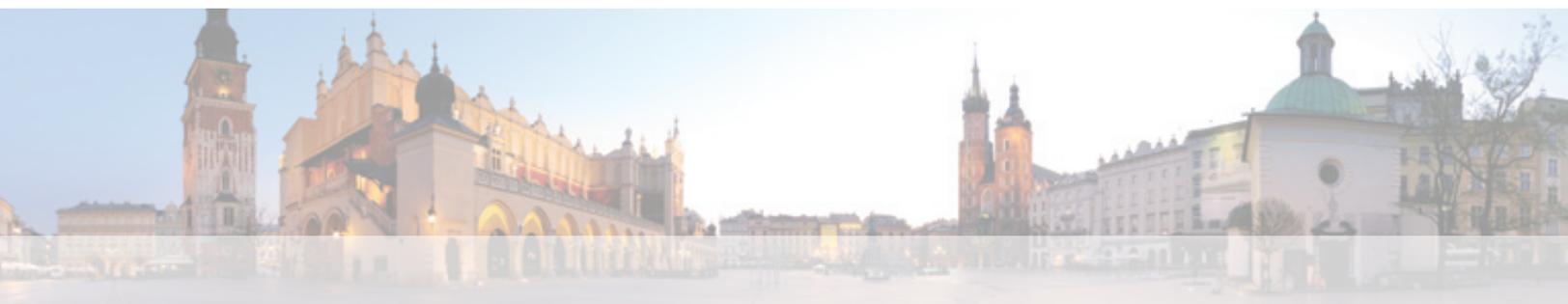


Global Aging and Retirement Security in Emerging Markets

Reassessing the Role of Funded Pensions

Authors **Richard Jackson**
Keisuke Nakashima





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The Global Aging Institute does not take specific policy positions; accordingly, all views expressed herein should be understood to be solely those of the author(s).

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introduction

Although it is today's developed countries that are leading the way into humanity's graying future, global aging, as the name implies, is a global phenomenon. The developing world as a whole is still much younger than the rich world, but it too is aging, with some emerging markets traversing the entire demographic distance from young and growing to old and stagnant or declining at a breathtaking pace. By 2050, Mexico will be nearly as old as the United States and Brazil, Chile, China, and Thailand will be older. Meanwhile, South Korea will be vying with Germany, Italy, and Japan for the title of oldest country on earth.¹ (See figure 1.)

By 2050, Mexico will be nearly as old as the United States and Brazil, Chile, and China will be older.

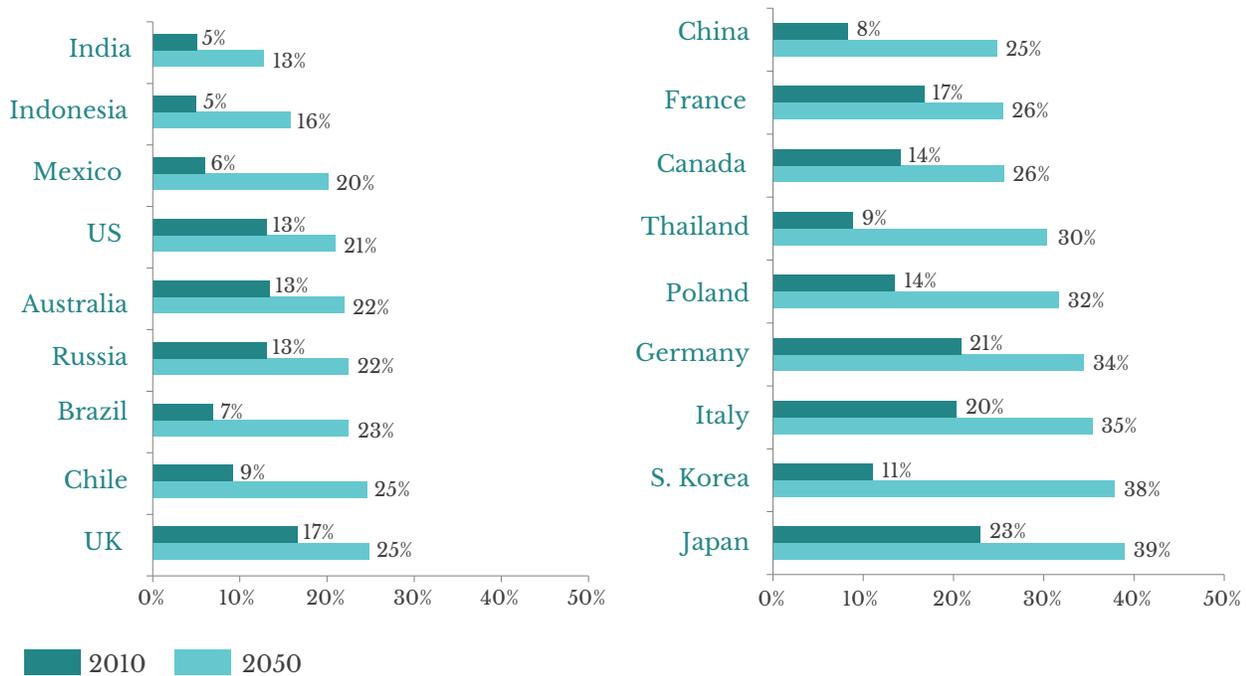
While today's fully developed economies were all affluent societies with mature welfare states by the time they became

aging societies, many of today's emerging markets are aging before they have had time to put in place adequate government or market substitutes for traditional old-age family support networks. If the challenge for most developed countries is how to reduce the rising burden that generous state retirement systems threaten to place on the young, without at the same time undermining the security they now provide to the old, the challenge for many emerging markets is precisely the opposite: how to guarantee a measure of security to the old that does not now exist, without at the same time placing a large new burden on the young.

Until recently, there was a growing consensus that, in meeting this challenge, funded pension systems, in which worker contributions are saved and invested and benefits are paid out of the accumulated assets, have potentially important advantages over pay-as-you-go systems, in which current workers are taxed to pay for the benefits of current retirees. Some emerging markets, especially in Asia and

1. Unless otherwise noted, all demographic data cited in the report come from *World Population Prospects: The 2012 Revision* (New York: UN Population Division, 2013). For a discussion of the UN projections, as well as the other major data sources used in the report, see the "Technical Note on Data and Sources."

Elderly (Aged 65 & Over), as a Percent of the Population in 2010 and 2050



Source: *World Population Prospects: The 2012 Revision* (New York: UN Population Division, 2013)

FIGURE 1

Africa, have long had “provident funds,” which are funded state pension systems in which all assets are centrally managed by the government. Then in 1981, Chile pioneered a new “personal accounts” state pension model in which, though the pension system is publicly mandated and regulated, assets are privately managed by competing pension fund companies. In the years that followed, spurred in part by the recommendations of the World Bank in its seminal *Averting the Old Age Crisis*,² nearly two dozen emerging markets, mostly

in Latin America and Central and Eastern Europe, have introduced personal accounts systems that substitute in whole or in part for pay-as-you-go state pension systems. Meanwhile, from Brazil to China and South Korea, many emerging markets that have retained their pay-as-you-go state pension systems are building supplemental private pension systems.

The advantages of the funded model for aging societies, and especially for aging emerging markets, are large and important.

2. World Bank, *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth* (New York: Oxford University Press, 1994).

3. The term “replacement rate” refers to the share of preretirement wages replaced by pension benefits. Replacement rates can be calculated in various ways. In this report, they are always calculated on a final salary basis—that is, as a share of wages in the year immediately preceding retirement.

At the micro level, funded pension systems can generate higher rates of return than pay-as-you-go systems can, and hence can offer higher replacement rates at any given contribution rate.³ While pay-as-you-go systems face a zero-sum trade-off between raising taxes or cutting benefits as countries age, funded systems can help them to escape the tyranny of their own demography. Meanwhile, at the macro level, funded pension systems can help to speed the development of capital markets, a crucial development priority as the populations and economies of emerging markets mature. Depending on how the systems are structured and financed, they can also take pressure off government budgets, which will be under growing stress from rising retirement and health-care costs, while helping to maintain adequate rates of savings and investment, another crucial priority for aging societies.

Yet at the same time, the benefits of the funded model have often been oversold. Many early advocates of personal accounts systems, including those at the World Bank, believed that they would reduce labor-market informality, increase pension coverage rates, and reduce old-age poverty. When this did not happen, disappointment in the model began to grow. Nor did it help that many personal accounts systems were initially poorly designed, with inadequate contribution rates, high administrative fees, overly restrictive portfolio allocation rules, and ineffective minimum benefit guarantees.

In most Latin American countries, the disappointment has led to constructive policy responses. Beginning with Chile's "reform of the reform" in 2008, a new round of "second generation" pension reforms has sought to improve the equity and efficiency of the personal accounts model by fashioning more effective poverty backstops, lowering administrative fees, and liberalizing portfolio allocation rules.⁴ Yet despite the promise of these new reforms, the momentum toward funding state pension systems has clearly stalled. While supplemental private pension systems continue to be created and expanded throughout most of the developing world, there has only been one new mandatory personal accounts system established in the past ten years (Panama's). A few countries, including Argentina, Hungary, and Poland, have actually reversed direction, dismantling their funded systems and replacing them with pay-as-you-go ones.

This is unfortunate, since there is little question that funded pension systems can play an important role in helping emerging markets confront the age waves looming in their future. Indeed, they may be an essential component of any successful strategy.

Funded pension systems can help emerging markets confront the age waves looming in their future.

4. See Stephen J. Kay and Tapen Sinha, eds., *Lessons from Pension Reform in the Americas* (New York: Oxford University Press, 2008); Carmelo Mesa-Lago, *Reassembling Social Security: A Survey of Pensions and Health Care Reforms in Latin America* (Oxford: Oxford University Press, 2008); Robert Holzmann, David A. Robalino, and Noriyuki Takayama, eds., *Closing the Coverage Gap: The Role of Social Pensions and Other Retirement Income Transfers* (Washington, DC: World Bank, 2009); and Barbara E. Kritzer, Stephen J. Kay, and Tapen Sinha, "Next Generation of Individual Account Pension Reforms in Latin America," *Social Security Bulletin* 71, no. 1 (February 2011).

To be sure, funded pensions by no means constitute a complete solution to the aging challenge. To ensure the overall adequacy of the retirement system, a tax-financed floor of old-age poverty protection, or “social pension,” is also essential. Yet this is equally true for pay-as-you-go pension systems in emerging markets with large informal sectors. Nor does the mere fact that a state pension system is funded necessarily confer an advantage if the system is poorly designed, which, despite the recent reforms, remains the case for some personal accounts systems. Yet pay-as-you-go systems can also be poorly designed, with the biggest problem being that they often promise benefits they cannot possibly deliver as societies age. Funded systems are sometimes criticized for shifting risks to workers. But pay-as-you-go systems also entail risks that may be as large or even larger.

This report explores the challenge of ensuring the adequacy and sustainability of retirement systems in aging emerging markets, and in particular the role of funded pensions. Although there will be some discussion of voluntary supplemental pension systems, the focus will be almost entirely on mandatory funded state pension systems that are intended to substitute in whole or in part for mandatory pay-as-you-go state pension systems. The report will draw on evidence from countries around the world, but will devote most attention to Latin America and its personal accounts systems, which we believe continue to provide the most useful model for other emerging markets.

Latin America’s personal accounts systems continue to provide a useful model for other countries.

Before proceeding further, a word of explanation about our use of the term “state pension system” may be in order. Although the Chilean personal accounts model is sometimes referred to as “privatization,” this is a misnomer. Mandatory personal accounts systems are established by the state, are regulated by the state, and are designed by the state to serve the same public purpose as mandatory pay-as-you-go state pension systems. As such they remain an integral part of a nation’s overall social insurance system and should be considered state pension systems, even if fund balances are personally owned and privately managed. It is also important to understand that, with some exceptions for public employee plans in a few countries, all funded state pension systems are defined-contribution systems, meaning that it is the contribution level that is fixed by statute, rather than the ultimate benefit level. Traditionally, all pay-as-you-go state pension systems were defined-benefit systems, though many countries are now transitioning to “notional defined-contribution systems,” which have some of the benefits of personal accounts systems, including stronger work incentives and more flexible retirement ages, though not the economic benefits of funding.

The first chapter describes the broad demographic, economic, and social

trends shaping the future environment for retirement security in the developing world. The second chapter discusses the potential micro and macro advantages of the funded pension model, while also addressing key criticisms that have been leveled against it. The third chapter examines some of the most critical design challenges facing personal accounts systems, from setting contribution rates to managing longevity risk.

A conclusion then recaps the report's major findings—and calls on policymakers to make addressing the aging challenge an urgent priority. The fact that today's emerging markets are aging at an earlier stage of economic and social development than today's developed countries creates an opportunity, but also raises the stakes of retirement reform. On the one hand, emerging markets, most of which are unburdened by large unfunded pension liabilities, have much greater flexibility than the developed countries to design retirement systems that are adapted to the new demographic realities. On the other hand, failure to rise to the challenge could result not just in fiscal stress and economic hardship, but in a humanitarian aging crisis of immense proportions. ►

chapter one

THE DEVELOPING WORLD'S AGING CHALLENGE

The developing world is in the midst of a stunning demographic transformation. Since the mid-1970s, the average annual growth rate in the developing world's population has fallen from 2.0 to 1.1 percent, while its median age has risen from 20 to 27—and these are just the averages. As the transformation continues to unfold, population growth will keep decelerating and population age structures will shift inexorably upward. In 1975, there were ten children under age 15 in Latin America for every one elder aged 65 and over. By 2050, there will be slightly more elders aged 65 and over in Latin America than children under age 15—and in East Asia, there will be twice as many. From Chile to China, emerging markets that most people in the developed world still associate with large families, large youth bulges, and large labor surpluses will be utterly transformed.

There are two forces behind the demographic transformation. The first force is falling fertility. People are having fewer babies, and this decreases the relative number of young in the population.

Although the trend toward lower birthrates began in the developed world, it has now overtaken most of the developing world as well. Fertility has fallen beneath the so-called 2.1 replacement rate needed to maintain a stable population in all of East Asia, the only exception being Mongolia. It has also fallen well beneath the replacement rate throughout Central and Eastern Europe, and it is near, at, or beneath the replacement rate in most of Latin America's leading economies. Although fertility is still higher in most of South Asia and the Greater Middle East, it is falling rapidly there as well. The only region largely bypassed by the trend is sub-Saharan Africa. (See table 1.)

The second force is rising life expectancy. People are living longer, and this increases the relative number of old in the population. Worldwide, life expectancy at birth has increased by roughly twenty years since 1950—a larger gain over the past six decades than humanity had achieved over the previous six millennia. In the developed world, life expectancy has now risen into the late seventies or early eighties

Total Fertility Rate and Life Expectancy at Birth, 1950-2015

	Total Fertility Rate				Life Expectancy at Birth			
	1950-55	1970-75	1990-95	2010-15	1950-55	1970-75	1990-95	2010-15
EAST ASIA	6.0	4.7	2.0	1.6	44.8	64.6	70.2	75.5
EASTERN EUROPE	2.9	2.2	1.6	1.4	59.9	69.1	68.3	70.0
GREATER MIDDLE EAST	6.6	6.2	4.6	3.0	44.6	56.0	65.6	70.2
LATIN AMERICA	5.9	5.1	3.0	2.2	52.1	61.4	69.2	74.8
SOUTH ASIA	5.9	5.5	3.5	2.4	39.2	52.0	61.6	68.2
SUB-SAHARAN AFRICA	6.4	6.6	6.1	5.2	36.8	44.6	50.0	58.0

Source: UN Population Division (2013)

TABLE 1

in every country, and it has reached the same level, or nearly the same level, in some emerging markets. Life expectancy in China today is 75 (up from 45 in 1950), in Mexico it is 77 (up from 51 in 1950), and in South Korea it is 81 (up from 48 in 1950).

As emerging markets age, they will encounter many of the same challenges now confronting today's developed economies.

As their populations age, today's emerging markets will encounter many of the same challenges now confronting today's developed economies, from rising fiscal burdens to graying workforces and declining rates of savings and investment. Perhaps most fatefully, they will find it increasingly difficult to provide a decent standard of living for the old without imposing a crushing burden on the young.

There is, however, an important difference—and one that may make the aging challenge even more daunting. The developing world's age waves will be arriving in societies that are not only less affluent, but that in many cases have not yet put in place the full social protections of a modern welfare state. In India, barely one in ten workers earns a formal pension benefit of any kind, public or private. In Brazil and Mexico, just two in five do. Even in Chile and South Korea, the share is just two in three. In many emerging markets, the majority of elders still depend heavily on the extended family for economic support. Yet traditional family support networks are already under stress as countries urbanize and modernize, and will soon come under intense new demographic pressure as family size declines. In Brazil and South Korea, the average number of children that the typical elder can turn to for support will decline by 1.7 between 2010 and 2040. In China it will decline by 2.3 and in Mexico it will decline by 2.4.⁵

5. The projections of family size are from Richard Jackson, Neil Howe, and Tobias Peter, *The Global Aging Preparedness Index, Second Edition* (Washington, DC: CSIS, 2013).

The good news is that most of the developing world's age waves, unlike those in the developed world, still lie well over the horizon. While falling fertility and rising life expectancy ultimately lead to a dramatic aging of the population, they first open up a window of opportunity for economic and social development. When a country's fertility rate first falls, the total dependency ratio of children and elderly to working-age adults declines—or, to look at it another way, the share of the population in the working years rises. (See tables 2 and 3.) In effect, the number of producers increases relative to the number of consumers, which, all other things being equal, boosts the growth rate in per capita living standards. Beyond this simple arithmetic, declining dependency burdens can also alter economic behavior in ways that further accelerate the pace of living-standard growth. Labor-force participation rates

may increase, because fewer children free up adult time, and especially the time of women, for participation in the market economy. Declining family size, together with rising life expectancy, also increases incentives to invest more in the “quality” of children, and thus of the future workforce. The overall dynamic is called the demographic dividend, and it has been a key force behind the development of today's emerging markets, and especially the meteoric rise of East Asia.⁶

Much of the developing world now finds itself traversing a demographic sweet spot.

To be sure, the pace and timing of the developing world's demographic transformation vary tremendously. In some parts of the developing world, including

Total Dependency Ratio: Number of Children (Aged 0-19) and Elderly (Aged 65 & Over) per 100 Working-Age Adults (Aged 20-64), 1975-2050

	1975	1990	2010	2030	2050
EAST ASIA	115	83	53	60	76
EASTERN EUROPE	74	68	55	64	74
GREATER MIDDLE EAST	136	127	89	73	70
LATIN AMERICA	129	106	79	69	75
SOUTH ASIA	124	108	80	66	67
SUB-SAHARAN AFRICA	137	143	133	114	94

Source: UN Population Division (2013)

TABLE 2

6. See, for example, David E. Bloom and Jeffrey Williamson, “Demographic Transitions and Economic Miracles in Emerging Asia,” *World Bank Economic Review* 12, no. 3 (September 1998); Jeffrey Williamson, “Demographic Change, Economic Growth, and Inequality,” in *Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World*, eds. Nancy Birdsall, Allen C. Kelley, and Steven Sinding (New York: Oxford University Press, 2001); and David E. Bloom, David Canning, and Jaypee Sevilla, *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change* (Santa Monica, CA: RAND, 2003).

Working-Age Population (Aged 20-64), as a Percent of the Total Population, 1975-2050

	1975	1990	2010	2030	2050
EAST ASIA	46%	55%	65%	62%	57%
EASTERN EUROPE	58%	59%	65%	61%	58%
GREATER MIDDLE EAST	42%	44%	53%	58%	59%
LATIN AMERICA	44%	48%	56%	59%	57%
SOUTH ASIA	45%	48%	55%	60%	60%
SUB-SAHARAN AFRICA	42%	41%	43%	47%	52%

Source: UN Population Division (2013)

TABLE 3

most of sub-Saharan Africa and parts of the Greater Middle East, it has stalled in its early stages. Here, the demographic window of opportunity for rapid development has not yet opened—and may never do so unless fertility rates fall. Meanwhile, in other parts, the demographic transformation has proceeded at a breathtaking pace. The countries of East Asia, where fertility fell faster than elsewhere, are already approaching the demographic tipping point where the decline in the number of children is overtaken by the growth in the number of elderly, and dependency burdens once again begin to rise. Demographics will also be leaning against economic growth throughout Central and Eastern Europe, whose fertility decline was not as precipitous as East Asia’s, but began much earlier. Here too, the demographic window of opportunity for rapid development is already closing. Still, much of the developing world, including all of South Asia, all of Latin America, and parts of the Greater Middle East, now finds itself

traversing a demographic sweet spot that is projected to last for several decades.

The aging of the developing world’s population thus poses two fundamental challenges. The first challenge is to leverage the demographic dividend created by falling fertility. The favorable demographics that most of the developing world now enjoy may open up a window of opportunity for economic and social development, but they do not guarantee success. Without sound macroeconomic management, pro-growth business and labor-market policies, good governance, and large-scale investments in infrastructure and human capital, this one-time opportunity to boost society’s income and wealth may be squandered. The importance of the overall economic, social, and political environment is evident in the vast differences in economic performance across the developing world. If demography were all that mattered, most emerging markets would be growing as fast, or nearly as fast, as those in East Asia.

All emerging markets need both a contributory pension system and a noncontributory floor of protection against poverty in old age.

The second challenge is to prepare for the age waves looming over the horizon. Most experts agree that all emerging markets need both a contributory pension system, whose benefits help to replace the income of participants when they no longer work, and a noncontributory one to serve as a floor of protection against poverty in old age.⁷ Although some developed countries try to meet the twin retirement policy goals of income replacement and poverty protection within the same contributory state pension system, this is not feasible in most emerging markets, where the combination of weak enforcement and high levels of self-employment and irregular employment make it nearly impossible for

a contributory system to ensure anything close to universal coverage. Putting in place a robust old-age safety net is not just a matter of ensuring social adequacy. In rapidly aging emerging markets, where the forces of modernization and declining family size are combining to weaken traditional family support networks, the failure to do so could lead to social and political crisis.

As for the contributory pension system, it must be both adequate and sustainable. While the pay-as-you-go model may seem to be the more tempting choice when societies are still young and growing and active contributors greatly outnumber retired beneficiaries, the payroll tax surpluses eventually narrow and disappear and the unfunded liabilities come due. In the long run, we believe that the funded model is more likely to deliver reliable retirement security as today's emerging markets age. ►

7. See, among others, Rafael Rofman, Ignacio Apella, and Evelyn Veza, eds., *Beyond Contributory Pensions: Fourteen Experiences with Coverage Expansion in Latin America* (Washington, DC: World Bank, 2015); Javier Olivera and Blanca Zuluaga, "The Ex-Ante Effects of Non-contributory Pensions in Colombia and Peru," *Journal of International Development* 26, no. 7 (October 2014); and Holzmann, Robalino, and Takayama, *Closing the Coverage Gap*.

chapter two

THE ADVANTAGES OF THE FUNDED MODEL

For more than two decades, the advantages of the funded pension model, and in particular personal accounts systems, have been the subject of much research and debate.⁸ If advocates of the model have at times been guilty of misrepresenting its advantages, critics have been just as guilty of misrepresenting its shortcomings, which often turn out to be shortcomings of the pay-as-you-go model as well. Often lost in the back and forth is any realistic assessment of how well the two models are likely to fare in enabling emerging markets to meet what is shaping up to be one of the defining challenges of the twenty-first century: the dramatic aging of their populations.

This chapter discusses the potential advantages of the funded pension model for aging emerging markets, while also addressing key criticisms that have been

leveled against it. The first section, which focuses on the central income replacement function of contributory pension systems, presents replacement rate matrices which demonstrate that, under most reasonable assumptions, funded systems will outperform pay-as-you-go systems as today's emerging markets age. The second section turns to the challenge of ensuring broad coverage and adequate old-age poverty protection, while the third considers the challenge posed by market risk and political risk. The fourth and final section briefly considers the potential macro benefits of funded systems, and in particular their impact on fiscal balances, national savings, and capital market development.

INCOME REPLACEMENT

The most basic goal of any contributory pension system is to provide participants an adequate retirement income at an

8. Among the more important studies are Zvi Bodie, Alan J. Marcus, and Robert C. Merton, "Defined Benefit versus Defined Contribution Pension Plans: What Are the Real Trade-offs?" in *Pensions in the U.S. Economy*, eds. Zvi Bodie, John B. Shoven, and David A. Wise (Chicago: University of Chicago Press, 1988); World Bank, *Averting the Old Age Crisis*; Robert Holzmann and Joseph E. Stiglitz, eds., *New Ideas about Social Security: Toward Sustainable Pension Systems in the 21st Century* (Washington, DC: World Bank, 2001); Indermit S. Gill, Truman Packard, and Juan Yermo, *Keeping the Promise of Social Security in Latin America* (Washington, DC: World Bank, 2005); Kay and Sinha, eds., *Lessons from Pension Reform in the Americas*; and OECD, *Pensions at a Glance: Latin America and the Caribbean* (Paris: OECD, 2014).

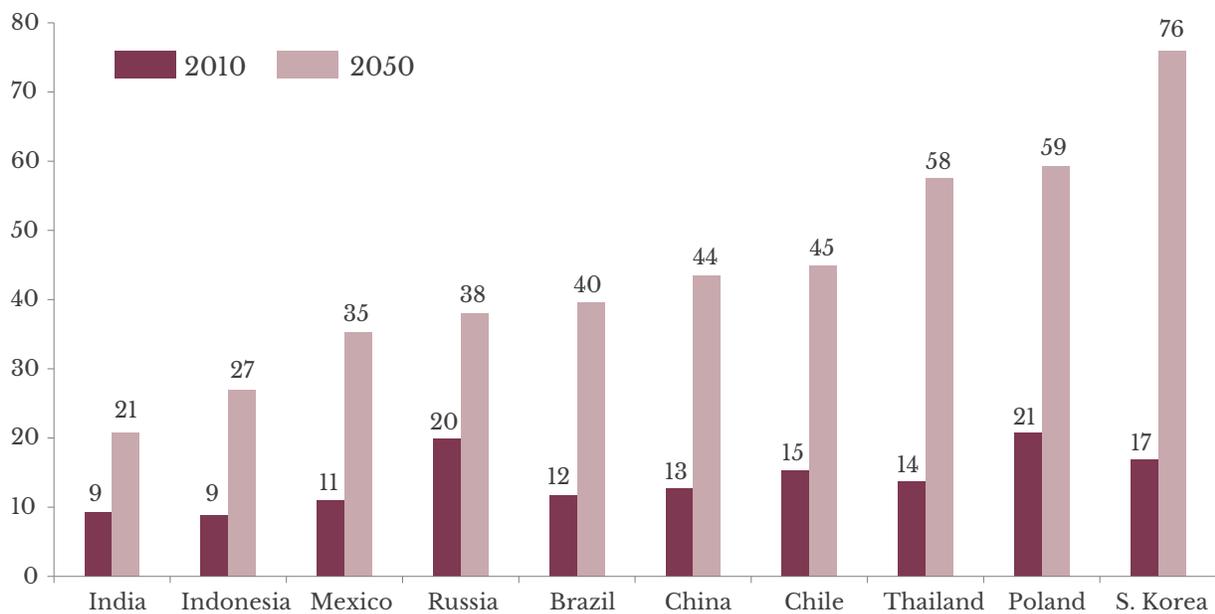
By 2050, the ratio of elderly to working-age adults is on track to double, triple, or even quadruple in today's emerging markets.

affordable cost. As today's emerging markets age, achieving this goal will become a growing challenge. Falling fertility and rising life expectancy translate directly into a rising aged dependency ratio of elderly to working-age adults, and, all other things being equal, a rising aged dependency ratio in turn translates directly into a rising cost rate for pay-as-you-go pension systems. By 2050, the aged dependency ratio, and along with it the potential burden on workers

and taxpayers, is on track to double, triple, or even quadruple in today's emerging markets. (See figure 2.)

As this demographic shift gathers momentum, funded pension systems will almost certainly be able to deliver the same replacement rate at a lower contribution rate than pay-as-you-go pension systems could—or, conversely, a higher replacement rate at the same contribution rate. In eras of rapid workforce and wage growth, the rate of growth in worker payroll, which determines the return to contributions in a pay-as-you-go pension system, may exceed the rate of return to capital, which determines the return to contributions in a funded system. But when workforces grow more slowly or contract, and when

Aged Dependency Ratio: Number of Elderly (Aged 65 & Over) per 100 Working-Age Adults (Aged 20-64) in 2010 and 2050



Source: UN Population Division (2013)

FIGURE 2

Average Annual Growth Rate in the Working-Age Population (Aged 20-64), by Decade, 1980s-2040s

	1980s	1990s	2000s	2010s	2020s	2030s	2040s
BRAZIL	2.9%	2.4%	2.0%	1.2%	0.5%	0.0%	-0.4%
CHILE	2.6%	1.9%	1.7%	1.1%	0.1%	0.0%	-0.1%
CHINA	2.9%	1.8%	1.6%	0.4%	-0.3%	-0.8%	-0.9%
INDIA	2.6%	2.4%	2.2%	1.7%	1.2%	0.8%	0.3%
INDONESIA	3.0%	2.6%	1.9%	1.6%	1.2%	0.4%	0.1%
MEXICO	3.1%	3.1%	2.0%	1.8%	1.2%	0.4%	0.0%
POLAND	0.6%	0.4%	0.8%	-0.6%	-0.9%	-0.7%	-1.8%
RUSSIA	0.7%	0.1%	0.5%	-0.7%	-1.0%	-0.6%	-1.4%
S. KOREA	2.9%	1.4%	0.8%	0.5%	-0.9%	-1.3%	-1.3%
THAILAND	3.6%	2.1%	1.3%	0.3%	-0.6%	-1.2%	-1.3%

Source: UN Population Division (2013)

TABLE 4

wage growth slows, the advantage shifts to the funded model.⁹ Over the next few decades, workforce growth is due to slow dramatically across most of the developing world, as the delayed impact of recent declines in fertility rates feeds its way up the age ladder. (See table 4.) Meanwhile, at least in more economically advanced emerging markets where the potential for huge leaps in productivity has been exhausted, wage growth will inevitably slow to something closer to developed-world levels.

To illustrate the advantage of the funded model in aging societies, we have projected

As emerging markets age, funded pension systems will be able to deliver higher replacement rates than pay-as-you-go systems.

final salary replacement rates in the year 2050 for pay-as-you-go and personal accounts systems of equivalent cost in three countries with very different demographic futures: India (which is due to experience modest population aging), Chile (which is

9. For the theory of pay-as-you-go and funded rates of return, see, among others, Paul A. Samuelson, "An Exact Consumption-Loan Model of Interest with and without the Social Contrivance of Money," *Journal of Political Economy* 66, no. 6 (December 1958); Henry J. Aaron, "The Social Insurance Paradox," *Canadian Journal of Economics and Political Science*, 32 (August 1966); Horst Siebert, "Pay-As-You-Go versus Capital Funded Pension Systems: The Issues," Kiel Working Papers 816 (Kiel, Germany: Kiel Institute for the World Economy, 1997); Martin Feldstein and Jeffrey B. Liebman, "Social Security," in *Handbook of Public Economics*, vol. 4, eds. Alan J. Auerbach and Martin Feldstein (Amsterdam: Elsevier B.V., 2002); and World Bank, *Averting the Old Age Crisis*.

due to experience significant population aging), and South Korea (which is due to experience extreme population aging). Note that the replacement rate projections are for stylized pension systems and do not refer to the existing pension systems in any of the countries. In all three countries, and for both the pay-as-you-go and the personal accounts systems, the contribution rate is assumed to be 12.5 percent, careers are assumed to last forty years, and workers are assumed to retire at age 65. The differences in projected replacement rates in India, Chile, and South Korea are thus due entirely to differences in their demographics. For the personal accounts projections, where life expectancy at age 65 is the only demographic variable that affects replacement rates, these differences are relatively small. For the pay-as-you-go projections, where replacement rates also depend on the rate of growth in the working-age population, they are huge.

For each of the three countries, we also show replacement rates under different real wage growth and real rate of return assumptions. For the personal accounts projections, both variables are relevant. While a higher real rate of return raises the replacement rate of a personal accounts system, a higher rate of real wage growth lowers it. Although the dynamic is not often appreciated, it is an immutable fact of retirement economics that the faster income is growing the larger is the share of income that needs to be saved each year in order to generate the same final salary replacement rate. Although pay-as-you-go

replacement rates are not affected by rates of return, they vary with real wage growth, which here pushes in the opposite direction and raises replacement rates. Personal accounts replacement rates are therefore projected under a range of assumptions for both variables and presented as matrices. Pay-as-you-go replacement rates are projected under different real wage growth assumptions and presented on a single row beneath each personal accounts replacement rate matrix. The shaded cells in the matrices indicate the combinations of real rate of return and real wage growth assumptions under which the funded model would outperform the pay-as-you-go model given the demographics of the country in question. (See tables 5, 6, and 7.)

First consider India, with its buoyant fertility rate and still youthful demographics. Although India is aging, it will still have a rapidly growing population and workforce over the next several decades. Moreover, as it shifts its vast reservoir of underemployed labor from the agricultural sector to the more productive manufacturing sector, real wage growth is likely to be high, perhaps even in the 3 to 5 percent range, a performance achieved by many of East Asia's emerging markets during their most rapid growth phase. Under these circumstances, as table 5 shows, a pay-as-you-go pension system is likely to deliver higher replacement rates than a personal accounts one. Indeed, given India's youthful demographics, real wage growth would have to average no more than 2.0 percent per year for the advantage to shift decisively to the funded model. At

India: Stylized Replacement Rate Projections

Personal Accounts Replacement Rates in 2050 versus Affordable PAYGO Replacement Rates, Assuming the Same 12.5 Percent Contribution Rate*

		Real Wage Growth Rate						
		FUNDED	5.0%	4.0%	3.0%	2.0%	1.0%	
Real Rate of Return	3.0%		26%	31%	37%	44%	54%	} Outperforms PAYGO
	3.5%		29%	35%	42%	51%	63%	
	4.0%		33%	40%	48%	59%	73%	
	4.5%		38%	45%	55%	68%	84%	
	5.0%		43%	52%	63%	78%	98%	
	5.5%		49%	59%	72%	90%	114%	
	6.0%		55%	68%	84%	105%	133%	
PAYGO			78%	73%	68%	63%	58%	

*Personal accounts projections assume a 40-year career, retirement at age 65, and administrative fees equal to 0.5 percent of assets. PAYGO projections assume retirement at age 65 and price indexation of current benefits.
Source: GAI calculations

TABLE 5

higher levels of wage growth, a personal accounts system would struggle to deliver adequate replacement rates.

Now consider Chile, whose lower fertility rate means that it will experience considerably greater population aging than India and where real wage growth is likely to be much lower. As table 6 shows, a personal accounts system can be expected to deliver higher replacement rates than a pay-as-you-go system under most reasonable assumptions. If real wage growth continues to average 2.0 percent,

about the historical record in Chile over the past twenty-five years, the real rate of return on contributions would have to fall beneath 3.0 percent, which many economists consider the risk-free rate of return, for the funded model to lose its relative advantage. With 2.0 percent real wage growth and a 4.5 percent real rate of return, a standard assumption for a globally diversified portfolio of stocks and bonds, the relative advantage would be huge: a 51 percent replacement rate for the personal accounts system versus a 32 percent replacement rate for the pay-as-

Chile: Stylized Replacement Rate Projections

Personal Accounts Replacement Rates in 2050 versus Affordable PAYGO Replacement Rates, Assuming the Same 12.5 Percent Contribution Rate*

		Real Wage Growth Rate						
		FUNDED	3.0%	2.5%	2.0%	1.5%	1.0%	
Real Rate of Return	3.0%		26%	29%	32%	35%	39%	} Outperforms PAYGO
	3.5%		30%	34%	37%	41%	46%	
	4.0%		35%	39%	43%	48%	54%	
	4.5%		41%	46%	51%	57%	63%	
	5.0%		48%	53%	60%	67%	75%	
	5.5%		56%	62%	70%	78%	88%	
	6.0%		65%	73%	82%	92%	105%	
PAYGO			35%	33%	32%	30%	28%	

*Personal accounts projections assume a 40-year career, retirement at age 65, and administrative fees equal to 0.5 percent of assets. PAYGO projections assume retirement at age 65 and price indexation of current benefits.

Source: GAI calculations

TABLE 6

you-go system. If real wage growth were to average 1.0 percent, closer to the historical record in most other Latin American countries, the advantage of the personal accounts system would be even greater: a 63 percent replacement rate, more than twice the 28 percent replacement rate that a pay-as-you-go system could deliver. Nor is there anything unusual about Chile. The funded model would enjoy a similar advantage in many other emerging markets facing similar aging challenges, from Brazil and Mexico to Turkey, Thailand, and Vietnam.

Finally, consider South Korea, whose massive age wave and sharply contracting working-age population give the funded model an overwhelming advantage. Here, as table 7 shows, there is no reasonable scenario at all in which a personal accounts system would fail to deliver higher replacement rates than a pay-as-you-go system. With 2.0 percent real wage growth and a 4.5 percent real rate of return, the personal accounts replacement rate would be 49 percent, compared with just 19 percent for the pay-as-you-go system. If real wage growth were to average 1.0

South Korea: Stylized Replacement Rate Projections

*Personal Accounts Replacement Rates in 2050 versus Affordable PAYGO Replacement Rates, Assuming the Same 12.5 Percent Contribution Rate**

		Real Wage Growth Rate						
		FUNDED	3.0%	2.5%	2.0%	1.5%	1.0%	
Real Rate of Return	3.0%		25%	28%	30%	34%	37%	} Outperforms PAYGO
	3.5%		29%	32%	36%	40%	44%	
	4.0%		34%	38%	42%	46%	52%	
	4.5%		40%	44%	49%	55%	61%	
	5.0%		46%	52%	58%	65%	73%	
	5.5%		54%	61%	68%	76%	86%	
	6.0%		64%	71%	80%	90%	102%	
	PAYGO		21%	20%	19%	18%	17%	

*Personal accounts projections assume a 40-year career, retirement at age 65, and administrative fees equal to 0.5 percent of assets. PAYGO projections assume retirement at age 65 and price indexation of current benefits.
Source: GAI calculations

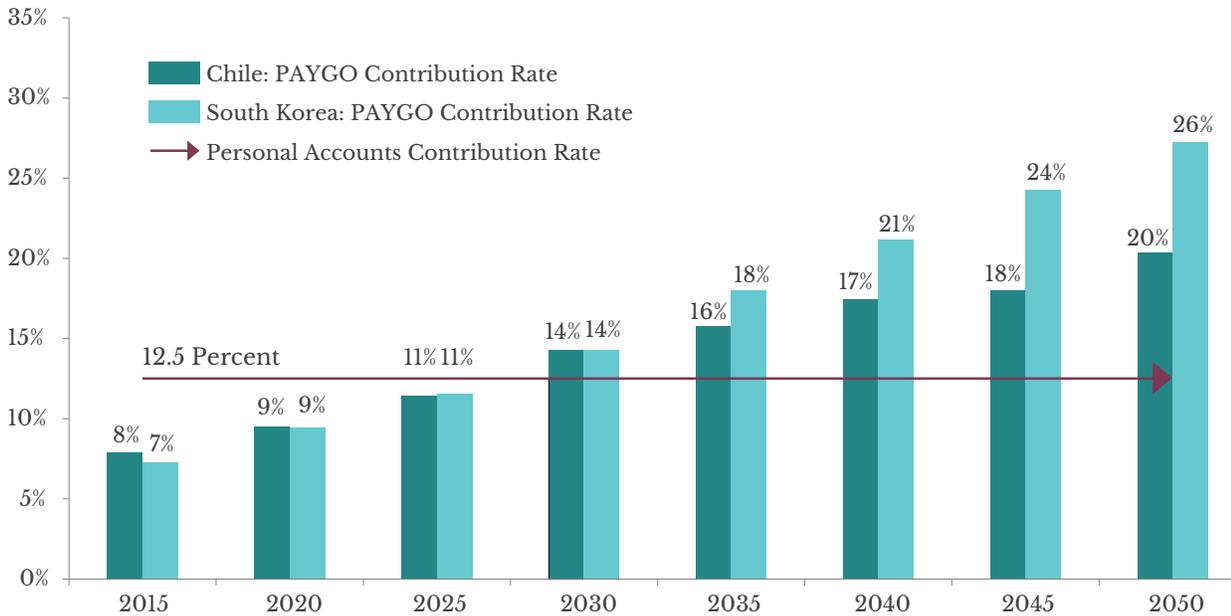
TABLE 7

percent, which is not unusually low for a high-income country, the personal accounts replacement rate would be 61 percent, more than three times the 17 percent replacement rate that a pay-as-you-go system could deliver. The funded model would enjoy a similarly overwhelming advantage in the other East Asian Tigers, where fertility rates have fallen as far or farther than in South Korea. Its advantage in the countries of Central and Eastern Europe, where extreme sub-replacement fertility is also ushering in a future of hyperaging and steep population decline, would be nearly as great.

In emerging markets with pay-as-you-go pension systems, the only choice may be between inadequate benefits and unaffordable benefits.

So far, our comparisons have assumed that the replacement rates delivered by pay-as-you-go systems are constrained to what is affordable at a 12.5 percent contribution rate. But what if, instead of cutting benefits,

PAYGO Contribution Rates Required in Chile and South Korea to Deliver the Same Replacement Rate as a 12.5 Percent Personal Accounts Contribution Rate, 2015-2050*



*Personal accounts projections assume real wage growth of 2.0 percent, a real rate of return of 4.5 percent, a 40-year career, retirement at age 65, and administrative fees equal to 0.5 percent of assets. PAYGO projections assume 2.0 percent real wage growth, retirement at age 65, and price indexation of current benefits.
Source: GAI calculations

FIGURE 3

pay-as-you-go systems raised contribution rates to the level needed to match the replacement rates delivered by the personal accounts systems? Pay-as-you-go systems may seem affordable when contributors greatly outnumber beneficiaries. But as the systems mature and populations age, the contribution rates needed to pay the same benefits rise by leaps and bounds. In Chile, assuming 2.0 percent real wage growth and a 4.5 percent real rate of return, the pay-as-you-go contribution rate would have to increase to 20 percent of payroll by 2050 to match the replacement rate that could be generated by a personal accounts system with an unchanged 12.5 percent

contribution rate. In South Korea, the pay-as-you-go contribution rate would have to increase to 26 percent of payroll. (See figure 3.) In short, the only choice for rapidly aging countries with pay-as-you-go state pension systems may be between benefits that are inadequate and benefits that are unaffordable.

Some economists may object that this analysis overstates the relative advantage of funded systems, since the rate of return to capital is likely to decline as societies age. There are two versions of this argument. The first, which is sometimes called the “asset meltdown hypothesis,”

holds that asset prices will fall as larger retiring generations (and their pension funds) try to sell their assets to smaller working generations.¹⁰ While population aging lowers the rate of return to pay-as-you-go systems by driving up the aged dependency ratio, it also lowers the rate of return to funded systems by driving down asset prices. But in fact, this would only be true in a closed economy. With open global financial markets, retirees in older and more slowly growing countries will, at least for the foreseeable future, always be able to find some larger working generation somewhere in the world willing to buy their assets. The second version of the argument holds that as GDP growth slows in aging societies with stagnant or contracting workforces, the rate of return to capital must fall in tandem.¹¹ After all, if it did not fall capital income would eventually consume more than all of GDP. But in fact, this constraint would only apply if the total return to capital were always reinvested year after year, something that has never been and will never be the case.

Readers may wonder how the global diversification that funded systems allow can help if the entire world is aging. The explanation lies in the differential pace and timing of global aging. As the term correctly implies, nearly every country in

the world is projected to experience some shift toward slower population growth and an older age structure. This does not mean, however, that the world is demographically converging. Most of today's youngest countries (such as those in sub-Saharan Africa and South Asia) are projected to experience the least aging. Most of today's oldest countries (such as those in Europe and East Asia) are projected to experience the most aging. As a result, the world will see an increasing divergence, or "spread," of demographic outcomes over the next few decades. During the 1960s, 99 percent of the world's population lived in nations that were growing at a rate of between +0.5 percent and +3.5 percent annually. By the 2030s, that 99 percent range will widen to between -1.0 percent and +3.5 percent annually. By then, most nations will be growing more slowly, and indeed many will be shrinking—but some will still be growing at a blistering pace of 3 percent or more per year. In the 1960s, 99 percent of the world's population also lived in nations with a median age of between 15 and 36. By the 2030s, that 99 percent range will widen to between 18 and 54.¹² Here again, the trend is toward increasing demographic diversity.

It is of course possible that rates of return to capital will be lower in the future than

10. See, among others, Sylvester J. Schieber and John B. Shoven, "The Consequences of Population Aging on Private Pension Fund Saving and Asset Markets," Working Paper no. 4665 (Cambridge, MA: NBER, 1994); James M. Poterba, "Demographic Structure and Asset Returns," *The Review of Economics and Statistics* 83, no. 4 (November 2001); and Kyung-Mook Lim and David N. Weil, "The Baby Boom and the Stock Market Boom," *The Scandinavian Journal of Economics* 105, no. 3 (September 2003).

11. Dean Baker, J. Bradford DeLong, and Paul R. Krugman, "Asset Returns and Economic Growth"; and N. Gregory Mankiw and William D. Nordhaus, "Comments," *Brookings Papers on Economic Activity*, no.1 (2005).

12. These calculations are based on *World Population Prospects: The 2006 Revision* (New York: UN Population Division, 2007). See Richard Jackson and Neil Howe, *The Graying of the Great Powers: Demography and Geopolitics in the 21st Century* (Washington, DC: CSIS, 2008).

they have been in the past. Indeed, with the world now awash in excess savings, this prospect seems entirely plausible, at least in the near term. Yet at the same time, it is difficult to believe that the global rate of return to capital will, over the long run, be lower than the growth rate of worker payroll in fast-aging countries with stagnant or contracting workforces. To the contrary, it is likely to be considerably higher.

POVERTY PROTECTION

Along with allowing workers to defer receipt of some of the income they earn during their working years until their retirement years—what economists call “lifetime consumption smoothing”—retirement systems also serve another vital public purpose: protecting workers against poverty in old-age. Here emerging markets around the world must grapple with the same problem: Workers in the informal sector often fail to contribute to the state pension system, and even when they do contribute, they do so irregularly, which means that the ultimate benefits they receive may still be inadequate.

At first glance, one might suppose that funded pension systems, and especially personal accounts systems, would be more effective at encouraging broad participation than pay-as-you-go systems. Because the benefits paid out are directly proportional to the contributions paid in, and because account balances are personally owned, workers should be less likely to view their contributions as a tax. Many of the original personal accounts advocates in the 1980s and 1990s, including those at the World

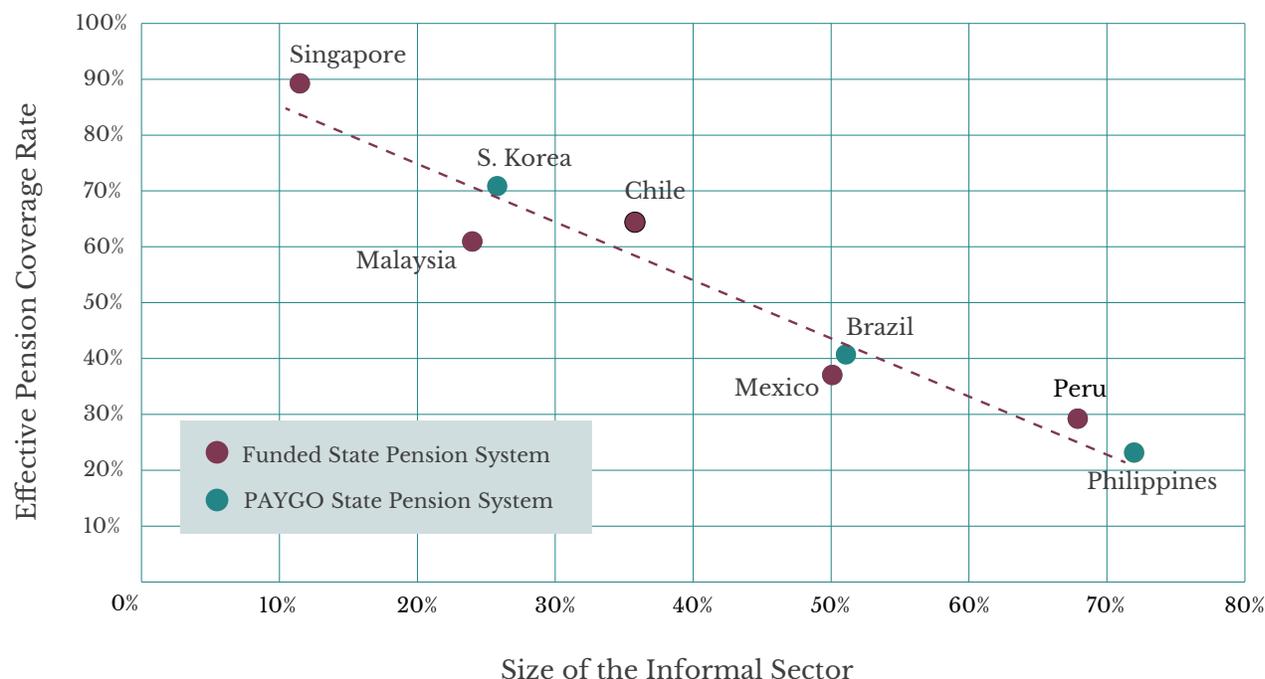
Bank, believed that the incentives built into personal accounts systems might be especially important in Latin American countries, where trust in government has historically been low and tax compliance has been difficult to enforce.

Unfortunately, it did not work out that way. There is little persuasive evidence that funded pension systems have increased participation in those emerging markets that have adopted them. Yet just as importantly, there is little persuasive evidence that they

When emerging markets have large informal sectors, no contributory pension system can achieve universal coverage.

have decreased participation. The truth is that when labor-market informality is high and trust in government is low, no contributory pension system, however it is structured and financed, can achieve anything close to universal coverage. Across the developing world, the level of pension coverage is closely correlated with the size of the informal sector. (See figure 4.) South Korea and Malaysia both have relatively large formal sectors and relatively high rates of pension coverage. The fact that the first has a pay-as-you-go pension system and the second has a funded system appears to make little difference. The Philippines and Peru both have relatively small formal sectors and relatively low rates of pension coverage. Once again, the fact that the first has a pay-

Effective Pension Coverage Rate and Size of the Informal Sector* in the Most Recent Available Year



*The informal sector is defined as informal employment as a share of total non-agricultural employment. Source: Donghyun Park, ed., *Pension Systems and Old-Age Income Support in East and Southeast Asia* (Manila: ADB, 2012), 114 y 129; *World Social Protection Report 2014/15* (Geneva: ILO, 2014), 270; AIOS Statistical Bulletin (2012); *Is Informal Normal?* (Paris: OECD, 2009), 34-35; Friedrich Schneider, “The Shadow Economy and Work in the Shadow,” IZA Discussion Paper no. 6423 (Bonn: Institute for the Study of Labor, March 2012), 55; Melisa R. Serrano, ed., *Between Flexibility and Security* (Jakarta: ASEAN Services Employees Trade Unions Council, 2014), 60 and 108; and national government pension authorities and statistical offices.

FIGURE 4

as-you-go pension system and the second has a funded system appears to make little difference.

Not surprisingly, the coverage problem is especially acute among lower-earning workers. One study found that in Brazil the active contributor rate in 2002 was 17 percent for the lowest income quintile, but 67 percent for the highest income quintile. In Mexico, it was 10 percent for the lowest quintile, but 56

percent for the highest, while in Chile it was 40 percent for the lowest but 70 percent for the highest.¹³ Other studies have found that the active contributor rate in Latin America is also lower for women than for men, for younger workers than for older workers, for workers at small firms than for workers at large ones, and for self-employed workers, who are exempted entirely from mandatory contributions in many countries, than for wage and salary workers.¹⁴ Note that the

13. Rafael Rofman and Leonardo Luchetti, “Pension Systems in Latin America: Concepts and Measurements of Coverage,” Social Protection Discussion Paper no. 0616 (Washington, DC: World Bank, November 2006).

14. Kritzer, Kay, and Sinha, “Next Generation of Individual Account Pension Reforms in Latin America.”

“active contributor rate” refers to the share of workers who contribute to the pension system in a given year. “Affiliation rates,” which refer to the share of workers enrolled in the pension system, are typically much higher. The problem in most countries is thus not lack of pension coverage per se, but lack of consistent pension coverage.

Governments are acutely aware of the problem and, over the years, have attempted to address it in various ways. Most of Latin America’s contributory pension systems, whether pay-as-you-go or funded, have minimum benefit guarantees that are supposed to provide a backstop against poverty in old age. But these guarantees of course do nothing to help those workers who do not contribute to the pension system at all. Nor do they do much to help those who do, since eligibility for the subsidized benefits typically requires twenty or twenty-five years of contributions. According to one study, over half of all affiliates in Mexico’s personal accounts system are on track to reach retirement age with account balances that would need to be topped up in order to reach the minimum guaranteed benefit level. Yet because 85 percent of affiliates contribute less than half of the time, very few will qualify for the guarantee.¹⁵

What all of this underscores is that, whatever type of contributory pension system they may have, emerging markets with large

A social pension is a social necessity.

informal sectors also need a noncontributory “social pension” to ensure effective protection against poverty in old age. The availability of noncontributory benefits may to some extent hamper efforts to encourage more workers to participate in contributory pension systems. But this disincentive can be minimized, as Chile has done in its new “Solidarity Pension,” by setting noncontributory benefits at a relatively low level and by phasing them out gradually as contributory benefits are earned. In any case, a floor of old-age poverty protection is a social necessity. Between 2000 and 2013, an astonishing eighteen countries in Latin America and the Caribbean introduced some sort of social pension. Some of the new systems pay a universal flat benefit to all of the elderly, while others are more restrictive and only pay benefits to those elderly who were not covered by the contributory pension system or whose income falls beneath some poverty threshold.¹⁶ Nor is the rush to put in place social pensions limited to Latin America. The movement is also sweeping the rest of the developing world, from sub-Saharan Africa to East Asia, where Malaysia, South Korea, Thailand, and Vietnam have all recently established or expanded noncontributory pension systems.

15. Tapen Sinha and Maria de los Angeles Yañez, “A Decade of Government-Mandated Privately Run Pensions in Mexico: What Have We Learned?” in *Lessons from Pension Reform in the Americas*, eds. Stephen J. Kay and Tapen Sinha (New York: Oxford University Press, 2008).

16. Kritzer, Kay, and Sinha, “Next Generation of Individual Account Pension Reforms in Latin America.”

The overall retirement system in countries that have personal accounts systems can be made as progressive as desired.

It is often assumed that countries with traditional defined-benefit state pension systems can achieve greater overall progressivity in their retirement systems than countries with personal accounts systems, since defined-benefit systems can redistribute income through progressive benefit formulas, while personal accounts systems cannot. But this is not necessarily true. Including its floor-of-protection component, the overall retirement system in countries with personal accounts systems can be made as progressive as desired. To build a more progressive system, policymakers could simply design a larger floor of protection. If some progressivity is also desired for middle-income workers, more sophisticated mechanisms are possible, such as providing for government matching contributions to personal accounts that are gradually phased out at higher income levels.

In any case, the trend in recent years has been to strip pay-as-you-go pension systems of their redistributive elements. Although many developed countries still have traditional defined-benefit systems with progressive benefit formulas, a growing number are transitioning to notional defined-contribution systems in which, just as in funded personal accounts systems, benefits paid out precisely reflect the magnitude and timing of contributions

paid in. As for redistribution, it is handled through first-tier flat benefits, means-tested supplements, and/or the progressive income taxation of benefits. When it comes to how best to structure retirement systems to meet the twin goals of income replacement and poverty protection, the global state of the art in pay-as-you-go pension reform is surprisingly similar to the global state of the art in funded pension reform. Sweden has its notional defined-contribution accounts backed up by means-tested supplements, while Chile has its funded defined-contribution accounts backed up by a social pension. The only critical distinction is that, because Chile's accounts are funded, they are likely to deliver a higher return on worker contributions.

MARKET RISK AND POLITICAL RISK

To be sure, funded personal accounts systems like Chile's are sometimes criticized because they subject retirement benefits to the ups and downs of financial markets, while notional accounts systems like Sweden's do not. Economists largely agree, however, that market risk can be minimized by regulations that require workers to maintain an adequate spread in their portfolios and to move into fixed-income assets at older ages. The multifund model that has now been adopted in Chile, Colombia, Mexico, and Peru moves in the direction of just such lifecycle portfolio allocation. Governments could also encourage broad-based index funds. At the regulatory extreme, they could even require that all pension assets be invested in a limited number of these funds.

The market risk of a funded pension system, of course, can never be entirely eliminated. But neither can the “political risk” of a pay-as-you-go pension system—that is, the risk that future politicians will reduce promised benefits. This risk will steadily grow as populations age and the cost of paying promised benefits rises. Unlike market risk, moreover, there is no proven strategy for minimizing political risk.

For evidence, we need look no further than the cuts in relative benefit levels faced by future retirees in many pay-as-you-go state pension systems. Confronted with projections showing that the aging of the population would put relentless

Unlike market risk in funded systems, there is no proven strategy for minimizing political risk in pay-as-you-go systems.

upward pressure on public budgets, a growing number of developed-country governments have enacted reforms that reduce the future generosity of state retirement provision. In some countries, the reductions are very large. Compared with a hypothetical “current-deal” scenario in which today’s average replacement rates and retirement ages remain unchanged, the total cost of current-law state pension benefits in Sweden and the United States is

due to be cut by roughly one-fifth by 2040. Meanwhile, current-law state pension benefits in Canada and France are due to be cut by roughly one-third beneath current-deal levels by 2040. In Germany and Japan, they are due to be cut by roughly two-fifths beneath current-deal levels and in Italy they are due to be cut by nearly one-half.¹⁷ (See figure 5.)

Nor is it just developed-country governments that are cutting the generosity of their pay-as-you-go pension systems. South Korea, which had the poor timing to establish its National Pension System in 1988, just before its birthrate collapsed, has already slashed promised replacement rates from 70 to 40 percent, and with the system still facing yawning long-term deficits, will

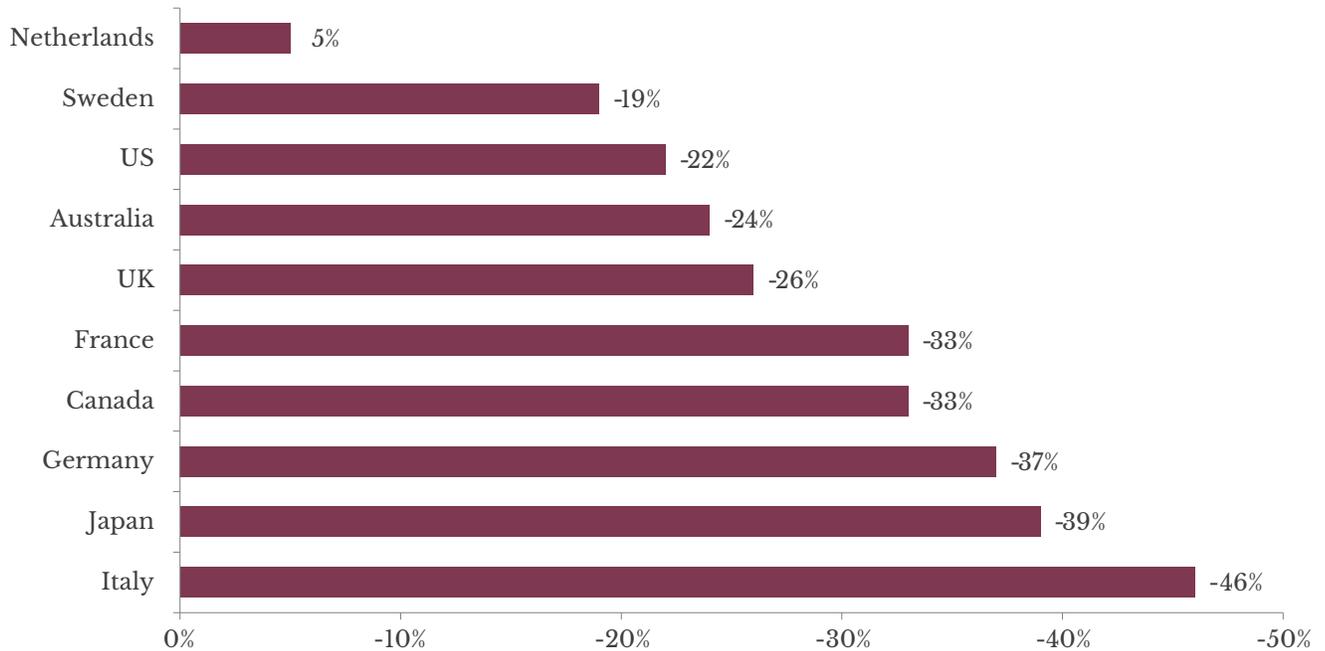
Many countries with pay-as-you-go pension systems have enacted deep cuts in the future generosity of state retirement provision.

undoubtedly have to slash them again.¹⁸ In China, which also faces a massive aging challenge, average replacement rates in the Basic Pension System are falling like a stone, in large part because contributions to the second notional accounts tier of the system are by design credited with a rate

17. Richard Jackson, *Lessons from Abroad for the U.S. Entitlement Debate* (Washington, DC: CSIS, 2014).

18. Neil Howe, Richard Jackson, and Keisuke Nakashima, *The Aging of Korea: Demographics and Retirement Policy in the Land of the Morning Calm* (Washington, DC: CSIS, 2007).

Cumulative Percentage Reduction in Current-Law PAYGO Pension Benefits to the Elderly (Aged 60 & Over) Relative to “Current-Deal” Benefits,* from 2010 to 2040



*The projections of “current-deal” benefits assume that retirement ages and replacement rates remain unchanged in the future.

Source: Richard Jackson, *Lessons from Abroad for the U.S. Entitlement Debate* (Washington, DC: CSIS, 2013)

FIGURE 5

of return that is far beneath the rate of wage growth.¹⁹ Meanwhile in Brazil, a long series of cost-cutting reforms beginning in the late 1990s have progressively reduced the generosity of the RGPS and RPPS pension systems, which, respectively, cover private-sector and public-sector employees. Yet with total state pension spending in Brazil still projected to double as a share of GDP by 2050, there is little question that additional reforms will soon be necessary.²⁰

To be fair, funded pension systems are by no means immune to political risk. To begin with, government policies can systematically prevent pension system participants from earning a market rate of return on their savings. Such policies of “financial repression” can take many forms, including setting artificially low interest rates, restricting investment in foreign securities, and requiring that contributions flow to government “social

19. Richard Jackson, Keisuke Nakashima, and Neil Howe, *China’s Long March to Retirement Reform: The Graying of the Middle Kingdom Revisited* (Washington, DC: CSIS, 2009).

20. OECD, *Pensions at a Glance 2013: OECD and G20 Indicators* (Paris: OECD, 2013).

overhead” projects. At the extreme, as recently happened in Argentina, Poland, and Hungary, governments may even shut down funded pension systems and divert their assets to cover current government expenditures, whether for pay-as-you-go pension commitments or other general purpose spending.

It would be perverse, however, to conclude that the failure of funded systems to eliminate all political risk makes them no different from pay-as-you-go systems, in which political risk is endemic. Although governments have sometimes overridden property rights in funded systems, there are no property rights at all in pay-as-you-go systems, where benefits are wholly contingent on a social contract than can be rewritten at any time. Moreover, while political risk in pay-as-you-go systems is largely driven by inexorable demographic shifts that threaten their long-term affordability, in funded systems it is driven by near-term fiscal exigencies that make them tempting targets for cash-strapped governments. This was certainly the case in Argentina, which nationalized its personal accounts system during the recent global financial crisis. It was also the case in Hungary and Poland, where the need of governments for cash was made more acute by European Union accounting rules, which count the near-term transition deficits of a personal accounts system against the Maastricht Treaty deficit and debt limits,

but not the long-term unfunded liabilities of a pay-as-you-go system.²¹ The failure to insulate funded pension systems from political risk is not an argument against funding. Rather, it is an argument for more robust property rights and more coherent accounting rules.

THE BROADER ECONOMY

Beyond the potential benefits of funding to individuals, there are also potential benefits to the broader economy. To begin with, funded pension systems can help emerging markets meet their development goals while their populations are still young and growing. It is well established that functioning capital markets are critical

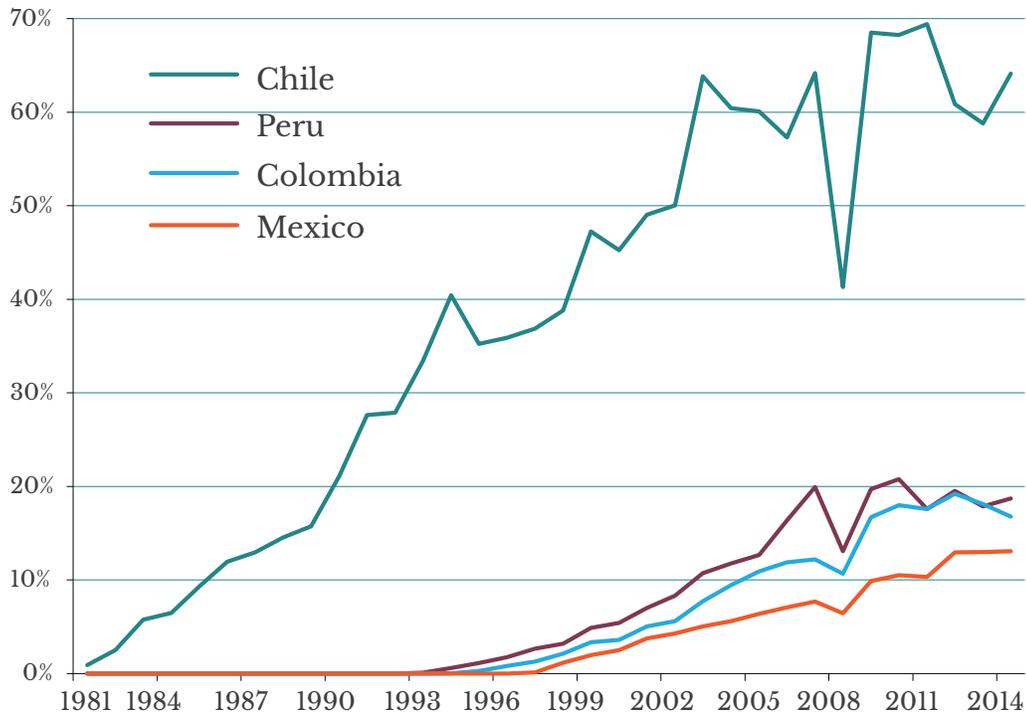
Funded pension systems can play an important role in broadening and deepening capital markets.

for successful development. It is also well established that funded pension systems can play an important role in broadening and deepening capital markets, as they have done in the United States and many other developed countries. As a country’s pension funds grow, so do the size and liquidity of its capital markets. Along with professional fund management come greater accountability, transparency, and long-term returns.²²

21. Stephen J. Kay, “Political Risk and Pension Reform in Latin America and Central and Eastern Europe,” paper prepared for the ISA/FLASCO meeting, Buenos Aires, July 23-25, 2014.

22. See, among others, Juan Yermo, “Pension Reform and Capital Market Development,” Background Paper for Regional Study on Social Security Reform no. 30486 (Washington, DC: World Bank, 2004); Channarith Meng and Wade Donald Pfau, “The Role of Pension Funds in Capital Market Development,” GRIPS Discussion Paper no. 10-17 (Tokyo: National Graduate Institute for Policy Studies, October 2010); and Ratna Sahay et al., “Rethinking Financial Deepening: Stability and Growth in Emerging Markets,” IMF Staff Discussion Notes no. 15/8 (Washington, DC: IMF, May 2015).

Assets of Personal Accounts Systems, as a Percent of GDP, 1981-2014



Source: Historical Statistics on Mandatory Savings (International Federation of Pension Fund Administrators, December 2014)

FIGURE 6

There is no question that the creation of funded pension systems has contributed significantly to the development of Latin America's capital markets. As of 2014, assets under management in Chile totaled 64 percent of GDP, and though pension funds are still much smaller in other countries, they are rapidly growing. (See figure 6.) The systems have given an enormous boost to domestic bond markets, particularly government bond markets, lengthening maturities and spurring the introduction of new securities like inflation-indexed

bonds in Mexico and tradable "recognition bonds" in Chile. They have also helped to increase stock market capitalization, though in many countries stock markets still remain highly concentrated. Meanwhile, insurance markets have grown substantially, since in most countries with personal accounts systems pension fund managers are required to purchase survivors and disability insurance for affiliates. There have been other benefits as well, including broader mortgage bond markets, better credit rating agencies, and improved corporate governance.

In the longer term, funded pension systems can take pressure off government budgets and help to maintain adequate rates of savings and investment as emerging markets age. Whether countries realize these benefits, however, will depend on how the systems are structured and financed. “Add on” systems, which are funded with

As societies age, funded pension systems may take pressure off government budgets and help to maintain savings and investment.

entirely new worker contributions, are certain to raise national savings, although some of the increase in savings within the new funded pension system may be offset by a decline in other types of savings. “Carve out” systems, which are funded with worker contributions that are diverted from an existing pay-as-you-go system, may also raise national savings, but only if the government offsets the lost revenue by raising taxes or cutting other spending. After all, even as contributions are diverted, the government must continue to pay benefits to current retirees, as well as the benefits already accrued by current workers when they in turn retire. If the new private savings accumulating within the funded pension system is offset by an equal increase in government debt, the macro benefits of reform may not materialize. Pay-as-you-go pension spending may decline, but long-term debt service costs

will grow. Although participants in the funded pension system may enjoy the benefits of higher returns, society as a whole may be no better off.

The larger the unfunded liability of the existing pay-as-you-go pension system, the more daunting is the so-called double burden problem. When countries have generous mature pension systems, which is the case in much of the developed world, the transition costs may be nearly

The larger the unfunded liability of an existing pay-as-you-go pension system, the more daunting is the so-called double burden problem.

insuperable. When countries have immature pension systems and/or rapidly growing economies, which is the case in many emerging markets, it may be more manageable. Still, emerging markets that have fully paid for the transition to a funded pension system appear to be the exception rather than the rule. While the impact of personal accounts reforms on Latin America’s capital markets has been almost uniformly positive, the impact on national savings has not. In Chile, the reform boosted national savings and consequently investment and economic growth. Government spending on the residual pay-as-you-go pension system has been declining steadily since the mid-1980s and will continue to do so in decades to

come. At the same time, the government has been running large budget surpluses that have offset the revenue that was lost as pension contributions were diverted to the personal accounts system. The Chilean experience, however, does not appear to have been repeated in other Latin American countries, where reforms have been largely debt-financed.²³

In short, leveraging the full macro benefits of reform requires fiscal discipline that many emerging markets now lack. The fact remains, however, that funded pension systems have the potential to reduce fiscal burdens and raise national savings, whereas pay-as-you-go systems are sure to lead to rising contribution rates, rising fiscal burdens, and lower national savings as societies age. Either that, or state pension benefits will have to be cut, undermining the adequacy of the retirement system. ►

23. See, among others, Vittorio Corbo and Klaus Schmidt-Hebbel, "Macroeconomic Effects of Pension Reform in Chile," in *Pension Reform: Results and Challenges*, ed. International Federation of Pension Fund Administrators (Santiago: FIAP, 2003); and Andrew A. Samwick, "Is Pension Reform Conducive to Higher Saving?" *The Review of Economics and Statistics* 82, no. 2 (May 2000).

chapter three

DESIGN CHALLENGES FOR PERSONAL ACCOUNTS SYSTEMS

Although funded pension systems have potentially important advantages over pay-as-you-go systems in aging societies, they may fail to deliver on their promise of greater retirement security if they are poorly designed. Inadequate contribution rates, high administrative fees, overly restrictive portfolio allocation rules, early retirement ages, or the failure to provide for the annuitization of account balances can all undermine the adequacy of a personal accounts system. There are other design choices as well, including whether assets should be privately or publicly managed and how much discretion over investment decisions to allow individual participants. In this chapter, we consider some of the most critical design challenges facing personal accounts systems, starting with the most basic: whether it should be mandatory or voluntary.

MANDATORY VS. VOLUNTARY

Government has a compelling interest in ensuring that people prepare adequately for old age, if for no other reason than to

prevent them from becoming free riders on the social safety net. To the extent that funded pension systems are designed to substitute in whole or in part for mandatory pay-as-you-go state pension systems, the funded systems should also be mandatory. Mandatory funded systems can achieve much higher participation rates than voluntary ones, which is good for social adequacy. They are also much more likely to result in net new savings, which is good for the economy.

Government has a compelling interest in ensuring that people prepare adequately for old age.

This is not to say that there is not also an important role for voluntary supplemental pension savings. Countries with mandatory funded pension systems can (and almost always do) allow additional voluntary contributions above the mandatory minimum. This is the case from Hong Kong and Singapore to Chile, Mexico, Peru, and

the other Latin American countries with personal accounts systems, virtually all of which allow workers to make additional voluntary contributions to their mandatory accounts or to separate voluntary accounts. Many countries, of course, have also encouraged the development of entirely separate employer-sponsored and personal pension systems. These systems are likely to be particularly valuable for higher-earning workers, whose salaries often exceed the maximum contributory wage in mandatory funded systems and who benefit most from the tax incentives the supplemental systems provide. But they can also be an important source of added retirement security for middle- and even lower-earning workers. Although such workers benefit less from the tax incentives, and so are less likely to join supplemental systems, there are ways for the government or employers to broaden participation without mandating it, such as offering matching contributions and switching from “opt in” enrollment to automatic enrollment with an opt out option.

It is important to note that supplemental funded pension systems are especially important for countries that retain a pay-as-you-go state pension system. As the generosity of pay-as-you-go retirement provision is cut back in aging societies, countries that fail to fill in the lost benefits with alternative sources of income are likely to face intense pressure from aging electorates to rollback the reforms. In the long run, it may be no more feasible for a country to have a state pension system that is fiscally sustainable but socially inadequate

than to have one that is socially adequate but fiscally unsustainable. This is why many developed countries are rushing to expand supplemental funded pension systems. Countries like Australia, Canada, and the United Kingdom that already have well-established ones are strengthening them, while countries like Germany, Italy, and Spain that have up to now relied almost exclusively on pay-as-you-go state provision are adding them. The same thing is happening in the developing world, where Brazil is strengthening its “Open Funds” and “Closed Funds” and China and South Korea are adding new “Enterprise Annuity” and “Corporate Pension” systems.

CONTRIBUTION RATES

Although funded pension systems enjoy a rate of return advantage over pay-as-you-go systems, contribution rates must nonetheless be set at a level that is high enough to generate adequate replacement rates. Adequacy, of course, is a relative concept. The 12.5 percent contribution rate that we assumed in our illustrative replacement rate matrices would, with a 4.5 percent real rate of return and 2.0 percent real wage growth, generate a 51 percent replacement rate for a full-career worker in a country with Chile’s demographics. Compared with the 32 percent replacement rate that would be affordable in 2050 under a pay-as-you-go system of equivalent cost, this seems munificent. Yet a 51 percent replacement rate is hardly enough to maintain preretirement living standards. To be sure, the funded system might perform better than this. But for a 12.5 percent contribution rate to generate a replacement rate of at least 70

percent, the threshold most retirement planners consider adequate, the real rate of return would have to rise to 5.5 percent or real wage growth would have to fall to 1.0 percent, neither of which is a prudent assumption.

Ideally, contribution rates should thus be set higher than our 12.5 percent example. Unfortunately, the reality is that the current contribution rates in most personal accounts systems are not higher, but lower. In

In most countries, personal accounts contribution rates are too low to ensure adequate benefits.

Mexico, the contribution rate is a woefully inadequate 6.5 percent, excluding the small government subsidy or “social quota.” In Bolivia, Chile, and Peru it is 10 percent. In fact, among those Latin American countries which have exclusively funded retirement systems, only Colombia, with its 16 percent contribution rate, is clearly requiring workers to save enough for retirement.

Improving the adequacy of today’s personal accounts systems will come at a cost, though the cost would be a surprisingly modest one. As a rule of thumb, each 2.5 percentage point increase in the contribution rate would raise ultimate replacement rates

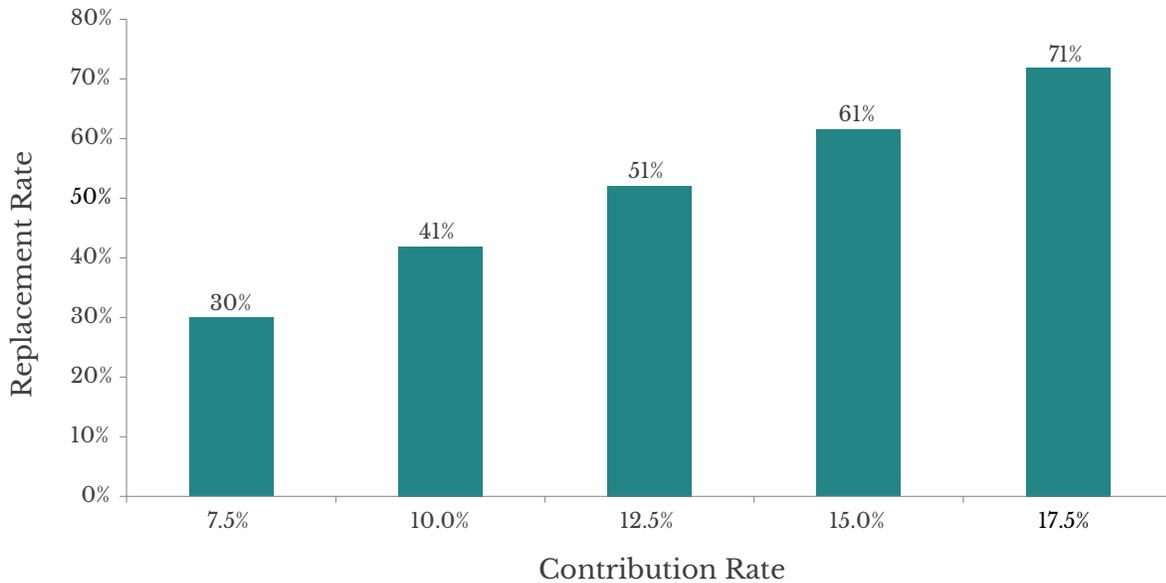
by roughly 10 percentage points, again assuming a 4.5 percent real rate of return and 2.0 percent real wage growth. While a 10 percent contribution rate would generate a 41 percent replacement rate and a 12.5 percent contribution rate would generate a 51 percent replacement rate, a 15 percent contribution rate would generate a 61 percent replacement rate. (See figure 7.) Policymakers are understandably reluctant to face the potentially adverse political consequences of raising contribution rates. They should bear in mind, however, that not raising contribution rates will have adverse economic consequences—namely, greater old-age poverty and a more expensive old-age safety net.

PRIVATE VS. PUBLIC MANAGEMENT

Any funded pension system necessarily involves plan administration, recordkeeping, and investment management functions, any or all of which could in principle be performed by government agencies or by private firms. While the relative advantages of public and private responsibility for plan administration and recordkeeping are at least debatable, there is no real question about investment management. When it comes to generating the highest rate of return on worker contributions there is ample evidence that systems in which assets are privately managed almost always generate higher long-term returns than ones in which they are publicly managed.²⁴

24. See, among others, Augusto Iglesias and Robert J. Palacios, “Managing Public Pension Reserves Part I: Evidence from the International Experience,” Social Protection Discussion Paper No. 0003 (Washington, DC: World Bank, 2000); Robert Holzmann, Ian W. MacArthur, and Yvonne Sin, “Pension Systems in East Asia and the Pacific: Challenges and Opportunities,” Social Protection Discussion Paper no. 0014 (Washington, DC: World Bank, 2000); and Dimitri Vittas, Gregorio Impavido, and Ronan O’Connor, “Upgrading the Investment Policy Framework of Public Pension Funds,” World Bank Policy Research Working Paper no. 4499 (Washington, DC: World Bank, January 2008).

Personal Accounts Replacement Rates for Full-Career Workers in the Year 2050, by Contribution Rate



*The projections assume real wage growth of 2.0 percent, a real rate of return of 4.5 percent, a 40-year career, administrative fees equal to 0.5 percent of assets, retirement at age 65, and life expectancy at retirement of 23 years.

Source: GAI calculations

FIGURE 7

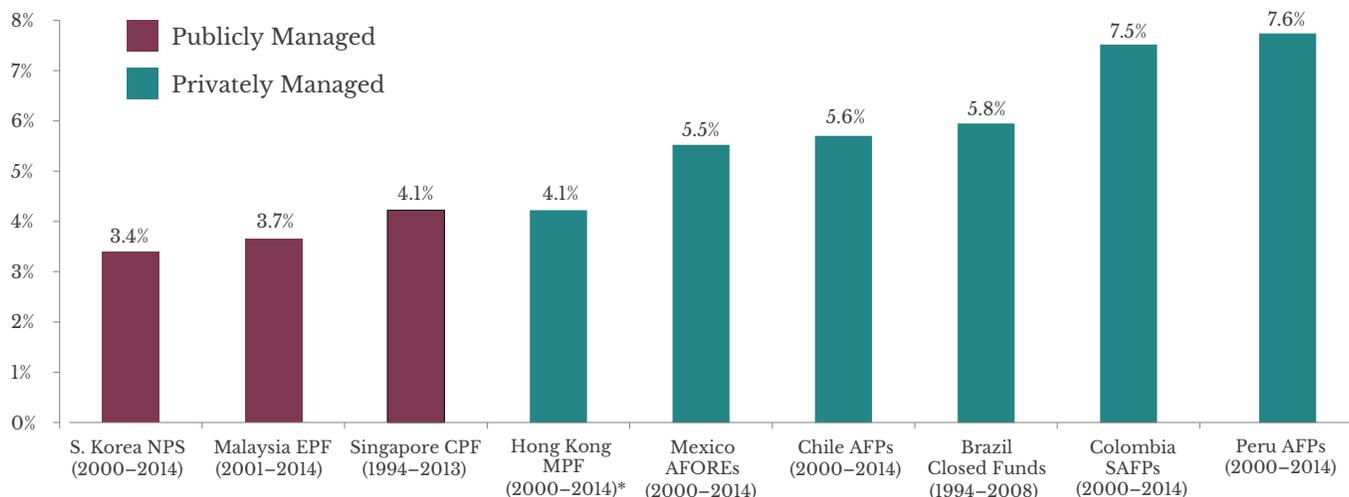
Privately managed pension funds outperform publicly managed ones.

While the real rate of return to assets under management in Chile's pension funds averaged 5.6 percent between 2000 and 2014, the real rate of return to assets under management in Malaysia's Employees Provident Fund averaged just 3.7 percent between 2001 and 2014, the period for which comparable data are available. Comparisons of many other privately and publicly managed pension systems show similar disparities in long-term investment

performance. (See figure 8.) Although the lower rate of return in publicly managed systems may be partly due to a more conservative investment philosophy, most experts agree that much of the explanation lies in the large share of funds that are channeled to low-return government "social overhead" projects.

There are other potential problems with public management of pension fund assets. For one thing, it invites political interference in financial markets by allowing government to direct funds to politically favored industries or to withhold them from politically disfavored ones. For another thing, public management creates ambiguity

Average Annual Real Rate of Return on Assets under Management over Various Periods from 1994 to 2014



*Estimated based on nominal rate of return data.

Source: FIAP Historical Statistics (December 2014); *Latin American Economic Outlook 2008* (Paris: OECD, 2007), 88; and national government pension authorities

FIGURE 8

about who owns the assets, workers or government—and what government owns, government can spend. From the United States to Japan, many countries have tried to partially prefund pay-as-you-go state pension systems through publicly managed trust funds. The track record is not encouraging. With few exceptions, the trust funds have ended up serving as back-door financing mechanisms for the general government budget. Whatever the legal or procedural firewalls between pension fund assets and the rest of the budget, governments have found some way to spend, borrow against, or otherwise nullify them. The Canadian Pension System’s trust fund, which is managed by an independent board with a fiduciary mandate to invest in the best interest of participants and which

is forbidden to invest in government debt, is one of the rare exceptions that proves the rule.

ADMINISTRATIVE FEES

Needless to say, the rate of return to assets under management in a funded pension system is not necessarily the same as the rate of return credited to participants in the system. Administrative fees can reduce the net rate of return that participants earn, and hence the eventual replacement rates that they receive. Fees currently vary greatly across mandatory personal accounts systems for a variety of reasons, including government regulations, the degree of competition in different markets, and, critically, the maturity of the system. Converted to a percent-of-assets-

under-management basis, administrative fees in 2014 averaged 0.6 percent in Chile, whose personal accounts system has been in operation for thirty-five years, but 1.1 percent in Mexico, whose system is less than twenty years old. According to one often-cited study, the prevailing fees in Latin America's personal accounts systems, converted to a percent-of-assets-under-management basis and projected over an entire forty-year career, now range between a low of 0.4 percent in Bolivia and a high of 0.9 percent in Costa Rica.²⁵

Latin America's personal accounts systems are often criticized for having high administrative fees. But whether one considers the fees to be high or not depends critically on the benchmark to which they are compared. Those who believe that the fees are excessive typically point to low-cost investment options available to retirement savers in developed countries. With many broad U.S. index funds charging fees of 0.25 percent of assets under management or less, Latin America's personal accounts systems indeed seem expensive by comparison. But the more relevant benchmark is probably the fees charged by alternative investment options actually available to retirement savers in the countries in question. In Latin America, the average management fees charged by mutual funds in 2013 ranged from 1.0 percent in Brazil and Mexico to 1.4

percent in Chile and Peru and 1.5 percent in Argentina. Excluding money market funds, whose fees are typically much lower than fees in equity or fixed-income funds, the averages are even higher.²⁶ Taking local market mutual funds as the benchmark, the fees charged by Latin America's personal accounts systems seem economical by comparison.

The superior investment performance of privately managed systems more than offsets their higher administrative fees.

It is also important to remember that it is the pension system's net rate of return that ultimately determines replacement rates, and that this depends on investment performance as well as on administrative fees. The focus on fees has led some experts to conclude that public management of pension fund assets would result in higher replacement rates, since the government, which would have little or no need to incur marketing expenses, could charge much lower fees. Experience, however, suggests that public management rarely improves the overall adequacy of a funded pension system.

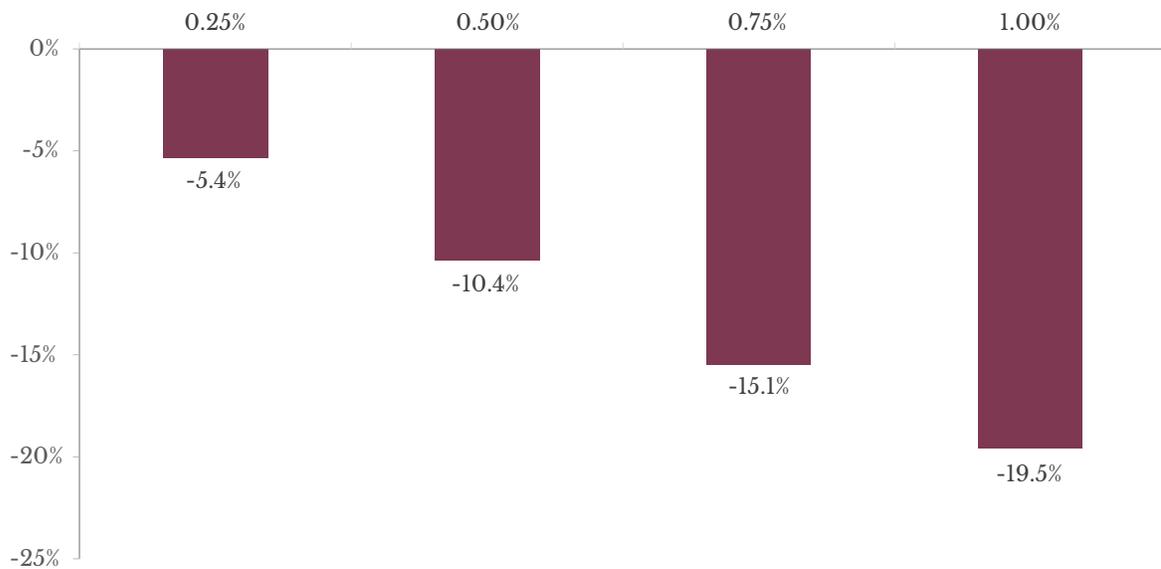
25. Gregorio Impavido, Esperanza Lasagabaster, and Manuel García-Huitrón, *New Policies for Mandatory Defined Contribution Pensions: Industrial Organization Models and Investment Products* (Washington, DC: World Bank, 2010). See also, Denise Gomez and Hernandez Fiona Stewart, "Comparison of Costs and Fees in Countries with Private Defined Contribution Pension Systems," IOPS Working Paper no. 6 (Paris: International Organization of Pension Supervisors, May 2008); and Liviu Ionescu and Edgar A. Robles, "Update of IOPS Work on Fees and Charges," IOPS Working Papers on Effective Pensions Supervision no. 20 (Paris: International Organization of Pension Supervisors, April, 2014).

26. Data for Latin American mutual funds are from Cerulli Associates, *The Cerulli Report: Latin American Distribution Dynamics 2014: Entry Points to Emergent Economies* (Boston: Cerulli Associates, 2014).

To begin with, publicly managed systems may simply replace explicit fees with an implicit tax on participant savings. Studies have found that the wedge between total return and net return in some publicly managed systems, most notably Malaysia’s and Singapore’s provident funds, is as large or larger than the wedge in most privately managed ones.²⁷ More importantly, even if a publicly managed system were to levy no charges at all, either explicit or implicit, the savings could easily be overwhelmed by the lower total rate of return that publicly managed systems typically earn. As figure

9 shows, each 25 basis points increase in administrative fees reduces ultimate account balances by roughly 5 percent. But as figure 10 shows, each 25 basis points increase in total return boosts ultimate account balances by a similar amount. Given the fact that, historically, the total return to privately managed systems has typically exceeded the total return to publicly managed ones by several hundred basis points, publicly managed systems, no matter how much administrative savings they achieve, are still likely to end up with much lower net returns. To put it more

Percent Reduction in Potential Personal Accounts Balance at Retirement, by Level of Administrative Fees*

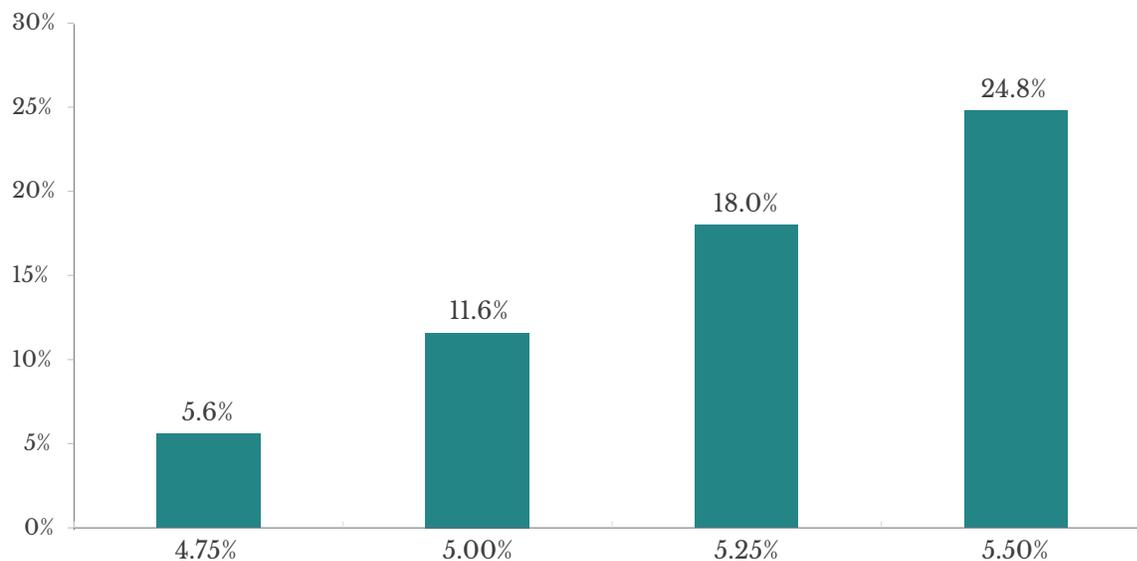


*Administrative fees are calculated as a percent of assets. The projections assume a 12.5 percent contribution rate, real wage growth of 2.0 percent, a real rate of return of 4.5 percent, and a 40-year career. Source: GAI calculations

FIGURE 9

27. Mukul G. Asher, “Malaysia: Pension System Overview and Reform Directions” and Mukul G. Asher and Amarendu Nandy, “Singapore: Pension System Overview and Reform Directions,” both in *Pension Systems and Old-Age Income Support in East and Southeast Asia: Overview and Reform Directions*, ed. Donghyun Park (Manila: Asian Development Bank, 2011).

Percent Increase in Potential Personal Accounts Balance at Retirement, by Real Rate of Return, Compared with the Potential Balance Assuming a 4.5 Percent Real Rate of Return*



*The projections assume a 12.5 percent contribution rate, real wage growth of 2.0 percent, a 40-year career, and administrative fees equal to 0.5 percent of assets.
Source: GAI calculations

FIGURE 10

simply, the extra value generated by private management of pension assets would seem to outweigh its extra cost.

Still, all other things being equal, it remains true that lower administrative fees will translate into higher replacement rates. Understandably, reducing fees has thus become a central goal of government regulation and reform in countries with personal accounts systems. Some countries, including Bolivia, Colombia, Cost Rica, El Salvador, and Mexico, have capped fees by regulatory fiat. While such caps will obviously reduce administrative fees, at least in the near term, they may distort markets and have unintended and self-defeating

consequences. If the cap is set too low, fund managers may shift their investment portfolios toward lower-cost asset classes, whose lower returns in turn may offset the positive impact of fee reductions on account balances and replacement rates. On the other hand, if the cap is set too high, the fees of all fund managers will tend to converge toward the maximum allowable fee, reducing price competition and, potentially, resulting in higher fees in the long term than would otherwise have been the case.

The best approach to reducing fees is to promote efficiency-enhancing competition.

The better approach, and the one being pursued by most countries with personal accounts systems, is to enact measures that promote efficiency-enhancing competition among fund managers. The most common measures include: reducing barriers to entry for fund managers; simplifying and standardizing fee structures to increase transparency; publishing regular statements that allow participants to compare net investment returns across fund managers; assigning those participants who fail to choose a fund manager to the manager with the lowest fees or (better) the highest net rate of return; allowing fund managers to offer loyalty discounts; and allowing participants to switch fund managers more frequently so long as they move to the fund with the lowest fees. Although it is difficult to disentangle the effect that these reforms have had on fees from other factors, and in particular system maturation, it appears that they are helping to lower fees in some countries.

Another much-discussed strategy involves segregating the pension system's plan administration and recordkeeping functions from its asset management function. In the so-called Swedish model, which was developed for the country's funded second-tier personal accounts system, or Premium Pensions, worker contributions are routed to private investment funds through a central government "clearinghouse," which handles all plan administration and recordkeeping functions. While most experts agree that

the Swedish model offers potential cost efficiencies, they also acknowledge that it requires sophisticated data collection and management capabilities that may not be within the reach of all governments.²⁸ For most emerging markets, the Chilean model, in which plan administration, recordkeeping, and asset management functions are all handled by the same fund management company, may be the only practical option.

PORTFOLIO RESTRICTIONS

The potential advantages of funded pension systems may not be fully realized if overly restrictive portfolio allocation requirements prevent participants from earning a market rate of return on their savings. During the start-up phase of personal accounts systems, it may make sense for regulators in emerging markets to establish broad guidelines for allowable investments, with minima and maxima for different asset classes. Over time, however, the restrictions should be relaxed as capital markets develop and the experience of fund managers grows. Ultimately, the success of a funded pension system requires moving toward a "prudent man" investment rule that allows contributions to flow to the investments with the highest risk-adjusted returns.

Personal accounts systems should gradually move toward a "prudent man" investment rule.

28. Gustavo Demarco and Rafael Rofman, "Supervising Mandatory Funded Pension Systems: Issues and Challenges," Social Protection Discussion Paper no. 9817 (Washington, DC: World Bank, 1998); and Gill, Packard, and Yermo, *Keeping the Promise of Social Security in Latin America*.

Assets by Investment Class in Selected Countries with Personal Accounts Systems

	Government Debt		Financial Institution Debt		Other Domestic Debt [†]		Foreign Investment	
	2000	2012	2000	2012	2000	2012	2000	2012
CHILE	36%	22%	35%	17%	18%	25%	11%	36%
COLOMBIA*	49%	44%	17%	6%	28%	36%	7%	15%
MEXICO	93%	58%	2%	2%	5%	26%	0%	14%
PERU	9%	17%	34%	12%	50%	44%	7%	28%

* Data for Colombia refer to 2004 and 2012.

[†] Includes a small category of unclassified assets.

Source: AIOS Statistical Bulletin (various years)

TABLE 8

Many Latin American countries are clearly moving in this direction. Initially, portfolio rules in most countries required the majority of pension assets to be invested in government debt. The rules were established partly due to the conservative investment philosophy of pension regulators, partly to secure a captive source of financing for the transition from pre-existing pay-as-you-go systems, and partly because adequate alternative investment options were not always available. As capital markets have developed, however, the rules have been liberalized and portfolios progressively diversified in most countries. Overinvestment in government debt, however, still remains a cause for concern in some, including Mexico. (See table 8.)

Despite the trend toward portfolio diversification, most countries still maintain low limits on foreign investment, Chile and Peru being notable exceptions. These restrictions pose a serious long-term problem. Although Latin American

capital markets are growing broader and deeper, the growth in pension fund assets threatens to outpace domestic investment opportunities. To be sure, there are some seemingly sensible arguments for placing restrictions on foreign investment. While the return to savings that is invested abroad flows to account holders, helping to fund their eventual retirement, that savings does not increase the domestic capital stock or the productivity of the domestic economy. It is understandable that governments would prefer pension savings to be invested in creating jobs, building housing, or improving public infrastructure at home. In the end, however, restrictions on foreign investment, like requirements to load portfolios with government debt, undermine the primary purpose of any funded pension system, which is to earn the highest risk-adjusted return for participants.

Global diversification of investment portfolios will become all the more important as today's emerging markets age

and growth in the workforce and economy slow. Without it, countries with funded pension systems may find themselves no more able to escape the tyranny of their own demography than countries with pay-as-you-go ones.

INDIVIDUAL CHOICE

Allowing investment managers to allocate pension fund portfolios according to the prudent man rule is of course not the same thing as allowing pension system participants free investment choice. There is a large literature which suggests that the financial literacy of most workers is at best rudimentary, a finding that applies to developed as well as to developing countries.²⁹ To the extent that investment choice is allowed at all in mandatory funded systems, it should be strictly limited. Ideally, all systems would move toward a multifund model in which participants are assigned, based on their age, to one of a limited panel of funds with varying degrees of investment risk.

The purpose of a state pension system is not to facilitate choice, but to protect individuals against the consequences of bad choices.

During the 1990s debate over transforming the U.S. Social Security system into a funded personal accounts system, many advocates favored personal accounts because of

the investment choice they would allow participants. The advantage of funded pension systems, however, is not the choice they may allow but the higher replacement rates they can deliver as societies age. Broad participant discretion in investment decisions may be appropriate in a voluntary supplemental pension system, precisely because it is voluntary and supplemental. In a mandatory state pension system, whose purpose is to ensure an adequate living standard in retirement and which covers a broad cross section of the population, the stress should not be on facilitating individual choice, but on protecting individuals against the consequences of bad choices.

RETIREMENT AGES

Just as setting contribution rates too low can undermine the adequacy of a pension system, so can setting retirement ages too low. While some emerging markets have an

The aging of the population makes the case for higher retirement ages compelling.

official retirement age of 65, the standard age in developed countries, in many others the official retirement age is 60 or even lower. The official retirement age may simply be the minimum eligibility age for state pension benefits, but in some emerging markets, especially in East Asia, it is a mandatory retirement age that is often rigidly enforced,

29. Annamaria Lusardi and Olivia S. Mitchell, "Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education," *Business Economics* no. 42 (January 2007); and Nidia García et al., "Financial Education in Latin America and the Caribbean: Rationale, Overview and Way Forward," OECD Working Papers on Finance, Insurance and Private Pensions no. 33 (Paris: OECD, 2013).

at least in the formal sector of the economy. In rapidly developing economies, early and/or mandatory retirement ages may make sense. After all, enticing or compelling unskilled older workers to retire from a firm helps to make room for more skilled younger ones. But as more highly educated and productive cohorts of younger workers climb the age ladder, such practices are becoming a costly anachronism.

The aging of the population makes the case for higher retirement ages even more compelling. As life expectancy increases, early retirement becomes increasingly expensive to finance. If retirement ages remain unchanged, either contribution rates must rise proportionally to increases in life expectancy or replacement rates must fall, regardless of whether the pension system is funded or pay-as-you-go. On the other hand, indexing retirement ages to increases in life expectancy can maintain the adequacy of the pension system without increasing its overall cost. There are other reasons as well why emerging markets will need to encourage or require higher retirement ages. Beyond helping to maintain income adequacy for retirees, longer work lives can also help to maintain economic growth in aging emerging markets where the population in the traditional working years will be growing more slowly or contracting. When the elderly remain productively engaged, moreover, it is not only good for the health of the economy, but also, according to most gerontologists, for the health of the elderly themselves.

LONGEVITY RISK

Personal accounts systems are sometimes criticized for failing to protect participants against “longevity risk”—that is, the risk that retirees will outlive their assets. There are in fact two types of longevity risk: individual risk (the risk that a particular retiree will live longer than the average life expectancy) and societal risk (the risk that average life expectancy itself will be higher than anticipated). A well-designed personal accounts system will indeed protect retirees against the first risk, while in the long run no pension system is likely to fully protect them against the second.

The usual way for personal accounts systems to address individual longevity risk is through mandatory annuitization, which in effect turns account balances into a defined benefit upon retirement. While annuities are notorious for being subject to moral hazard and asymmetric information, they are only problematic when they are optional. If the personal accounts are mandatory and longevity risk can be averaged across a broad cross section of the population, efficient annuities are relatively easy to price. It is true that some funded pension systems fail to require annuitization, thus leaving retirees at risk of squandering their lump-sum payouts and/or outliving their assets. This is the case in Malaysia’s and Singapore’s centrally managed provident funds, as well as in Hong Kong’s personal accounts system. In Latin America and Central and Eastern Europe, however, every mandatory funded pension system provides for some form of

annuitization and/or phased withdrawal of account balances.

The history of life expectancy projections has been largely a history of embarrassing underestimates.

While most of the policy focus has been on how to address individual longevity risk, it is societal risk that arguably poses the greater challenge. It is worth recalling that the history of life expectancy projections has been largely a history of embarrassing underestimates. The UN has raised its estimates of future life expectancy for most emerging markets in each successive revision of its long-term population projections over the past few decades. In some cases, the upward revisions have been enormous. The UN is now projecting that Brazil and Mexico will attain life expectancies by 2050 that are five years higher than what it was projecting just fifteen years ago, while for Chile and South Korea it is projecting that life expectancy will be six years higher.³⁰ While most actuaries tend to be “longevity pessimists” and assume that the long-term rate of improvement in mortality rates will slow, most demographers, looking at the historical record, now believe that it will continue at close to its historical pace. If

the demographers are right, we will soon be looking at a new round of upward revisions.

Regardless of the type of pension system countries have, they will find it increasingly difficult to exempt the fastest growing segment of the population from bearing the cost of longer life spans. To be sure, in traditional defined-benefit systems that cost has in the past often been shifted to current workers through higher contribution rates. But this is now changing as societies age and pension costs rise. Some developed countries (including Italy and Sweden) have transformed their defined-benefit pay-as-you-go systems into notional defined-contribution systems in which, just as in funded personal accounts systems, benefits are adjusted to reflect cohort life expectancy at retirement. Meanwhile, many countries that have retained traditional defined-benefit systems are raising normal retirement ages, while a few like Germany and Japan have enacted “demographic stabilizers” that in effect index benefits to life expectancy.

The only real question is whether retirees will bear the cost by accepting lower replacement rates or by working longer. The latter is the optimal solution, since it both benefits the economy and preserves the adequacy of retirement income. In aging societies, higher retirement ages are not only necessary, but also desirable. ►

30. *World Population Prospects: The 2000 Revision* (New York: UN Population Division, 2001); and *World Population Prospects: The 2012 Revision*.

conclusion

Policymakers in many of today's emerging markets are still preoccupied with meeting the needs of their countries' young and rapidly growing populations. With educating youth, creating jobs, and modernizing the economy such pressing concerns, it may be tempting to conclude that preparing for the eventual aging of their populations is a relatively low priority. Although this conclusion is understandable, it is mistaken. Putting in place the infrastructure for state pension systems entails a major commitment of resources, and the systems themselves take several decades to mature. Meanwhile, with each passing year, the developing world's age waves draw nearer.

This report has argued that global aging will increase the relative advantage of the funded pension model. Most importantly, funded pension systems are likely to enjoy a widening rate of return advantage over pay-as-you-go systems that will enable them to deliver adequate retirement benefits to participants at much lower contribution rates. Funded systems can also foster the

development of capital markets and, depending on how they are structured and financed, may help to take pressure off government budgets and maintain adequate rates of savings and investment—all of which will be critical challenges as the economies of emerging markets mature and their populations age.

Preparing for the aging of the population must be a high priority.

To be sure, funded pension systems must be well designed to realize their potential benefits. As we have seen, inadequate contribution rates, high administrative fees, overly restrictive portfolio allocation rules, early retirement ages, or the failure to provide for the annuitization of account balances can all undermine the adequacy of funded pension systems. Yet in principle, all of these problems can be addressed through relatively straightforward policy adjustments. As the “second generation”

reforms of Latin America's personal accounts systems demonstrate, it is possible to improve the equity and efficiency of the funded model without sacrificing, and indeed while enhancing, its underlying economic advantages.

It is possible to improve the equity and efficiency of personal accounts systems without sacrificing their underlying economic advantage.

Meanwhile, pay-as-you-go pension systems face a fundamental problem that has no satisfactory remedy. As emerging markets age, those that retain pay-as-you-go systems will inevitably find themselves facing a zero-sum trade-off between imposing steeply rising tax burdens on tomorrow's workers or deep reductions in benefits on tomorrow's retirees. From Brazil to South Korea, many emerging markets have already enacted large cuts in the prospective generosity of pay-as-you-go state retirement provision. Yet it is unclear whether they have actually improved the long-term sustainability of their pension systems, since governments may come under intense pressure to roll back the reforms as electorates age. In the end, the pretense that a pension system can be fiscally sustainable but socially inadequate may prove to be just as hollow as the pretense that it can be socially adequate but fiscally unsustainable. Pension systems must deliver both adequacy and

sustainability, and in aging societies only funded ones are likely to do so.

In recent years, the advantages of the funded model have been obscured by a highly tendentious debate over the failure of personal accounts systems to ensure broad coverage and adequate poverty protection. Yes, funded pension systems leave large segments of the workforce without coverage, but in emerging markets with large informal sectors so do pay-as-you-go systems. Yes, funded pension systems may fail to provide adequate benefits to workers with irregular contribution histories, but so do pay-as-you-go systems. And yes, funded pension systems subject workers to considerable risks, but so do pay-as-you-go systems. In the wake of the recent global financial crisis, the political risk of a pay-as-you-go system may seem to some to be preferable to the market risk of a funded system. But an effective retirement policy must focus on the long term, and in the long term there is little question that, as today's emerging markets age, pay-as-you-go systems will expose workers to greater risks than funded ones.

Although funded pension systems are an essential part of any overall strategy to confront the aging challenge, they alone cannot be the whole strategy. Every emerging market also needs to put in place a robust floor of old-age poverty protection, or social pension. As things stand, many workers—and in some countries the great majority of workers—will arrive in old age with inadequate benefits from the

contributory pension system or with no benefits at all. Without noncontributory benefits as a backstop, they will have to fall back on traditional family support networks, which will themselves be under growing stress from modernization and declining family size.

Yet however necessary social pensions may be in the near term, they do not add up to a viable long-term strategy for ensuring retirement security. In today's relatively youthful emerging markets, the limited reach of contributory pension systems has already become a growing economic and social concern. In tomorrow's emerging markets, with their soaring old-age dependency burdens, it could become an economic and social catastrophe. It is one thing if half or more of the elderly are dependent on government social assistance when the elderly comprise 5 to 10 percent of the population. It will be quite another thing when they comprise 20 to 30 percent of the population.

The development challenge and aging challenge facing emerging markets are inextricably linked.

In the end, the aging challenge and the development challenge facing emerging markets are thus inextricably linked.

Ensuring genuine retirement security will require expanding the reach of contributory pension systems. Yet the ability of countries to expand that reach will depend critically on their success at reducing informality and inequality. While this will demand new reform initiatives on many fronts, retirement policy also has a role to play. Unlike pay-as-you-go pension systems, funded ones can help to advance the development agenda by fostering capital market development and by freeing up fiscal resources for investments in infrastructure, human capital, and the other essential building blocks of a fully developed economy.

There is still time for emerging markets to confront the aging challenge, but time is running out. Some countries have already made tremendous progress, but many have barely begun to take action and a few are actually moving backwards. The broad contours of a solution are clear. What remains to be seen is whether policymakers will have the wisdom to enact timely and constructive reforms. At stake may be not just the security of future retirees, but also the prosperity and stability of the overall economy and society. ►

Technical Note on Data and Sources

With a few exceptions noted in the report, all demographic data come from *World Population Prospects: The 2012 Revision* (New York: UN Population Division, 2013). For countries where the fertility rate is at or beneath the 2.1 replacement rate, the population projections used in the report refer to the UN's "constant fertility variant" projection, which assumes that fertility will remain unchanged at its 2005-10 level in the future. For countries where the fertility rate is still above the 2.1 replacement rate, we use the UN's "medium variant" projection, which assumes that fertility will decline in the future.

Basic data on Latin American pension systems, except for Brazil's, come from the International Association of Pension Fund Supervisors (AIOS) and are available at <http://www.aiosp.org>. These data include statistics on numbers of affiliates and contributors, assets under management as a percent of GDP, assets under management by investment class, real rates of return, and administrative fees. Most of the statistics are also compiled by the International Federation of Pension Fund Administrators (FIAP) and are available at <http://www.fiap.cl>. For Brazil's pension system, as well as for pension systems in East Asia and Central and Eastern Europe, basic data come from national statistical agencies, national pension agencies, and specialized scholarly studies.

In preparing the report, we relied on a number of standard pension system overviews, including *Pensions at a Glance: Asia/Pacific 2013* (Paris: OECD, 2013); *Pensions at a Glance 2013: OECD and G20 Indicators* (Paris: OECD, 2013); *Pensions at a Glance: Latin America and the Caribbean* (Paris: OECD, 2014); *Social Security Programs Throughout the World: The Americas, 2013* (Washington, DC: U.S. Social Security Administration, 2014); *Social Security Programs Throughout the World: Europe, 2014* (Washington, DC: U.S. Social Security Administration, 2014); *Social Security Programs Throughout the World: Asia and the Pacific, 2014* (Washington, DC: U.S. Social Security Administration, 2015); and *World Social Protection Report 2014/15* (Geneva: ILO, 2014).

Beyond these overviews, there is of course a large literature on pension reform in emerging markets. The following are among the more important studies consulted while preparing this report: Robert Holzmann and Joseph E. Stiglitz, eds., *New Ideas about Social Security: Toward Sustainable Pension Systems in the 21st Century* (Washington, DC: World Bank, 2001); Indermit S. Gill, Truman Packard, and Juan Yermo, *Keeping the Promise of Social Security in Latin America* (Washington, DC: World Bank, 2005); Noriyuki Takayama, ed., *Pensions in Asia: Incentives, Compliance and Their Role in Retirement* (Tokyo:

Maruzen Co. Ltd., 2005); Stephen J. Kay and Tapen Sinha, eds., *Lessons from Pension Reform in the Americas* (New York: Oxford University Press, 2008); Donghyun Park, ed., *Pension Systems and Old-Age Income Support in East and Southeast Asia: Overview and Reform Directions* (Manila: Asian Development Bank, 2011); Mariano Bosch, Ángel Melguizo, and Carmen Pagés, *Better Pensions, Better Jobs: Towards Universal Coverage in Latin America and the Caribbean* (Washington, DC: Inter-American Development Bank, 2013); *Reinforcing the Foundations of the Individually Funded Pension System to Ensure Its Sustainability* (Santiago: International Federation of Pension Fund Administrators, 2014); Anita M. Schwarz et al., *The Inverting Pyramid: Pension Systems Facing Demographic Challenges in Europe and Central Asia* (Washington, DC: World Bank, 2014); Rafael Rofman, Ignacio Apella, and Evelyn Vezza, eds., *Beyond Contributory Pensions: Fourteen Experiences with Coverage Expansion in Latin America* (Washington, DC: World Bank, 2015); and *OECD Pensions Outlook* (Paris: OECD, various years). ►

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The Global Aging Institute (GAI) is a nonprofit research and educational organization dedicated to improving our understanding of global aging, to informing policymakers and the public about the challenges it poses, and to encouraging timely and constructive policy responses. GAI's agenda is broad, encompassing everything from retirement security to national security, and its horizons are global, extending to aging societies worldwide.

GAI was founded in 2014 and is headquartered in Alexandria, Virginia. Although GAI is new, its mission is not. Before launching the institute, Richard Jackson, GAI's president, directed a research program on global aging at the Center for Strategic and International Studies which, over a span of nearly fifteen years, produced a large body of cutting-edge research and analysis that played a leading role in shaping the debate over what promises to be one of the defining challenges of the twenty-first century. GAI's Board of Directors is chaired by Thomas S. Terry, CEO of the Terry Group and immediate past president of the American Academy of Actuaries. To learn more about the Global Aging Institute, please visit www.GlobalAgingInstitute.org.

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