. The key issue is what happens to the mean *marginal* utility of consumption, which could either increase or decrease.[63]

5. One of the most difficult questions in assessing any program is the appropriate counterfactual against which to judge it. For example, assume that workers who did not save for retirement -- or who invested their contributions poorly -- knew that they would be bailed out by the government. Funds for the bailouts would have to be raised through distortionary taxes, which would then affect labor supply. Savings, investment, and labor supply behavior would all be affected by the (potential) bailout and associated taxes. Whether they would be more or less affected than under an alternative social insurance program is an empirical question. Similarly, consider a program of privatization without prefunding. The additional taxes necessary to finance the debt generated by privatization without prefunding could distort labor market incentives. Indeed, in the simulations reported by Corsetti and Schmidt-Hebbel (1997), a debt-financed transition to individual accounts *reduces* output by between 1 and 4 percent in the long run because of the distortions from higher income taxes necessary to finance the debt.[64]

6. Most of the discussion of the labor market effects of social insurance has focused on supply side effects in competitive markets. Particularly in developing countries, the assumption of a perfectly competitive labor market seems inappropriate -- suggesting

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defined benefit pension systems…is central in considering the labor market impact of proposals to privatize social security…the analysis is more complex than some might suspect." Peter Diamond, "Privatization of social security and the labor market," delivered at the MIT Public Finance lunch, February 9, 1998.

[61] For the marginal tax rates in the United States, see Andrew Lyon, "Individual Marginal Tax Rates under the U.S. Tax and Transfer System," in David Bradford, ed., *Distributional Analysis of Tax Policy* (American Enterprise Institute Press: Washington, 1995). Also see Joseph E. Stiglitz, "Taxation, Public Policy, and the Dynamics of Unemployment," Keynote Address to the 54th Congress of the International Institute of Public Finance, August 24, 1998.

[62] Martin Feldstein and Andrew Samwick, "Social Security Rules and Marginal Tax Rates," *National Tax Journal*, 1992, Volume 45, pages 1-22.

[63] Joseph Stiglitz, "Taxation, Public Policy, and the Dynamics of Unemployment," Keynote Address to the 54th Congress of the International Institute of Public Finance, August 24, 1998. See also Peter Diamond, "The economics of Social Security reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998).

[64] Giancarlo Corsetti and Klaus Schmidt-Hebbel, "Pension reform and growth," in Salvador Valdés-Prieto, *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997), page 134. The authors note that with different specifications regarding labor supply elasticities, the long-run results may change.

that an exclusive focus on the supply side may be misplaced. Stiglitz (1998) has begun the exploration of labor market effects in a broader context.[65] Consider, for example, an efficiency wage model in an environment in which an urban job entitles one to participate in a public social insurance program. The subsidies associated with such a system increase the rents of those who obtain jobs in the urban sector (one of the most often quoted criticisms of such public systems), but the increased public subsidy shifts the no-shirking constraint (e.g., in a Shapiro-Stiglitz model of efficiency wages) down, so that equilibrium wages are reduced and equilibrium employment increased. Whether social welfare increases from such a wage subsidy is thus a complicated matter. More recently, Orszag, Orszag, Snower, and Stiglitz (1999) explore these issues in a model that incorporates interactions between the characteristics of the labor market and the pension system, while also being capable of studying interactions between the pension system and the unemployment insurance system. They conclude that there is no simple dominance of one system over another in terms of labor market incentives.[66]

Myth #6: Defined benefit plans necessarily provide more of an incentive to retire early

The seminal work edited by Gruber and Wise (1999) shows that public defined benefit plans in the industrialized economies incorporate substantial taxes on work among the elderly, and that the provisions of those plans are often an important factor in early retirement.[67] Some proponents of individual accounts have therefore suggested moving to a system of individual accounts as a way of avoiding this blandishment for early retirement.[68]

This myth is thus related to Myth #5, but focuses specifically on older workers. A critical question in evaluating its importance is the degree to which we should be concerned about early retirement *per se*. Some social insurance programs implicitly provide "obsolescence" insurance against technological shocks that affect the value of human capital. Experience normally increases an individual's human capital, but rapid technological change may diminish its value, so that older workers face diminishing productivity and wages. Some workers may want to obtain insurance against this risk, in the form of an "option" to retire early. Carefully defined retirement insurance programs could provide an element of such insurance by providing early retirees some increment in the present value of benefits over contributions. To be sure, like most insurance, moral hazard concerns arise with such insurance: The provision of the insurance at the margin induces some individuals whose productivity has not fallen to retire earlier than they otherwise would have. Optimal insurance balances the risk reduction and moral hazard

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[65] Joseph E. Stiglitz, "Taxation, Public Policy, and the Dynamics of Unemployment," Keynote Address to the 54th Congress of the International Institute of Public Finance, August 24, 1998.

[66] J. Michael Orszag, Peter R. Orszag, Dennis J. Snower, and Joseph E. Stiglitz, "The Impact of Individual Accounts: Piecemeal vs. Comprehensive Approaches," presented at the Annual Bank Conference on Development Economics, The World Bank, April 29, 1999.

[67] Jonathan Gruber and David Wise, eds., *Social Security and Retirement Around the World* (University of Chicago Press: Chicago, 1999).

[68] See, for example, Estelle James, "Pension Reform: An Efficiency-Equity Tradeoff?" in Nancy Birdsall, Carol Graham, and Richard Sabot, eds., *Beyond Tradeoffs* (Brookings Institution Press: Washington, 1998).

effects. It is a valid criticism to say that balancing has not been undertaken properly; it is not a valid criticism to say that some adverse incentive effect exists.[69]

Even if one concludes that the optimal tradeoff between insurance and work should be tilted more toward work, this issue provides a vivid illustration of the "inherent vs. implemented" point we noted in the introduction. A public defined benefit plan need not necessarily impose an additional tax on elderly work. Similarly, a defined contribution approach *could* potentially impose such a tax. The net effect of a pension system on the incentive to retire comprises three components: the marginal accrual rate for additional work (additional benefits relative to additional taxes or contributions, for any given age of initial benefit receipt), the actuarial adjustment for delaying the initial receipt of benefits (regardless of whether work continues), and the rules for whether benefits are reduced because of earnings. In all three components, defined benefit plans need not provide more of a disincentive against work and in favor of claiming benefits than a defined contribution plan. For example, benefit accrual rates are *higher* under many forms of defined benefit plans (e.g., some forms of final salary plans) than under defined contribution plans -- potentially providing a stronger incentive for continued work at older ages. The actuarial adjustment within a defined benefit plan is a policy parameter. And the presence or absence of an earnings test need not depend on the form of the pension system.

An idealized comparison between a defined benefit and defined contribution approach therefore does not uphold this myth. But what about the as-implemented comparison? Here, too, the situation is complicated. Many industrialized countries are reducing the incentives for early retirement within their defined benefit structures.[70] For example, in the United States, Diamond and Gruber (1999) find small subsidies at age 62 and small net tax rates until age 65, with substantial tax rates from ages 65 to 69.[71] But those large tax rates above age 65 will fall over time: under current law, the delayed retirement credit, which provides increased benefits to those who delay claiming benefits past 65, has been increasing, and is scheduled to reach 8 percent for each year of delayed claiming by 2005.[72] (That level is viewed as being approximately actuarially fair.[73]) Coile

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[69] In a related spirit, Diamond and Mirlees prove the optimality of taxing work for insurance purposes in an *ex ante* identical workers model. See Peter Diamond and James Mirlees, "A Model of Social Insurance with Variable Retirement", *Journal of Public Economics* 10, 1978, pages 295-336; Diamond and Mirlees, "Payroll-Tax Financed Social Insurance with Variable Retirement", *Scandinavian Journal of Economics* 88 (1), 1986, pages 25-50; and Diamond and Mirlees, "Social Insurance with Variable Retirement and Private Saving", *Journal of Public Economics,* forthcoming.

[70] David Kalish and Tetsuya Aman, "Retirement Income Systems: The Reform Process Across OECD Countries," Social Policy Division, OECD, 1997.

[71] Peter Diamond and Jonathan Gruber, "Social Security and Retirement in the United States," Figure 11.14, page 461, in Jonathan Gruber and David Wise, eds., *Social Security and Retirement Around the World* (University of Chicago Press: Chicago, 1999).

[72] The delayed retirement credit applies to delays past the normal retirement age (currently 65). For claiming before the normal retirement age, the actuarial adjustments are 6.67 percent of the worker's Primary Insurance Amount per year. That is also approximately actuarially fair.

[73] A difficult issue involved in actuarial "fairness" is which population's mortality projections to use in evaluating such "fairness." For example, many of those retiring early are less healthy than average. In evaluating actuarial "fairness" for early retirement, should the mortality experience of those actually choosing to retire early be used, or the mortality experience of the population as a whole? Similarly, a

and Gruber (1999) find that increasing the delayed retirement credit has a particularly strong effect on encouraging work among the elderly.[74] Similarly, the economies in transition have generally increased the retirement ages within their traditional defined benefit programs over the past decade (the only exceptions, as of 1998, were Bulgaria and the Ukraine).[75]

It is also worth noting that Sweden has recently introduced a new pension system (including a "notional defined contribution" approach to the pay-as-you-go component) that reflects concerns about the return to work among the elderly.[76] A similar system was earlier implemented in Latvia and Poland.[77] In Sweden, combined employer and employee contributions to the new system will amount to 18.5 percent of all earnings, of which 16 percent will be used for pay-as-you-go benefits and 2.5 percent will be deposited in a prefunded pension called a "premium reserve." The benefit formula under the "notional income" pay-as-you-go component is innovative, and is intended to automatically provide an incentive for delayed claiming.[78]

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program that is actuarially fair for the population as a whole will generally not be actuarially fair for specific sub-sets of that population. See, for example, the discussion in Jonathan Gruber and Peter Orszag, "What to Do About the Social Security Earnings Test?" Issue in Brief #1, Center for Retirement Research, Boston College, July 1999.

[74] Courtney Coile and Jonathan Gruber, "Social Security and Retirement," presented at NBER Conference on Social Security, August 4, 1999.

[75] Marco Cangiano, Carlo Cottarelli, and Luis Cubeddu, "Pension Developments and Reforms in Transition Economies," International Monetary Fund, Working Paper 98/151, October 1998, page 23-28.

[76] For a summary of the Swedish reforms, see Annika Sundén, "The Swedish Pension Reform," Federal Reserve Board, September 1998.

[77] Louise Fox, "Pension reform in the post-Communist transition economies," World Bank working paper, 1997, and Marco Cangiano, Carlo Cottarelli, and Luis Cubeddu, "Pension Developments and Reforms in Transition Economies," International Monetary Fund, Working Paper 98/151, October 1998, page 30.

[78] The value of pension rights accumulated under the pay-as-you-go system is based on actual and imputed income (e.g., during child care years), uprated by wage growth per capita. The pay-as-you-go component thus provides a real rate of return equal to real wage growth per capita, which is why the system is sometimes referred to as a "notional defined contribution" system. Upon retirement, the value of pension rights is divided by remaining life expectancy. Therefore, the later benefits begin, the higher annual benefits will be, since the downward adjustment to reflect remaining life expectancy will be smaller. (Benefits can be claimed as early as age 61.) The key point is that delaying retirement, by reducing remaining life expectancy, raises annual benefits. The annual benefits will be indexed to average wage growth per capita. This wage-indexing ensures that inflation-adjusted benefits increase during periods of positive real wage growth, and decline during periods of negative real wage growth. The time profile of the annual benefits will be tilted toward the present by assuming a future real wage growth rate of 1.6 percent, and adjusting the initial benefit level up to spread the expected present value of that real wage growth over the beneficiary's remaining life expectancy. In other words, the real benefits over the beneficiary's life are computed assuming 1.6 percent real wage growth, and then turned into an equivalent real annual benefit. In future years, the nominal annual benefit will then be indexed to nominal wage growth minus 1.6 percent. If real wage growth turns out to average 1.6 percent over the beneficiary's life, this system therefore produces the expected real benefit level upon which the initial benefit was based. If, however, real wage growth falls below 1.6 percent, the real value of the pension falls -- and vice versa. Thus, despite the forward tilting of the real benefit pattern, beneficiaries continue to share in higher- or lower-than-expected productivity growth. Whether the forward tilting in real terms is desirable depends upon one's views on the attractions of subsidizing those with shorter-than-average life expectancies and on the importance of liquidity constraints.

As part of this conference, Louise Fox and Edward Palmer will examine these new ideas in more detail. But whatever their costs and benefits, they represent the type of innovative thinking that may help to address the labor market distortions for older workers identified by Gruber and Wise. The key point is that the encouragement of early retirement is not a necessary element of a public defined benefit plan, and the Gruber-Wise findings do not necessarily provide a rationale for moving to individual accounts.

Myth #7: Competition ensures low administrative costs under private defined contribution plans

Another myth is that competition among financial providers will necessarily reduce administrative costs on individual accounts. For example, the *Economist* has written that in creating individual accounts, countries should "let many kinds of firms (banks, insurance companies, mutual funds) compete for the business. Fierce competition in sophisticated markets has driven down costs in these businesses. There is no reason why the same should not be true for pensions, although the need for adequate prudential and saver-protection regulation will clearly remain."[79]

Competition, however, only precludes excess rents; it does not ensure low costs.[80] Instead, the *structure* of the accounts determines how high the costs are. Furthermore, centralized approaches -- under which choices are constrained and economies of scale are captured -- appear to have substantially lower costs than decentralized approaches. Low administrative costs thus may be possible under an idealized set of accounts -- one that involves a centralized approach -- but not under a decentralized approach.

One approach to individual accounts would be to have centralized management with restricted investment options. In the United States, the Advisory Council on Social Security estimated that administrative costs under such a system would amount to roughly 10 basis points per year. Such costs, accumulated over 40 years of work, would reduce the ultimate value of an individual account by about two percent. More recent estimates suggest that costs may be somewhat higher under this approach.[81]

An alternative approach would be a decentralized system of individual accounts, in which workers held their accounts with various financial firms and were allowed a broad array of investment options. Under such an approach, costs tend to be significantly

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[79] The *Economist*, "Economic Focus: Latin lessons on pensions," June 12, 1998. That article is very supportive of a defined contribution second pillar. Interestingly, the same column raised fundamental questions about individual accounts in the U.S. context. See the *Economist*, "Economic Focus: The perils of privatization," August 15, 1998.

[80] Moreover, in a world with monopolistic competition (which, given imperfect information, is often a better description of markets than perfect competition), competition leads to zero profits but not necessarily economic efficiency.

[81] See, for example, Peter Diamond, "Administrative Costs and Equilibrium Charges with Individual Accounts," presented at NBER Conference on Administrative Costs of Individual Accounts, December 4, 1998. Diamond also notes that the administrative costs for a decentralized approach may be 100 to 150 basis points, slightly higher than the 100 basis point estimate applied to the Personal Security Account proposal in the Advisory Council report.

higher because of advertising expenses, the loss of economies-of-scale, competitive returns on financial company capital, and various other additional costs. The Advisory Council estimated that administrative costs under such a system would amount to roughly 100 basis points per year. Such costs would, over a 40-year work career, consume about 20 percent of the value of the account accumulated over the career.

Experience from both Chile and the United Kingdom is consistent with these predictions and indicates that a decentralized system of individual accounts involves significant administrative expenses.[82] Both Chile and the United Kingdom have decentralized, privately managed accounts, and administrative costs in both countries have also proven to be surprisingly high.[83]

Murthi, Orszag, and Orszag (1999) present an accounting structure for administrative costs, and then show that the administrative costs for individual accounts in the U.K. are substantial.[84] As they will discuss during the session on administrative costs, the administrative costs associated with any system of individual accounts can be broken down into three components:

- The <u>accumulation ratio</u> captures fund management and administrative costs for a worker contributing funds to a single financial provider throughout her career.

- The <u>alteration ratio</u> measures the additional costs of failing to contribute consistently to a single financial provider over an entire career. It includes any costs from switching from one financial provider to another or from stopping contributions altogether. Many analyses have ignored the costs of transferring funds or stopping contributions.[85]

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[82] For more extensive discussions, see National Academy of Social Insurance, "Report of the Panel on Privatization of Social Security," available at http://www.nasi.org and as Peter Diamond, ed., *Issues in Privatizing Social Security: Report of an Expert Panel of the National Academy of Social Insurance* (MIT Press: Cambridge, 1999); Peter Diamond, "Administrative Costs and Equilibrium Charges with Individual Accounts," presented at NBER Conference on Administrative Costs of Individual Accounts, December 4, 1998; Estelle James, Gary Ferrier, James Smalhout, and Dimitri Vittas, "Mutual Funds and Institutional Investments: What is the Most Efficient Way to Set Up Individual Accounts in a Social Security System?" NBER Working Paper Number 7049, 1999; and Olivia Mitchell, "Administrative Costs in Public and Private Retirement Systems," in Martin Feldstein, ed., *Privatizing Social Security* (University of Chicago Press: Chicago, 1998).

[83] See, for example, Peter Diamond, "The Economics of Social Security Reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), pages 38-64, and Congressional Budget Office, *Social Security Privatization: Experiences Abroad,* January 1999, available at http://www.cbo.gov.

[84] Mamta Murthi, J. Michael Orszag, and Peter R. Orszag, "The Charge Ratio on Individual Accounts: Lessons from the U.K. Experience," Birkbeck College Working Paper 2/99, March 1999.

[85] Murthi, Orszag, and Orszag discuss these alteration costs in much more detail. The high level of alteration costs in the U.K. seems to reflect a particularly inefficient approach to implementation of individual accounts.

- The <u>annuitization ratio</u> reflects the costs of converting an account to a lifetime annuity upon retirement. These costs include mortality cost effects, since those purchasing an annuity in the United Kingdom (or elsewhere) tend to have longer average life expectancies than the general population. In a competitive market, such longer life expectancies will be reflected in higher annuity prices. As a result, if someone with the typical life expectancy wishes to purchase an annuity, he or she must pay these prices, which means such a person will pay a higher price than the actuarially fair price for people with average life expectancies.[86]

Taking into account interaction effects, Murthi, Orszag, and Orszag estimate that, on average, between 40 and 45 percent of the value of individual accounts in the U.K. is consumed by various fees and costs. Given the fixed costs associated with individual accounts, furthermore, costs for smaller accounts (e.g., in developing economies with lower levels of GDP per capita) would be even higher relative to the account size if the U.K. experience were replicated in such countries.

Charges can be high either because profits are high or because underlying costs are high. The competitiveness of the individual account market in the United Kingdom and the departure of some providers from the market suggest the market is not excessively profitable. It thus is likely that charges primarily reflect underlying costs, rather than unusually high profits for providers. Examples of the underlying costs include sales and marketing costs, fund management charges, regulatory and compliance costs, record-keeping, and adverse selection effects.[87]

The bottom line is that both the U.K. and Chilean experiences indicate a decentralized approach to individual accounts is expensive -- and the administrative costs would be even more higher (relative to the account balances) if the accounts were smaller.[88] As will be discussed in a paper by Estelle James, Dimitri Vittas, and others at

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[86] This point is related to one made in a footnote above: It is always important to ask "actuarially fair for whom?" It is also important to note that mortality selection effects are a cost to the typical individual but do not necessarily measure the profit to the provider, the loss of utility to the consumer, or the resource cost to society from the selection effect in the annuity market. Rather, they represent a financial loss for the typical person, if he or she decided to purchase an annuity, relative to an annuity that accurately reflected his or her life expectancy. For further discussion of the annuities market in the U.K. and the impact of selection effects, see Mamta Murthi, J. Michael Orszag and Peter R. Orszag, "The Value for Money of Annuities in the UK: Theory, Experience and Policy," Birkbeck College, July 1999. For further discussion of the various selection effects in annuities markets -- not all of which necessarily represent market failures -- see Estelle James and Dimitri Vittas, "Annuities Markets in Comparative Perspective: Do Consumers Get Their Money's Worth?", World Bank, September 1999.

[87] It is important to note that most studies examine the costs of individual accounts to consumers, not the resource costs to society. In many situations, the two concepts may not be identical. For example, selection effects are of a somewhat different nature than many of the other costs listed above: most of the accumulation costs, for example, likely represent direct resource costs to society, whereas selection effects represent indirect costs (by discouraging individuals from participating in the insurance market). Similarly, such studies do not necessarily measure the utility losses from charges. The approach is a financial one, not a utility one, and is not presented in utility-based terms.

[88] It may be worth noting that Sweden, in addition to adopting an innovative approach to its pay-as-you-go system, has also adopted an innovative approach to individual accounts: First, the government will maintain all records and negotiate fees with private mutual funds. Second, while workers will be able to

this conference, a centralized approach to individual accounts could offer substantially reduced administrative costs. But one may wonder why government interference and governance concerns are less problematic under such a centralized approach than under a public trust fund system.

POLITICAL ECONOMY MYTHS

Myth #8: Inefficient governments provide a rationale for private defined contribution plans

Some proponents of individual accounts argue that corrupt and inefficient governments provide a strong motivation for moving away from public systems and toward private ones. To be true to our idealized vs. as-implemented distinction, we should emphasize that this myth is very much in the "as-implemented" world, since in an idealized world the government is not inefficient or corrupt.

On an "as-implemented" basis, however, the issue is more complicated than it may initially appear. Even under a private system, as James (1997) emphasizes, "considerable government regulation is essential to avoid investments that are overly risky and managers who are fraudulent. Some minimum reliability is required from the civil service for regulation to be effective...."[89] Similarly, as Heller (1998) argues, "a government supervisory authority may be seen as necessary to ensure adequate prudential standards are the norm for those private sector agents given license to manage and invest pension funds. The possibility of fraud and abuse cannot be discounted, particularly for countries with poorly developed capital markets or where the potential for conflicts of interest within financial institutions (associated with their possible multiple roles as lenders and pension fund investors) are great."[90] It is difficult to know why a government that is inefficient and corrupt in administering a public benefit system would be efficient and honest in regulating a private one. One of the sessions in this conference will examine regulatory failures in other sectors (e.g., banking) to see what, if anything, pension regulators can learn.[91]

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select among various funds, contributions will be aggregated and invested by the government agency, allowing it to capture economies of scale and bargaining power, thereby reducing administrative costs. And individuals who switch funds (which they are allowed to do at any time) will have to pay the administrative costs themselves. Furthermore, sales commissions will be discouraged because funds will not have information identifying their members. See Estelle James, Gary Ferrier, James Smalhout, and Dimitri Vittas, "Mutual Funds and Institutional Investments: What is the Most Efficient Way to Set Up Individual Accounts in A Social Security System?" NBER Working Paper 7049, 1999.

[89] Estelle James, "Public pension plans in international perspective: Problems, reforms, and research ideas," in Salvador Valdes-Prieto, ed., *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997).

[90] Peter Heller, "Rethinking Public Pension Initiatives," International Monetary Fund, Working Paper 98/61, April 1998, page 9.

[91] For a discussion of some of the issues involved in supervising pension schemes, see Gustavo Demarco and Rafael Rofman, "Supervising mandatory funded pension systems: Issues and challenges," World Bank working paper, 1999.

To be sure, the likelihood of government malfeasance under different public programs -- regulatory versus direct government management -- may differ markedly, and we are only just beginning to understand the causes of any such differences. Among the relevant factors are undoubtedly transparency and complexity, and, more generally, control systems within the public sector; and the magnitude of private incentives for abuses. For example, a rule-based system in which public funds are invested in government bonds or in broad market indexes is relatively easy to monitor and therefore seems to involve limited scope for abuse. By contrast, given the wide variety of ways in which private actors can circumvent the intent of any specific rule, a government regulatory system can be quite complex. Such complexity may increase the potential for corruption, as actors try to "bribe" regulators to approve non-transparent schemes. Such concerns are of particular importance in developing countries, where non-governmental consumer and investor protection organizations may be weak and unsophisticated.

A good example of the risks may be offered by Kazakhstan, which lacks a well-developed set of financial markets and has little of the infrastructural and regulatory prerequisites for the proper functioning of individual accounts. And even in industrialized economies with relatively efficient governments and well-developed financial markets, the scale of the regulatory challenge should not be underestimated. For example, according to Arthur Levitt, Chairman of the Securities and Exchange Commission in the United States, more than half of all Americans do not know the difference between a stock and a bond; only 12 percent know the difference between a load and no-load mutual fund; only 16 percent say they have a clear understanding of what the Individual Retirement Account is; and only 8 percent say they completely understand the expenses that their mutual funds charge.[92] The investor education and investor protection measures required to ensure that an individual account system operates well despite these knowledge gaps seem substantial.

The "mis-selling" controversy in the United Kingdom also illustrates the difficulties of regulating individual accounts. In 1988, new regulations allowed investors in private pensions to contract out of the public pension system. At the time, few analysts thought that these individual accounts would present regulatory difficulties. After all, the U.K. financial services industry was, by and large, a reasonably safe place to invest and the 1986 Financial Services Act had established a system of self-regulation combined with heavy penalties for conducting investment business without authorization.

As it turned out, the U.K. experienced substantial difficulties with the movement to personal pensions. (Perhaps these problems should not have been so surprising: Kevin James reports that when asked whether they preferred a 10 percent discount on a $300 TV or $25, 28 percent of those surveyed in the U.K. opted for the latter![93]) In what has become known as the "mis-selling" controversy, high-pressure sales tactics were used to persuade members of good occupational pension schemes (especially older, long-serving members) to switch into unsuitable personal pension schemes. Sales agents had often

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[92] Arthur Levitt, speech at the John F. Kennedy School of Government, Harvard University, October 19, 1998.
[93] Kevin James, "The Price of Retail Investing in the UK," February 8, 1999, page 24.

sought too little information from potential clients to provide proper advice, and their firms did not keep adequate records to defend themselves against subsequent mis-selling claims.[94]

The bottom line is that public malfeasance or incompetence can be just as dangerous under individual accounts as under public defined benefit systems. The key questions are thus the difficulties of constructing open, transparent systems under alternative regimes, and the capacities of individuals and organizations to monitor the public sector.

Myth #9: Bailout politics are worse under public defined benefit plans than under private defined contribution plans

Another political economy myth is that bailout politics are more severe under public defined benefit plans than under private defined contribution plans. In other words, the assertion is that the government will experience greater pressure for social protection under a public defined benefit system than a private defined contribution one.

To be sure, this myth is an as-implemented one. After all, in an idealized world, bailout politics may not be of particular concern. But it is simply not politically realistic to claim that governments will fail to come to the rescue in some way if financial disaster looms for a non-trivial share of the population. As Hugh Heclo writes, "If government is inevitable, political risks in retirement policy cannot be avoided….The history of public policy is rich with examples of demands for compensatory government action when free choice and competition do not produce the happy endings people expect."[95]

In a sense, this myth is related to the previous one. If the government fails to do an effective job in regulating the private sector, and if individuals are allowed to invest in risky securities, those whose investment decisions turn out to be poor will likely turn to the government for assistance. In many countries, the guarantee is more than implicit: Governments often provide some sort of guarantee on the returns earned under the individual account approach.[96] As Rocha, Gutierrez, and Hinz (1999) argue, "most countries that have introduced a second, mandatory pillar, have also been induced to offer

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[94] In late 1993, the U.K. regulators announced that it would undertake a general review of the personal pensions schemes of individuals who had transferred out of occupational pension schemes since 1988. After conducting this review, the regulators concluded that a large fraction had been given inappropriate advice. Miners, teachers, and nurses with relatively generous occupational pensions were among the main targets of sales agents. As a result, the U.K. government has adopted tighter regulations, increased disclosure requirements, and forced compensation from financial providers. Despite these steps, there is some evidence of continuing problems. For further discussion of the mis-selling controversy, see Mamta Murthi, J. Michael Orszag, and Peter R. Orszag, "The Charge Ratio on Individual Accounts: Lessons from the U.K. Experience," Birkbeck College Working Paper 2/99, March 1999.

[95] Hugh Heclo, "A Political Science Perspective on Social Security Reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), pages 71-86.

[96] For a contingent claims approach to valuing these guarantees, see George G. Pennacchi, "Government Guarantees on Pension Fund Returns," World Bank working paper, March 1998.

some form of guarantee on second pillar returns."[97]   Such guarantees ultimately involve some type of explicit government backstop.[98]

Diamond and Valdes-Prieto (1994) examine the government guarantees inhering in the Chilean system at that time. They note that the government guaranteed 100 percent of an annuity up to the minimum pension, plus 75 percent of its value above the minimum pension; the minimum AFP relative return if the guarantee bonds posted by the AFPs are temporarily exhausted; and finally the minimum pension, so that the government shared in accrual risk (and longevity risk, if a phased withdrawal is chosen rather than an annuity). They further argue that "implicit government guarantees may exist because of the mandatory nature of contributions…"[99]

Some analysts may argue that the government does not have to issue guarantees in the second pillar of a pension system if the first pillar were optimally constructed. Yet such an approach seems unlikely to be a political equilibrium. Dynamic inconsistency concerns are likely to loom large. Governments that regulate privatized systems -- and surely some government regulation of the second pillar is necessary -- are inevitably blamed for any failures in that system.[100] The comfort provided by the first pillar is unlikely to be sufficient to qualm the political unrest resulting from any significant financial losses suffered by the middle and upper classes.

The extent of bailout politics in a private, defined contribution system relative to a public, defined benefit one is difficult to assess *ex ante*. The outcome depends on a complicated political dynamic, which undoubtedly differs from country to country. To what extent does any increased risk under a defined contribution approach -- and the related inability to spread risk across generations -- increase the likelihood of a bailout? To what extent does the "privatized" nature of a private defined contribution system insulate the government from pressure for bailouts?   These are important questions, and worthy of further study. We submit that the answers are far from clear at this point. One of the sessions during this conference includes a paper about what pension regulators can learn about bailout politics from banking regulators.

Concerns about potential bailouts following adverse financial performances are particularly germane to developing countries, since Easterly, Islam, and Stiglitz (1999)

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[97] Roberto Rocha, Joaquinn Gutierrez, and Richard Hinz, "Improving the Regulation and Supervision of Pension Funds: Are There Lessons from the Banking Sector?" World Bank, September 1999
[98] Note that the guarantees transform the system from a pure defined contribution one toward a mixed private defined contribution-public defined benefit system. They thus facilitate some degree of inter-generational risk sharing absent from the pure private defined contribution system.
[99] Peter Diamond and Salvador Valdes-Prieto, "Social Security Reforms," in Barry Bosworth, Rudiger Dornbusch, and Raul Laban, ed., *The Chilean Economy: Policy Lessons and Challenges* (Brookings Institution Press: Washington, 1994), pages 304-5.
[100] Any government that chose *not* to regulate a privatized system could increase the risk of a crisis -- for example, the lack of prudential standards may raise the possibility of a large account provider failing to deliver on its promises to retirees. In any case, if such a crisis hit, the government -- despite its ostensible lack of involvement -- would likely be forced to provide a bailout anyway.

show that such economies typically experience higher volatility than developed ones.[101] The higher financial volatility in developing economies could be attenuated by allowing individuals to invest in foreign assets. If such investments were appropriately chosen, the returns should then be independent of outcomes in their own country -- insulating the individuals from the effects of higher domestic volatility. But this approach raises a number of sensitive issues. For example, in the presence of endogenous growth elements or any differential between social and private returns to capital, investing abroad is not necessarily equivalent to investing at home. If pension savings are invested abroad, the country benefits from the private return to capital in foreign markets, but does not necessarily capture the full potential social return. This effect could thus provide a policy rationale for limiting foreign investments.

Finally, the likelihood of a bailout of individual accounts may be heightened in post-socialist economies that had engaged in voucher privatizations.[102] In such voucher privatizations, shares in large and medium-sized companies were sold in exchange for vouchers. Since the normal fiduciary rules to be listed on a public stock exchange were bypassed by many firms undergoing privatization, shares in these firms are illiquid. Voucher investment funds, which were organized as intermediaries for the voucher privatizations, hold most of the illiquid shares.[103] Pension reform schemes in these countries may have the effect of transferring illiquid shares from the voucher funds to pension funds. Such a transfer may benefit the voucher funds, but could also necessitate a government bailout of the pension funds should the illiquid shares prove to be worth less than their current "market price."[104] To be sure, the pension reforms are often touted as "deepening the stock market." Yet they may ultimately merely reallocate losses from one set of funds to another -- and in a potentially regressive fashion.

Myth #10: Investment of public trust funds is always squandered and mismanaged

Another myth is that public trust funds are always squandered or mismanaged. As Estelle James has written, "…data gathered for the 1980s indicate that publicly managed pension reserves fared poorly and in many cases lost money -- largely because public managers were required to invest in government securities or loans to failing state enterprises, at low nominal interest rates that became negative real rates during inflationary periods."[105]

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[101] William Easterly, Roumeen Islam, and Joseph Stiglitz, "Shaken and Stirred: Volatility and Macroeconomic Paradigms for Rich and Poor Countries," Michael Bruno Memorial Lecture, XII World Congress of the IEA, Buenos Aires, Argentina, August 27, 1999.

[102] The authors thank David Ellerman for his insight into this problem. This section relies heavily on his contributions.

[103] The voucher funds were creatures of the voucher privatization, and are far more numerous and powerful than mutual funds in the West. For instance, in one small country, there are about 10 actively traded companies and over 30 voucher funds (and over a thousand voucherized companies with tradable, but illiquid, shares).

[104] Given the illiquidity, the current market price is not necessarily particularly illuminating.

[105] Estelle James, "Pension Reform: An Efficiency-Equity Tradeoff?" in Nancy Birdsall, Carol Graham, and Richard Sabot, eds., *Beyond Tradeoffs* (Brookings Institution Press: Washington, 1998).

Several points are worth noting here. The first concerns the nature of the capital market. If capital markets were perfect, then it would simply not be possible (apart from corruption or a failure to diversify the portfolio across a sufficient number of assets) for funds to be badly invested. *Efficient markets ensure that returns are commensurate with risk*, as long as the investment portfolio is sufficiently diversified. Given efficient markets, those that accuse the government of investing poorly therefore must be accusing the government either of corruption, or of choosing a portfolio that does not correspond to the risk preferences of pensioners. With respect to the latter, little evidence is typically presented.

Furthermore, as Stiglitz shows in a series of papers, if individuals can "undo" the public fund portfolio by adjusting their own portfolio risk, public financial policy -- including how the government invests its trust funds -- is irrelevant.[106] The assumption of perfect capital markets is not entirely convincing, especially in many developing countries. But then the opportunities for uninformed investors to make mistakes or to be exploited are increased. Furthermore, even in the presence of imperfect capital markets, the government *may* choose to invest in a more restricted class of assets than are generally available because the social returns from such restrictions justify any costs. For example, public authorities may legitimately decide that an embargo on investments in South Africa during the apartheid regime was a reflection of broader social goals. Similarly, as discussed above, restrictions on foreign investments *may* be socially beneficial if social and private returns to capital diverge sufficiently or if other differences between domestic and foreign investment obtain (e.g., if endogenous growth is spurred more from domestic investment than foreign investment).

Averting the Old Age Crisis noted that real rates of return on many public trust funds were negative during the 1980s. But that information alone does not tell us much: we would like to know how the real rate of return on the trust fund compared to other investments, after controlling for risk. Figure 3.7 in *Averting the Old Age Crisis* only offers one such comparison: between the U.S. OASI Trust Fund and returns earned by U.S. occupational pension funds, and it does not control for risk. The risk adjustment is essential, since we should not be particularly concerned about funds that earn equal risk-adjusted rates of return but differ in their portfolios.

The table below includes the other countries in the *Averting the Old Age Crisis*, along with *ex post* real market interest rates between 1980 and 1990 computed from the IMF's *International Financial Statistics*. As it shows, a comparison with market interest rates indicates that the returns earned on public pension funds during the 1980s were indeed somewhat disappointing relative to risk-free market interest rates. But the degree of shortfall is much less pronounced than column (A) by itself would suggest. *Averting the Old Age Crisis* published only column (A). Column (B) shows the average real *ex*

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[106] Joseph Stiglitz, "On the Irrelevance of Corporate Financial Policy," *American Economic Review*, December 1974, pages 851-866; Joseph Stiglitz, "On the Relevance or Irrelevance of Public Financial Policy: Indexation, Price Rigidities, and Optimal Monetary Policy," in R. Dornbusch and M. Simonsen, editors, *Inflation, Debt, and Indexation* (MIT Press: Cambridge, 1983), pages 183-222; and Joseph Stiglitz, "On the Relevance or Irrelevance of Public Financial Policy," *Proceedings of the 1986 International Economics Association Meeting*, 1988, pages 4-76.

post discount rate, computed as the geometric mean of the cumulative real interest rate between 1980 and 1990.[107] The final column compares the real rate reported in *Averting the Old Age Crisis* for the public trust fund to the respective real market rate. Such a comparison yields a somewhat different perspective on the issue. Indeed, in two of the nine instances, government returns appear to have been at least as good as the market return.

Table: *Ex post* real returns

	Real return on public fund, as published in *Averting the Old Age Crisis**	Average real *ex post* discount rate, 1980-1990, geometric mean**	Difference
	(A)	(B)	(A)-(B)
Peru	-37.4	NA	NA
Turkey	-23.8	-4.4	-19.4
Zambia***	-23.4	-12.4	-11.0
Venezuela	-15.3	-6.4	-8.9
Egypt	-11.7	-4.1	-7.6
Ecuador	-10.0	-10.2	0.2
Kenya	-3.8	1.8	-5.6
India	0.3	0.8	-0.5
Singapore	3.0	4.3	-1.3
Malaysia	4.6	1.1	3.5

* Note that the time period in column (A) covers different sub-periods of the 1980s for different countries, so the comparisons with columns (B) and (C) are not precise. Nonetheless, the qualitative results are similar regardless of the sub-period.

** The real *ex post* discount rate in any year is computed as $r = 100 \left[\frac{1+n}{1+\pi} - 1 \right]$, where r is the real interest rate, n is the nominal discount rate (line 60 in the *International Financial Statistics*), and π is the consumer price inflation rate (the percentage change in line 64 in the *International Financial Statistics*). The figure shown is then the geometric mean of the cumulative real return across 1980-1990.

*** The real market rate is for 1980-1988 because of data limitations.

Furthermore, by revealed preference, not all public trust funds are mismanaged. Individuals in many countries prefer a public trust fund to private funds. In Kazakhstan, for example, more than 85 percent of citizens initially held their individual accounts, by choice, with the State Accumulation Fund rather than private funds.[108]

Finally, countries are experimenting with institutional arrangements -- such as independent boards and clear legislative mandates to avoid political investing -- to protect trust funds from political pressures. For example, Canada has recently changed the regulations governing its Canada Pension Plan (CPP) to allow that system to invest a portion of its reserves in private securities. The investments will be governed by an independent investment board comprising 12 members, each of whom will serve a three-year term. The board will have a fiduciary responsibility to the fund. For the first three years of the fund, its equity investments will be limited to investing in stock market

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[107] It should be noted that the procedure used to compute the figures in *Averting the Old Age Crisis* is somewhat unclear. The text states that the table shows "simple annual averages."

[108] Mitchell A. Orenstein, "A Political-Institutional Analysis of Pension Reform in the Postcommunist Countries," World Bank Political Economic of Pension Reform Project, final draft, May 1999, page 22.

indexes. Other limitations on the portfolio also apply.[109] The impact of a trust fund's institutional structure deserves closer attention -- funds with independent boards and other important structural features seem to have fared somewhat better than other funds.[110]

The debate over public pension investment performance has been particularly heated in the United States. On the basis of research undertaken by Olivia Mitchell and others, Alan Greenspan has noted that state and local pension funds tend to under-perform market rates of return.[111] More recently, Munnell and Sundén (1999) re-examined the evidence on state and local pension funds, and concluded that:

> First, economically targeted investments [ETIs] account for no more than 2.5 percent of total state and local holdings….recent survey data reveal no adverse impact on returns as a result of the current small amount of ETI activity. Second, public plans in only three states have seriously engaged in shareholder activism... The literature suggests that this activity has had a negligible to positive impact on returns. Third, the only significant divestiture that has occurred was related to companies doing business in South Africa before 1994…With respect to tobacco, public plans have generally resisted divestiture, and only a few have actually sold their stock. Finally, state and local governments have borrowed occasionally from their pension funds or reduced their contributions in the wake of budget pressures, but this activity has been restrained by the courts and frequently reversed. In short, the story at the state and local level is that while in the early 1980s some public plans sacrificed returns for social considerations, plan managers have become much more sophisticated. Today, public plans appear to be performing as well as private plans.[112]

One potential conclusion from this literature is that public pension funds with sound corporate governance protections -- independent boards and sources of financing, along with a clear legal mandate to pursue competitive returns -- may avoid some of the pitfalls associated with pension fund investing. Further study of these issues is clearly warranted -- and we are pleased that this issue will be explored further in one of the

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[109] For a discussion of the Canadian program, see David Slater, "Prudence and Performance: Managing the CPP Investment Board," C.D. Howe Institute Commentary, Toronto.

[110] It is also worth noting that private managers can be hired to undertake the actual investment of public funds, much as a private financial firm manages the investments of the Thrift Savings Plan (a retirement program for Federal government employees) in the United States.

[111] See, for example, Olivia S. Mitchell and Roderick Carr, "State and Local Pension Plans." Cambridge, MA: NBER, Working Paper No. 5271 (1995), Olivia S. Mitchell and Ping-Lung Hsin. 1997. "Public Pension Governance and Performance" in Salvador Valdés-Prieto ed., *The Economics of Pensions: Principles, Policies, and International Experience*, op. cit., 92-123; and Olivia S. Mitchell and Robert S. Smith, "Pension Funding in the Public Sector." *Review of Economics and Statistics* (May 1994), 278-90. For the Greenspan comments, see Alan Greenspan, "Social security," Testimony before the Committee on Budget, U.S. Senate, January 28, 1999.

[112] Alicia H. Munnell and Annika Sundén, "Investment Practices Of State And Local Pension Funds: Implications For Social Security Reform," presented at the Pension Research Council Conference, Wharton School, University of Pennsylvania, April 26-27, 1999.

sessions during this conference (including a paper by Augusto Iglesias and Robert J. Palacios on international experiences with publicly managed funds).

CONCLUSION

Underfunded public pension systems represent a potential threat to the fiscal soundness -- and, more broadly, economic stability -- of many developing countries. The World Bank's study, *Averting the Old Age Crisis*, provided an invaluable service in drawing attention to this problem and in discussing specific policy changes to address the issue. Unfortunately, as often happens, the suggestions have come to be viewed narrowly -- focusing on a second pillar limited to a private, non-redistributive, defined contribution pension plan. We have shown that most of the arguments in favor of this particular reform are based on a set of myths that are often not substantiated in either theory or practice.

A move toward privately managed defined contribution pensions may or may not have an adverse effect on savings, welfare, labor supply, or the fiscal balance. We have identified a number of factors that affect the outcome in any specific country. In developing economies, there is not, we would argue, any presumption in favor of the "conventional wisdom" -- a privately managed, defined contribution system. Less developed countries usually have less developed capital markets, with less informed investors and less regulatory capacity, making the scope for potential abuse all the greater. Moreover, the presence of greater volatility and the absence of many types of financial markets makes many kinds of insurance provided by traditional defined benefit programs all the more valuable.

The debate over pension reform would benefit substantially from a more expansive view of the optimal second pillar -- which should incorporate well-designed public defined benefit plans. A privately managed second pillar is not always optimal. A more expansive perspective would allow policy-makers to weigh appropriately all the tradeoffs they face, including private vs. public systems; prefunding vs. not prefunding; diversifying vs. not diversifying; and defined contribution vs. defined benefit pension plans.

BIBLIOGRAPHY

Henry J. Aaron and Robert D. Reischauer, *Countdown to Reform* (Century Foundation Press: New York, 1998)

Andrew B. Abel, "The Social Security Trust Fund, the Riskless Interest Rate, and Capital Accumulation," prepared for the NBER conference on Risk Aspects of Investment-Based Social Security Reform, January 15-16, 1999

_____, Gregory Mankiw, Lawrence Summers, and Richard Zeckhauser, "Assessing dynamic efficiency: theory and evidence," *Review of Economic Studies*, volume 56, 1989

Advisory Council on Social Security, *Report of the 1994-1996 Advisory Council on Social Security*, Volume I: Findings and Recommendations, January 1997, Table IRR4.

Hazel Bateman and John Piggott, "Mandatory retirement saving: Australia and Malaysia compared," Salvador Valdes-Prieto, *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997)

Joan T. Bok, Ann L. Combs, Sylvester J. Schieber, Fidel A. Vargas, and Carolyn L. Weaver, "Restoring Security to Our Social Security Retirement Program," *Report of the 1994-1996 Advisory Council on Social Security, Volume I: Findings and Recommendations* (Washington, DC, 1997)

Michele Boldrin, Juan Jose Dolado, Juan Franscisco Jimeno, and Franco Peracchi, "The Future of Pension Systems in Europe: A Reappraisal," *Economic Policy*, forthcoming.

F. Breyer, "On the Intergenerational Pareto Efficiency of Pay-as-you-go Financed Pension Systems," *Journal for Institutional and Theoretical Economics*, 1989

Gary Burtless, Testimony before the Committee on Ways and Means, Subcommittee on Social Security, U.S. House of Representatives, June 18, 1998, available at www.house.gov/ways_means/

Marco Cangiano, Carlo Cottarelli, and Luis Cubeddu, "Pension Developments and Reforms in Transition Economies," International Monetary Fund, Working Paper 98/151, October 1998

David Cass, "Optimum Growth in an Aggregative Model of Capital Accumulation," Review *of Economic Studies*, July 1965, pages 233-240

Courtney Coile and Jonathan Gruber, "Social Security and Retirement," presented at NBER Conference on Social Security, August 4, 1999

Congressional Budget Office, *Social Security Privatization: Experiences Abroad,* January 1999, available at http://www.cbo.gov.

Giancarlo Corsetti and Klaus Schmidt-Hebbel, "Pension reform and growth," in Salvador Valdes-Prieto, *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997)

Council of Economic Advisers, *Economic Report of the President 1997* (Government Printing Office: Washington, 1997)

Gustavo Demarco and Rafael Rofman, "Supervising mandatory funded pension systems: Issues and challenges," World Bank working paper, 1999

Peter Diamond, "The economics of Social Security reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998)

_____, "Privatization of social security and the labor market," delivered at the MIT Public Finance lunch, February 9, 1998

_____, "Administrative Costs and Equilibrium Charges with Individual Accounts," presented at NBER Conference on Administrative Costs of Individual Accounts, December 4, 1998

_____, ed., *Issues in Privatizing Social Security: Report of an Expert Panel of the National Academy of Social Insurance* (MIT Press: Cambridge, 1999)

_____, and Jonathan Gruber, "Social Security and Retirement in the United States," in Jonathan Gruber and David Wise, eds., *Social Security and Retirement Around the World* (University of Chicago Press: Chicago, 1999)

_____ and John Geanakoplos, "Social Security Investment in Equities I: The Linear Case," unpublished draft, April 1999

_____ and James Mirlees, "A Model of Social Insurance with Variable Retirement", *Journal of Public Economics* 10, 1978, pages 295-336

_____ and James Mirlees, "Payroll-Tax Financed Social Insurance with Variable Retirement", *Scandinavian Journal of Economics* 88 (1), 1986, pages 25-50

_____and James Mirlees, "Social Insurance with Variable Retirement and Private Saving", *Journal of Public Economics,* forthcoming

_____ and Joseph Stiglitz, "Increases in Risk and in Risk Aversion," *Journal of Economic Theory,* 1974:8, 337-60

_____ and Salvador Valdes-Prieto, "Social Security Reforms," in Barry Boswoth, Rudiger Dornbusch, and Raul Laban, ed., *The Chilean Economy: Policy Lessons and Challenges* (Brookings Institution Press: Washington, 1994)

J.E. Duggan, R. Gillingham, and J.S. Greenlees, "Progressive Returns to Social Security? An Answer from Social Security Records," Department of the Treasury, Research Paper No. 9501, 1995.

Jayasri Dutta, Sandeep Kapur, and J. Michael Orszag, "A Portfolio Approach to the Optimal Funding of Pensions," May 1999

William Easterly, Roumeen Islam, and Joseph Stiglitz, "Shaken and Stirred: Volatility and Macroeconomic Paradigms for Rich and Poor Countries," Michael Bruno Memorial Lecture, XII World Congress of the IEA, Buenos Aires, Argentina, August 27, 1999

The Economist, "Economic Focus: Latin lessons on pensions," June 12, 1998
_____, "Economic Focus: The perils of privatization," August 15, 1998

Martin Feldstein, "The Case for Privatization," Foreign Affairs, July/August 1997

_____, "Introduction," in Martin Feldstein, ed., *Privatizing Social Security* (University of Chicago Press: Chicago, 1998)

_____ and Andrew Samwick, "Social Security Rules and Marginal Tax Rates," *National Tax Journal*, 1992, Volume 45, pages 1-22.

Louise Fox, "Pension reform in the post-Communist transition economies," World Bank working paper, 1997

D.M. Garrett, "The Effects of Differential Mortality Rates on the Progressivity of Social Security," *Economic Inquiry,* Volume 33, July 1995

John Geanakoplos, Olivia S. Mitchell, and Stephen P. Zeldes, "Would a Privatized Social Security System Really Pay a Higher Rate of Return?" in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998)

_____, "Social Security Money's Worth," available as NBER Working Paper Number 6722, September 1998, and in Olivia S. Mitchell, Robert J. Myers, and Howard Young, eds., *Prospects for Social Security Reform* (University of Pennsylvania Press: Philadelphia, 1999)

Alan Greenspan, Remarks at the Abraham Lincoln Award Ceremony of the Union League of Philadelphia, Philadelphia, Pennsylvania, December 6, 1996

_____, "Social security," Testimony before the Committee on Budget, U.S. Senate, January 28, 1999

Jonathan Gruber and David Wise, eds., *Social Security and Retirement Around the World* (University of Chicago Press: Chicago, 1999)

Jonathan Gruber and Peter Orszag, "What to Do About the Social Security Earnings Test?" Issue in Brief #1, Center for Retirement Research, Boston College, July 1999

Hugh Heclo, "A Political Science Perspective on Social Security Reform," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998)

Peter Heller, "Rethinking Public Pension Initiatives," International Monetary Fund, Working Paper 98/61, April 1998

Richard Hemming, "Should Public Pensions be Funded?" International Monetary Fund, Working Paper 98/35, March 1998

Robert Holzmann, "A World Bank Perspective on Pension Reform," paper prepared for the Joint ILO-OECD Workshop on the Development and Reform of Pension Schemes, Paris, France, December 15-17, 1997

_____, "Fiscal Alternatives of Moving from Unfunded to Funded Pensions," OECD Development Centre Technical Papers No. 126, August 1997

Estelle James, "Outreach #17: Policy Views from the World Bank Policy Research Complex," August 1995

_____, "Public pension plans in international perspective: Problems, reforms, and research ideas," in Salvador Valdes-Prieto, ed., *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997).

_____, "Pension Reform: An Efficiency-Equity Tradeoff?" in Nancy Birdsall, Carol Graham, and Richard Sabot, eds., *Beyond Tradeoffs* (Brookings Institution Press: Washington, 1998)

_____, Gary Ferrier, James Smalhout, and Dimitri Vittas, "Mutual Funds and Institutional Investments: What is the Most Efficient Way to Set Up Individual Accounts in a Social Security System?" NBER Working Paper Number 7049, 1999

_____, and Dimitri Vittas, "Annuities Markets in Comparative Perspective: Do Consumers Get Their Money's Worth?", World Bank, September 1999

Kevin James, "The Price of Retail Investing in the UK," February 8, 1999

David Kalish and Tetsuya Aman, "Retirement Income Systems: The Reform Process Across OECD Countries," Social Policy Division, OECD, 1997

Stephen Kay, Testimony before the Subcomittee on Social Security of the Ways and Means Committee, U.S. House of Representatives, September 18, 1997

Dean Leimer, "A Guide to Social Security Money's Worth Issues," *Social Security Bulletin*, Summer 1995

Arthur Levitt, speech at the John F. Kennedy School of Government, Harvard University, October 19, 1998

Andrew Lyon, "Individual Marginal Tax Rates under the U.S. Tax and Transfer System," in David Bradford, ed., *Distributional Analysis of Tax Policy* (American Enterprise Institute Press: Washington, 1995)

George Mackenzie, Philip Gerson, and Alfredo Cuevas, "Pension Regimes and Saving," International Monetary Fund, Occasional Paper No. 153, 1997

Rajnish Mehra and Edward Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics*, March 1985, pages 145-161

Robert Merton, "On the role of social security as a means for efficient risk sharing in an economy where human capital is not tradeable," in Zvi Bodie and John Shoven, eds., *Issues in Pension Economics* (University of Chicago Press: Chicago, 1983)

Robert Merton, Zvi Bodie, and Alan Marcus, "Pension Plan Integration as Insurance Against Social Security Risk," in Zvi Bodie, John Shoven, and David Wise, eds., *Issues in Pension Economics* (University of Chicago Press: Chicago, 1987)

Olivia Mitchell, "Administrative Costs in Public and Private Retirement Systems," in Martin Feldstein, ed., *Privatizing Social Security* (University of Chicago Press: Chicago, 1998)

_____ and Robert S. Smith, "Pension Funding in the Public Sector." *Review of Economics and Statistics* (May 1994), 278-90

_____ and Roderick Carr, "State and Local Pension Plans." Cambridge, MA: NBER, Working Paper No. 5271 (1995)

_____ and Ping-Lung Hsin, "Public Pension Governance and Performance" in Salvador Valdés-Prieto ed., *The Economics of Pensions: Principles, Policies, and International Experience*

Franco Modigliani, Marialuisa Ceprini, and Arun Muralidhar, "A Solution to the Social Security Crisis From an MIT Team," Sloan Working Paper 4051, July 1999

Alicia H. Munnell and Annika Sundén, "Investment Practices Of State And Local Pension Funds: Implications For Social Security Reform," presented at the Pension Research Council Conference, Wharton School, University of Pennsylvania, April 26-27, 1999

Mamta Murthi, J. Michael Orszag, and Peter R. Orszag, "The Charge Ratio on Individual Accounts: Lessons from the U.K. Experience, "Birkbeck College Working Paper 2/99, March 1999

_____, "The Value for Money of Annuities in the UK: Theory, Experience and Policy," Birkbeck College, July 1999

National Academy of Social Insurance, "Report of the Panel on Privatization of Social Security," available at http://www.nasi.org and as Peter Diamond, ed., *Issues in Privatizing Social Security: Report of an Expert Panel of the National Academy of Social Insurance* (MIT Press: Cambridge, 1999)

Mitchell A. Orenstein, "A Political-Institutional Analysis of Pension Reform in the Postcommunist Countries," World Bank Political Economic of Pension Reform Project, final draft, May 1999

J. Michael Orszag, Peter R. Orszag, Dennis J. Snower, and Joseph E. Stiglitz, "The Impact of Individual Accounts: Piecemeal vs. Comprehensive Approaches," presented at the Annual Bank Conference on Development Economics, The World Bank, April 29, 1999

Peter R. Orszag, "Individual Accounts and Social Security: Does Social Security Really Provide a Lower Rate of Return?" Center on Budget and Policy Priorities, March 1999

Robert Palacios and Edward Whitehouse, "The role of choice in the transition to a funded pension system," World Bank Social Protection Division, 1998

George G. Pennacchi, "Government Guarantees on Pension Fund Returns," World Bank working paper, March 1998

Roberto Rocha, Joaquinn Gutierrez, and Richard Hinz, "Improving the Regulation and Supervision of Pension Funds: Are There Lessons from the Banking Sector?" World Bank, September 1999

Michael Rothschild and Joseph Stiglitz, "Increasing Risk, I: A Definition," *Journal of Economic Theory*, 1970: 2, 225-243

_____,"Increasing Risk, II: Its Economic Consequences," *Journal of Economic Theory*, 1971: 3, 66-84

Paul Samuelson, "An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money," *Journal of Political Economy*, December 1958, pages 219-234

Jeremy Siegel, *Stocks for the Long Run* (McGraw Hill: New York, 1998).

Andrew Samwick and Jonathan Skinner, "Abandoning the Nest Egg? 401(k) Plans and Inadequate Pension Saving," in Sylvester Schieber and John Shoven, editors, *Public Policy Toward Pensions* (MIT Press: Cambridge, 1997)

David Slater, "Prudence and Performance: Managing the CPP Investment Board," C.D. Howe Institute Commentary, Toronto

Social Security Administration, *Social Security Programs Throughout the World 1997*

Eugene Steuerle and Jon Bakija, *Retooling Social Security for the 21st Century* (Urban Institute Press: Washington, 1994), pages 115-126.

Joseph E. Stiglitz, "On the Irrelevance of Corporate Financial Policy," *American Economic Review*, December 1974, pages 851-866

_____, "Utilitarianism and Horizontal Equity: The case for random taxation," *Journal of Public Economics*, 18 (1982), 1-33

_____, "On the Relevance or Irrelevance of Public Financial Policy: Indexation, Price Rigidities, and Optimal Monetary Policy," in R. Dornbusch and M. Simonsen, editors, *Inflation, Debt, and Indexation* (MIT Press: Cambridge, 1983), pages 183-222

_____, "On the Relevance or Irrelevance of Public Financial Policy," *Proceedings of the 1986 International Economics Association Meeting*, 1988, pages 4-76

_____, "Taxation, Public Policy, and the Dynamics of Unemployment," Keynote Address to the 54th Congress of the International Institute of Public Finance, August 24, 1998

Annika Sundén, "The Swedish Pension Reform," September 1998

Nicholas Timmins, "The biggest question in town: America faces critical choices over the future of its most popular spending programme," *Financial Times,* March 20, 1998

Salvador Valdés-Prieto, "Financing a reform toward funding," in Salvador Valdés-Prieto, ed., *The economics of pensions: Principles, policies, and international experience* (Cambridge University Press: Cambridge, 1997)

R. Kent Weaver, "The Politics of Pensions: Lessons from Abroad," in R. Douglas Arnold, Michael J. Graetz, and Alicia H. Munnell, eds., *Framing the Social Security Debate: Values, Politics, and Economics* (Brookings Institution Press: Washington, 1998), page 200.

The World Bank, *Averting the Old Age Crisis: Policies to Protect the Old <u>and</u> Promote Growth* (Oxford University Press: Oxford, 1994).