The Role of Choice in the Transition to a Funded Pension System

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A critical question in the transition to a funded, private pension system is whether the new private element is presented as a mandate or choice to current and future workers. This paper sets out the spectrum of available options and looks at policy in 13 reforming countries. It concludes that older workers are best excluded from reform, because the economic benefits are small and the political resistance is likely to be large if they are included. However, a defined cut-off age is arbitrary for reasons of intergenerational equity and heterogeneity of portfolio composition and risk preferences within cohorts. A voluntary switch is preferred. The main objection is the resulting uncertainty over the numbers switching. Analysis of reforming countries shows however, a consistent and rational pattern of switching. The paper concludes by discussing policy options for managing the switching process.

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Robert Palacios and Edward Whitehouse[1]

A number of countries have carried out fundamental reforms to their pensions systems and others are planning reform. Previously, pensions were 'defined benefit' (*i.e.,* the pension value depended on years of work and some measure of earnings), were financed on a pay-as-you-go basis (*i.e.,* current contributions paid for current pensions) and were run by the state. In each reform, part or all of the old pension system was replaced by 'defined-contribution' plans (where the pension value depends on individual contributions and investment returns), which are funded (*i.e.,* each individual's contributions pay directly for their pension benefits) and are run by private-sector pension providers.

The transition from a public-sector, pay-as-you-go pension system, into one in which at least part of pensions are provided by individual, privately managed pension accounts does not directly affect those receiving pensions at the time of the reform. But it could affect all current and future workers in a country. A critical issue that governments must resolve is the extent to which current and future workers will be allowed, encouraged or forced to switch their pension to the new private, funded element. The answer to this policy question could be crucial to the success or failure of the entire reform.

The next section describes the range of options open to reforming governments. The subsequent analysis shows that voluntary switching is the best strategy for meeting most of the reformer's goals, including acceptance of the reform itself. The principle argument against this strategy is the desire to control the pace of reform: specifically, the number of workers who switch. But switching behavior shows similar patterns in reforming countries that have offered some or all workers a choice. A proper analysis allows policymakers to anticipate the broad pattern of switching and adjust incentives accordingly. We conclude with some implications for the design and implementation of pension reforms.

1. Policy options in the transition to a funded pension system

The first and most important choice for reformers is determining the balance between the pay-as-you-go and funded elements of the new pension system. Some countries have opted for a complete shift to privately-managed, defined-contribution funds. In others, only a part of mandatory pension contributions have been diverted to the new funded system, usually at least one quarter of total contributions. Elsewhere, the new compulsory funded element has been additional to the existing pay-as-you-go system.

The second issue is coverage: the extent to which the new private element is a choice or a mandate to current and future workers.[2] Figure 1 shows the range of possible choices of second-pillar coverage in the transition to a full or partially funded pension system.

Figure 1. **Spectrum of switching strategies**

voluntary for current and future workers	compulsory only for new entrants	compulsory for new and younger workers	compulsory for all workers
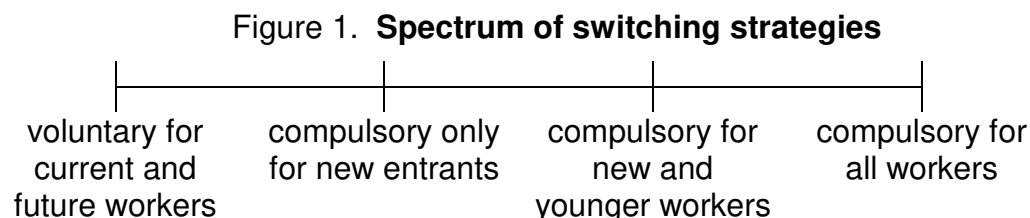
At the left-hand side is an entirely voluntary switch. All workers, including new entrants, have the option either of staying with the defined-benefit, pay-as-you-go scheme or switching to the new funded, defined-contribution plan. At the other end is an entirely compulsory switch, where pension rights in the old pay-as-you-go scheme are frozen and all new rights earned through the defined-contribution, funded plan. In between are various combinations. For example, current workers might have a choice between the new plans while new entrants are mandated to switch. Alternatively, older workers might be excluded from the new plan, while younger are forced to switch. The policy options are not discrete, but instead lie along a spectrum of possible options.

2. Policy choices in practice

The experience of 13 reforming countries is shown in Table 1. The sample covers the entire spectrum of possible outcomes for switching policy.

Three countries — Bolivia, Kazakhstan and Mexico — would be at the far right of Figure 1. They have forced all workers to switch to the private scheme. At the other end of the spectrum are Argentina, Colombia, Peru and the United Kingdom. They allow all workers, including those yet to reach the labor force, to choose between public, defined-benefit and private, defined-contribution schemes. Croatia, El Salvador and Uruguay compel workers below a certain age to switch. Poland has a similar proposal. Finally, Hungary and Chile have allowed choice for those with rights in the old scheme but not for new labor-market entrants.

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[2] Other coverage issues — such as the inclusion of the self-employed, rural workers or civil servants and the role of the informal labor market — are not considered here.

Table 1. **Switching rules in selected pension reforms**

	Switching for new entrants	Switching for current labor force
Latin America		
Argentina (1994)	voluntary	voluntary
Bolivia (1997)	mandatory	mandatory
Chile (1981)	mandatory	voluntary
Colombia (1994)	voluntary	voluntary
El Salvador (1998)	mandatory	mandatory < 35 voluntary 35-55
Mexico (1997)	mandatory	mandatory
Peru (1993)	voluntary	voluntary
Uruguay (1996)	mandatory	mandatory < 40, higher income
Other		
Croatia (1999)	mandatory	mandatory < 40 voluntary 40-50
Hungary (1997)	mandatory	voluntary
Kazakhstan (1998)	mandatory	mandatory
Poland (2000)	mandatory	mandatory < 30 voluntary 30-50
United Kingdom (1988)	voluntary	voluntary

Note: Uruguay's pension system is mandatory only for those earning more than 5,000 pesos per month (in 1996). Poland's reform proposal is provisional and final details are undecided. The maximum switching age for women in El Salvador is 50. See list of references for sources.

3.   Guarantees and options to reverse the switching decision

These initial groupings mask some important differences in switching policy. Unlike Bolivia and Kazakhstan, all current workers in Mexico are able to switch back to the public scheme on the day they retire (see Table 2). This effectively provides a guaranteed rate of return in the private scheme equivalent to the implicit rate of return in the public plan. In economic terms, workers have an option — to take the private, defined-contribution pension — that they did not have previously. They will exercise this option only if the benefit in the new scheme proves to be higher than in the old one.[3] Since new entrants are not extended this guarantee, the Mexican reform is probably closer to the Chilean and Hungarian approaches.

The option to reverse the switching decision is also a feature of the reform in Colombia. Workers can switch back and forth between the public and private schemes every three years (Table 2). Unlike Mexico, however, new entrants and existing workers can choose the public scheme.

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[3] The Mexican reform also includes a flat payment to each individual defined-contribution account, which increases the rate of return in the private relative to the public scheme, see Grandolini and Cerda (1998).

Unlimited reversibility of the switching choice and defined benefit type guarantees distort behavior and create a contingent liability to the government.[4] This liability, often ignored in the reform debate, could be quite large. Its value depends on several unknown probabilities, including:

- policy risk associated with the public scheme;

- the net rate of return to the private pension investments; and

- wage and employment patterns.

These are in turn affected by the guarantee itself. For example, the incentive for an individual to monitor investment performance and administrative costs is significantly reduced if it is very likely that he or she will receive the public pension regardless of net returns. Other things constant, the higher the guarantee, the greater the number of people who will switch and the greater the contingent liability for government which is created.[5]

Table 2. **Benefit guarantees in pension reforms**

	Option to return to public scheme	*Valuation of accrued rights*	*Defined-benefit guarantee*
Latin America			
Argentina	yes, for 2 years	new DB formula	no
Bolivia	no	new DB formula	no
Chile	no	recognition bonds	no
Colombia	yes, indefinitely	recognition bonds	yes
El Salvador	no	recognition bonds	no
Mexico	yes, indefinitely	not applicable	yes
Peru	yes, for 2 years	recognition bonds	no
Uruguay	no	new DB formula	no
Other			
Croatia	?	?	?
Hungary	yes, for 2 years	new DB formula	yes
Kazakhstan	no	new DB formula	no
Poland	no	notional capital	no
United Kingdom	yes, indefinitely	new DB formula	no

See notes to Table 1. The last column refers to general defined-benefit guarantees as opposed to minimum pension guarantees, targeted on low-income workers. Switching rules in Croatia are still under discussion at the time of writing. See list of references for sources.

4. The individual switching decision

Diverting pension contributions from public, defined-benefit to private, defined-contribution schemes affects each age cohort differently. We assume that the rate of return, net of

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[4] In most countries (with the exception of the United Kingdom, see below), switching back is retrospective, in that accumulated funds in the defined-contribution account are surrendered in return for the defined-benefit promise. The contingent liability to government in this case is therefore the difference between the defined-benefit right and accumulated funds in the account.

[5] See Pennacchi (1998) on the valuation of defined contribution pension guarantees.

transaction charges, in the private scheme is higher than the implied return in the public plan.[6] The pay-as-you-go system is presumed to continue unaltered. People opting for the funded system are assumed to divert the whole contribution to the defined-contribution pension account.

As shown in Figure 2, the effect of compounding the higher return in the funded plan is to widen the gap between the expected pension provided by the private and public scheme according to the length of the accumulation period. Younger workers, with more years of accumulation ahead, experience the largest gain. Older workers, if forced to join the private scheme and forfeit all rights accumulated in the old scheme, would lose practically all of their pensions. In the Figure, a 40-year-old would expect to break even from the shift to the private scheme. These differential accruals are standard characteristics: defined-benefit plans tend to have backweighted benefits (where pension rights are earned predominantly in later life) whereas compound interest means that defined-contribution pensions tend to be frontloaded.

Figure 2. **A stylized example of the switching decision**
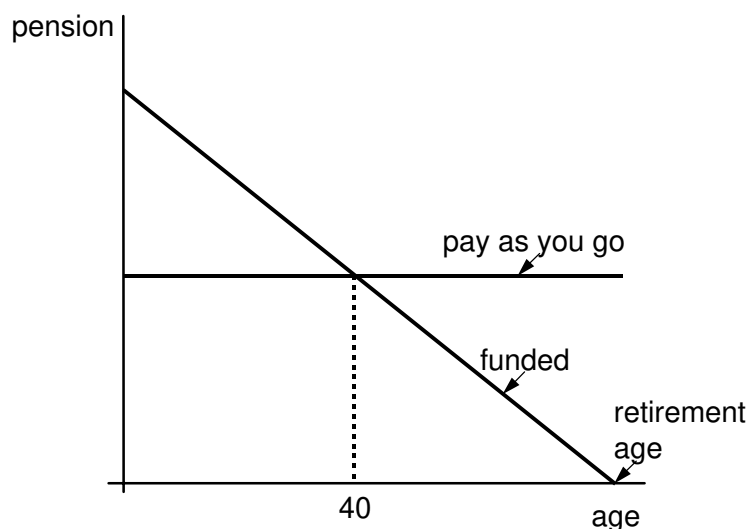
Note: the funded pension is shown as a straight line for clarity and simplicity. In reality, it will of course be a curve, concave to the origin, due to the compound-interest effect.

The second column of Table 2 shows that all reforms to date have compensated workers for rights accrued in the pre-reform period. This compensation rotates the funded line upward in Figure 2. Its y intercept is unchanged because there is no effect on the new entrant who has not yet acquired defined-benefit rights. By adjusting the point at which these two lines cross, policymakers can effectively target the switching age and influence the pace of a voluntary transition. We return to this link between the individual decision and fiscal policy in the next section.

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[6] This is an important reason for reform. It is supported by empirical evidence from Latin America and the OECD (see OECD 1997) as well as evidence supporting the prevalence of the dynamic efficiency condition (Abel *et al.*, 1989).

The analysis in Figure 2 has assumed a pay-as-you-go equilibrium, in which the implicit rate of return on the pay-as-you-go scheme is equal to the long-run rate of growth of the wage bill. In practice, many pay-as-you-go schemes offer a higher implicit rate of return. In the long-run, this either means contributions rates will have to rise to maintain pay-as-you-go equilibrium[7] or the deficit in the public pension plan must be financed from general government revenues. With such a scheme, the higher implicit rate of return in the pay-as-you-go scheme would imply that only the very youngest workers would voluntarily choose to switch. Mandatory switching from the deficit-financed pay-as-you-go scheme to the funded plan would be necessary. But this would be politically difficult: indeed, as politically difficult as cutting pay-as-you-go benefits. The result would be demands for better valuation of accrued rights and re-introducing the deficits.

We argue that a better approach is to ensure that the pay-as-you-go plan is sustainable in the long-term, without large forecast rises in deficits or contribution rates, and that switching choice is then permitted.

The role of uncertainty

Figure 2 and the discussion above abstract from risk when comparing returns from financial assets with returns from participation in a pay-as-you-go scheme. In fact, both types of pension involve uncertainty.[8]

The public pension promise in many countries is vulnerable to inflation, both at the time the pension is calculated and during retirement. Although automatic indexation is common in most industrial countries, elsewhere inflation adjustments are irregular and often *ad hoc*. During periods of high inflation, the real value of the pension can rapidly be eroded. For example, the average real pension fell 30 per cent in Argentina between 1985 and 1992 and 40 per cent in Hungary during the 1980s. Current indexation regimes in Hungary and the United States only uprate pensions to two years before the year of retirement.[9]

In some cases, the pension value may be subject to earnings uncertainty, particularly when final earnings or short averaging-periods are used as the base of the pension calculation.[10] Most importantly, the poor financial prospects of most pay-as-you-go schemes and repeated instances of benefit reductions imply a significant 'policy risk' in the public scheme.[11,12] The degree of policy risk will naturally depend on the finances of the scheme. A sound plan with sustainable benefits and forecast contributions is more likely to be stable than a scheme where required contribution rates or transfers from the central government budget are forecast to rise.

Most workers would trade their public-pension promise for a government bond of equal present value. This suggests that the default premium for a pay-as-you-go pension promise would

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[7] Pay-as-you-go equilibrium requires that aggregate contributions and aggregate benefits are equal in each time period, otherwise, external sources of finance are required. Long-run equilibrium occurs when the contribution rate is stable over time. See Creedy, Disney and Whitehouse (1993) for a discussion.

[8] See Dilnot *et al.* (1994), section 5.2 and Brugiavini, Disney and Whitehouse (1993) for a detailed discussion of risk and uncertainty in different types of pension plans.

[9] Palacios and Rocha (1998) and United States Department of Health and Human Services (1996).

[10] See Dulitsky (1996*a, b*) and Bodie, Marcus and Merton (1988).

[11] Bodie (1990) terms this 'social-insurance risk'. See the discussion there, in Browning (1975) and the references in note 6 on this issue.

[12] Many benefit cuts have been implemented through the 'back-door' route of changes to indexation. For example, the United States suspended indexation for 1984, Belgium for the three years 1983 to 1985 and New Zealand for the two years 1992 and 1993 despite the fact that indexation was written into the law.

be higher than that for government bonds.[13]   The perceived risk is likely to vary between countries and over time. It may be inversely correlated with the level of unfunded liabilities.

Private pensions, in contrast, offer some insurance against policy risk.[14] Governments are unlikely to confiscate private property. However, there is some risk of effective confiscation, for example, through changes in tax policy, means tests for social assistance benefits or pension guarantees.[15] The government also has an important role as regulator in ensuring private pensions funds deliver a reasonable return. The existence of a well-functioning, competitive private pension sector is required both to maintain reasonable administrative costs and incentives to find investments with the best risk-reward profiles. The regulatory environment must be strong enough to prevent fraud and protect consumers, but flexible enough to allow private funds to compete. Investment restrictions must not preclude a prudent amount of diversification between asset classes, including foreign assets.

Private, defined-contribution pensions are also protected against earnings uncertainty, but are subject to capital-market risk, as the pension depends on the returns contributions earn. At the same time, only the private funded component has the potential for international diversification, which can reduce country-specific risks.

Private pensions can also be affected by inflation.   During retirement, many countries require annuities to be indexed for price rises, and this can be facilitated by issuing indexed bonds. During the accumulation period, the risk is not inflation *per se*, but whether high inflation results in a sustained period of negative real returns.[16] Thus, inflation risk in defined-contribution schemes is really a form of capital-market risk.

Pensions of all forms are risky. While the comparison between public and private outcomes remains problematic, the two options both involve risk to the individual facing the choice. Which scheme is perceived to be riskier will vary from one country and one worker to another.

Heterogeneous preferences

Different workers will have different preferences for risk and different perceptions of the degree of risk particular choices entail. Two cases are most relevant.

First, age will affect preferences for risk. Policy risk is a function of the time remaining until retirement; hence, it affects younger workers more than it affects older workers. The tendency to phase in reform provisions and protect rights of those close to retirement suggests that this perception is rational. In contrast, younger workers tend to have very little savings except in the form of their own human capital. Some economists argue that these workers would find it advantageous to hold assets whose returns have a low correlation with their projected wages.[17] For

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[13] This is partly because workers are not able to trade or borrow against their pension promises. For a discussion, see Rizzo (1990).

[14] This is an argument for the introduction of a funded, privately-managed component to pensions. See Mitchell and Zeldes (1996) for a justification of reform as political risk reducing in the United States.

[15] For example, the United Kingdom government abolished the dividend tax credit paid to tax-exempt institutions, including pension funds. With the abolition of advance corporation tax announced in the November 1997 pre-budget report, the overall effect will be to reduce the rate of return on pension funds by 0.4 percentage points. See Whitehouse (1998).

[16] See Hemming and Kay (1981).

[17] See Jagannathan and Kocherlakota (1996).

the young, investing in equities is an optimal portfolio strategy and moving to a defined-contribution scheme would allow significant gains from diversification.[18]

Secondly, perceptions of different kinds of risk are likely to vary within as well as between age cohorts. For most current workers, particularly the young, their most significant asset is their human capital (*i.e.,* their future earnings). They may wish to diversify their portfolio of assets away from pensions that also depend on future earnings (*i.e.,* defined-benefit plans) and invest instead in the capital market (where returns will probably be only weakly correlated with individual earnings). Other individuals may prefer to avoid capital-market uncertainty. Attitudes to risk depend on a range of characteristics, such as occupation and industry of work, and family type. Workers, even of the same age, are heterogeneous in their attitudes to risk.

People also differ in the types of assets they hold. In addition to pension rights, individuals may own property, durable goods and liquid investments in equities, bonds or deposits. People will naturally want to manage risk through diversification.

A final issue is the relationship between switching and income. Unfortunately, few data are available on the choices made by people at different income levels, but there is a natural suspicion that people with higher income levels are more likely to switch. This may reflect rational decision-making. Even if the difference in the relative returns between the pay-as-you-go and funded options is large, for a low-income worker the absolute difference will still be small. The search and information costs in deciding on the best option and choosing among competing funds might outweigh the gain. Also, administrative costs in most reforming countries have a fixed element. Taking account of this cost, it may not be worth switching, because the contributions to the funded plan are swallowed up in charges. These two reasons suggest it may be rational for a low-income worker not to switch, and that forcing them to switch would be suboptimal. The counter-argument is that low-income workers are less financially sophisticated than their higher income peers, and so need to be forced into an option in their own interests. There is no evidence either way.

Since individual attitudes to risk vary and individuals' portfolios vary, it is suboptimal either to require the whole of each heterogeneous cohort to switch or not to switch.[19]

5.   Switching policy and the objectives of pension reform

A successful reform must meet a number of objectives. First, the new scheme must provide a reasonable level of income support during old age. This goal can be summarized by a target replacement rate.[20] In Figure 2, the long-run replacement-rate target is the *y* intercept of the funded line. In a partial move to funding, it would be the sum of benefits from the funded plan and the defined-benefit promise of the residual public scheme.

Secondly, the benefit level must be consistent with long-run fiscal policy, especially the contribution rate needed to finance the system. Short-run fiscal policy constraints must also be taken into account, since the diversion of payroll taxes to the funded scheme will increase deficits.

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[18]   Constantinides, Donaldson and Mehra (1998) suggest that liquidity constraints prevent younger workers from investing as much as they should in equities. This behavior in turn may help explain the 'equity premium' or the excess risk adjusted return observed on equities as compared to short-term government bonds.

[19]   Samwick (1997) explores a model of funding state pension benefits in the United States in which individual discount rates vary. He shows that pension reform can be achieved at lower cost with a voluntary switch.

[20]   While this discussion refers to average replacement rate (RR) targets, it is assumed that government intervention in some form will be required to provide a higher RR to lifetime low-income individuals.

However, it is important to recognize that standard fiscal accounting does not provide a clear picture of changing public-sector obligations during the transition from unfunded to funded schemes.[21]

Thirdly, pension reform has microeconomic objectives, to improve the efficiency of the workings of the economy. A well-designed reform should stimulate the development of pension funds as financial intermediaries, add liquidity to markets and contribute to capital-market development. The reform might also have a positive impact on labor supply[22], to the extent that it reduces the perceived tax component of pension contributions. Contributions to the funded scheme might be seen as savings or deferred consumption, rather than a tax on labor income.[23] It might also lead to a shift to from informal- to formal-sector jobs.[24]

In addition to these economic objectives, political and legal constraints will often affect the policymaker's choice of switching strategy. For example, in some countries, there have been constitutional challenges of the valuation of accrued rights, forcing reformers to modify their original proposals. More generally, a voluntary switch will be more acceptable to the public than others will. In the United Kingdom, for example, the original proposals for reform in 1985 envisaged doing away with the state-provided second pillar entirely, and replacing it with compulsory private provision. Nigel Lawson, then finance minister, refused to countenance compulsion, seeing it as inconsistent with the Conservative administration's 'libertarian' political philosophy. Margaret Thatcher, then prime minister, insisted on compulsion to ensure an adequate retirement income, telling Lawson that this had long been the practice in Switzerland. 'But Prime Minister', Lawson replied, 'it is well known that in Switzerland everything that is not forbidden is compulsory.'[25] Lawson's view prevailed, and the state scheme remained alongside the funded, defined-contribution alternative.

Trade-offs in switching strategies

The economic objectives of reform often conflict, particularly when it comes to deciding the pace of the transition. This depends mostly on the age below which it becomes advantageous for worker to switch: the higher the target switching age, the faster the transition, *ceteris paribus.*

Figure 3 below illustrates three transition cases. In the first, only new labor-market entrants have an incentive to choose the funded scheme. The path of the resulting deficits and the accumulation of private pension savings are labeled (a). The lines labeled (c) refer to the other extreme, in which there are incentives for all workers to switch regardless of age. Finally, the lines labeled (b) refer to a 'middle road' in which half of the workforce (*e.g.*, below age 35-40) is encouraged to switch to the funded scheme.

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[21] Several sources highlight the accounting problems related to the transition including, Kotlikoff (1987), Holzmann (1997) and Kane and Palacios (1998).

[22] For example, Feldstein and Samwick (1996) estimate that funding pensions in the Untied States would reduce the deadweight cost of the payroll tax by two per cent of the covered wage bill in the long run. Gustman and Steinmeier (1995), however, find little evidence of changes in labor-force participation in a structural model even if reform induces major changes in pension benefits.

[23] Kotlikoff, Smetters and Walliser (1998) consider cases of full and no perception of the link between taxes and benefits in a study of potential reform with voluntary switching in the United States.

[24] Schmidt-Hebbel (1998) finds that switching to funded schemes can increase productivity by reducing the incentives to evade in a two-sector model of an economy with a relatively capital intensive formal sector.

[25] Lawson (1992), p. 590. Lord Lawson was chancellor of the exchequer from 1983 to 1989 and Baroness Thatcher was prime minister from 1979 to 1990.

The slow transition case (a), results in low initial transition deficits and a very gradual accumulation of assets in the private pension sector.[26] The opposite is true for case (c) where the initial transition deficits peak at the beginning and gradually disappear as the system finally pays off the last of the old obligations. As discussed below, all of the countries that have allowed voluntary switching have opted for a variation of case (b). This option, excluding older workers from the reform, is appealing for several reasons.

Figure 3. **Transition deficit path under different switching-age targets**
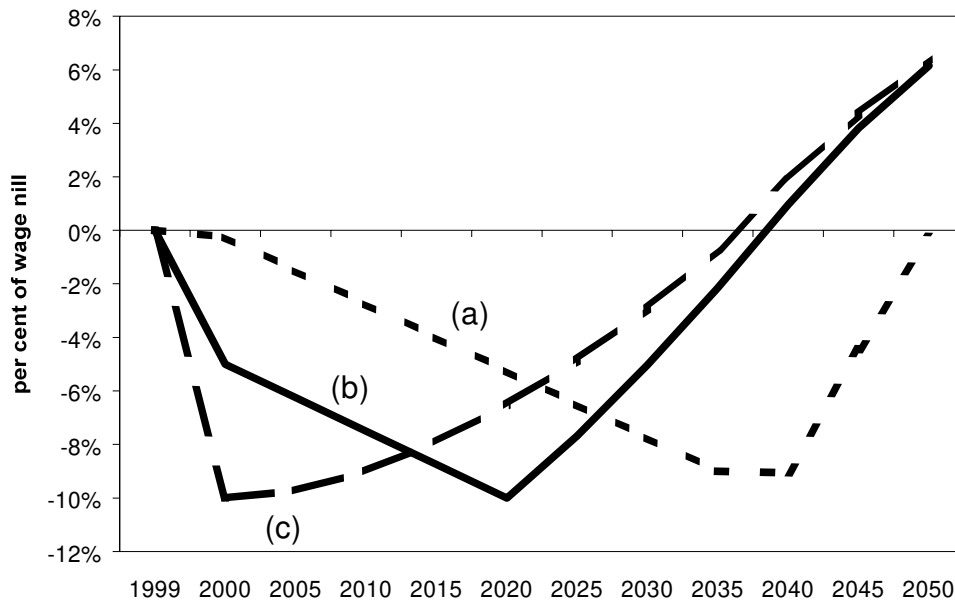
Note: Figure based on a hypothetical pay-as-you-go scheme with deteriorating demographics where contributions are constant and benefits reduced to maintain pay-as-you-go equilibrium. The funded scheme earns a rate of return two percentage points higher than wage growth. The residual public, defined-benefit pension is reduced to maintain the path of total (public plus private) benefits before reform.

First, older workers have a reasonable expectation of the pension they will receive under the old regime. Disrupting these expectations by switching them into a new system might be unfair; it is also likely to provoke the maximum political objections.

Secondly, the economic impact of switching older workers will be small. They will spend few years in the new scheme and so will build up only a small entitlement. There will only be a short period for investment returns to compound, especially if start-up costs affect early commission structures.

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[26] Obviously, this will depend on the covered wage bill.

Thirdly, the short time horizon also means that returns will be more uncertain than for younger workers, for whom bad years and good years are likely to cancel out (if shocks to the rate of return are not persistent).

Fourthly, the move to a funded scheme requires parallel reforms in financial markets and regulation. In particular, shifting older workers would allow little time for development of the insurance sector and building annuities markets.

Persuading older workers of the case to switch is likely to be expensive, either in terms of direct or implicit subsidies (through guarantees to the pension received in the new plan). For these reasons, switching strategy (c) in Figure 3 or a mandatory switch applied to all workers is not optimal.[27]

Older workers can be excluded by setting a mandatory cut-off age. This strategy is likely to produce objections and the age chosen will inevitably be arbitrary. The original plans in both Hungary and Argentina called for cut-off ages, of 47 and 45 respectively. These were dropped after legal challenges. Voluntary switching avoids these objections.

On the other hand, there are two disadvantages to allowing older workers to continue to participate in the public scheme. First, in reforms that eliminate the contribution based first pillar, it results in extra administrative costs during the period in which the old scheme continues to operate. Second, if there are no caps on the switching age some older workers may switch based on poor information. This is a more general problem of 'mis-selling', which calls for government involvement in the dissemination of information about the reform (see section 8, below).

Minimizing transition costs for a given target switching age

We argued above that an essential reason for moving from pay-as-you-go to funded pensions is the additional return earned in capital markets, compared with the implicit return in a sustainable public scheme, which is the growth in the aggregate wage bill. Both of these returns are subject to different kinds of risk, such as capital-market uncertainty and policy risk. The empirical analysis below show that switching exceeded forecasts, suggesting that individuals' perception of policy risk is that it is high and that some workers may have been over-compensated for switching.

In a certain world, the excess return is the triangle between the funded and pay-as-you-go lines in Figure 2. With other policies unchanged, this excess return results in a long-run increase in the replacement rate for the same level of contribution. The area of the triangle also represents an opportunity cost to the government. The empirical analysis of switching in the United Kingdom, below, shows that this opportunity cost can be very large.

The government should appropriate this excess return, either by cutting the contribution rate to the funded part of the system, or reducing residual pay-as-you-go benefits or cutting the value of recognition bonds for younger workers (if the system is only partially shifted to funding). Lower contribution rates could have further economic benefits, by increasing labor supply and reducing evasion. Lower pay-as-you-go benefit levels would help finance the transition deficit. Both of these policies can be achieved while keeping overall pension replacement rates constant.

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[27] Kotlikoff, Smetters and Walliser (1998) find that an option to switch in the United States would reduce the requirements on general revenue and speed the transition path compared with forced participation.

To what extent can the pace of reform be predicted or controlled?

Policymakers are often concerned with the short term fiscal implications of the switching process. Since most reforms (10 out of 12 excluding Mexico for the reasons mentioned above) involve some element of voluntary switching, the analysis described above is crucial, both for anticipating and minimizing fiscal deficits by avoiding overcompensation of younger workers. Many countries failed analyze incentives properly before introducing reform.

In the following section, clear patterns of age-related switching corresponding to the above analysis emerge. In all cases, the voluntary switch has resulted in a case similar to (b) in Figure 3, *i.e.,* a gradual switch involving most young workers. It should then be possible to anticipate a broad pattern, at least distinguishing the three cases presented in Figure 3. This was the case in Hungary and Uruguay before implementation, and afterwards in the United Kingdom, as described below.

6. Experience with voluntary switching

This section outlines experience in seven reforming countries that offered an option to switch between the public and private pension schemes: Argentina, Chile, Colombia, Hungary, Peru, Uruguay, and the United Kingdom.

Hungary

In Hungary, switching is compulsory for new labor-market entrants, but current workers have an option between a 'modernized' pay-as-you-go, defined-benefit pension and switching to a multipillar system. A unique feature of the Hungarian reform is the extent to which analysis of the incentive to switch played an important role both in the design of the reform and in the switch itself, by providing information to workers. A simple simulation model allows workers to input their personal information on earnings, career path, anticipated retirement age and expectation of rates of return. The model then shows expected pension benefits in the modernized pay-as-you-go and multipillar pensions.

Figure 4 shows the results of the model for different age groups. (This Figure is analogous to the stylized reform in Figure 2.) The line shows the projected pension from the modernized pay-as-you-go scheme. The gradual decline in returns for younger cohorts reflects the shift to a gross-wage-based formula and the gradual extension of the assessment period for individual earnings in the formula towards the full, lifetime earnings history. The formula for the pay-as-you-go, defined-benefit first pillar is changed in the same way, and so exhibits the same gradual decline for younger workers. The white area shows the return to the second pillar. This increases for younger cohorts due to the compound-interest effect. The sum of the two gives the replacement rate in the multipillar system. Comparing the two pension values, the multipillar system becomes attractive to workers in their early 30s or younger.

The structure of incentives reflects two deliberate policy decisions. First, the Hungarians were worried that switching would exceed expectations, and so the incentive to switch was deliberately made small (less than five percentage points addition to the replacement rate) and the switching breakeven age low. In practice, the government would have been content with workers up to their early 40s switching to the new scheme, but did not want to build in a large incentive for them to do so. Secondly, the new pension system is designed so that the long-run replacement rate of 60-65 per cent does not represent an increase on that in the current system. With conservative

assumptions, roughly two thirds of the pension will come from the first pillar, and one third from the new first pillar.[28]

A complication in the analysis of switching in Hungary is a defined-benefit guarantee of the value of the second-pillar pension offered by the government. This limits the potential losses from switching to the multipillar regime to about 10 per cent of the pay-as-you-go benefit. Naturally, the guarantee has less value for younger workers who would have to experience highly unfavorable returns to trigger the guarantee. Their switching behavior is not likely to be affected greatly. There is also little effect on older workers because the guarantee is limited to workers with at least 15 years of contributions. The restriction on the loss from switching should encourage more switching at the margin.

Figure 4. **Switching incentives in Hungary by age**
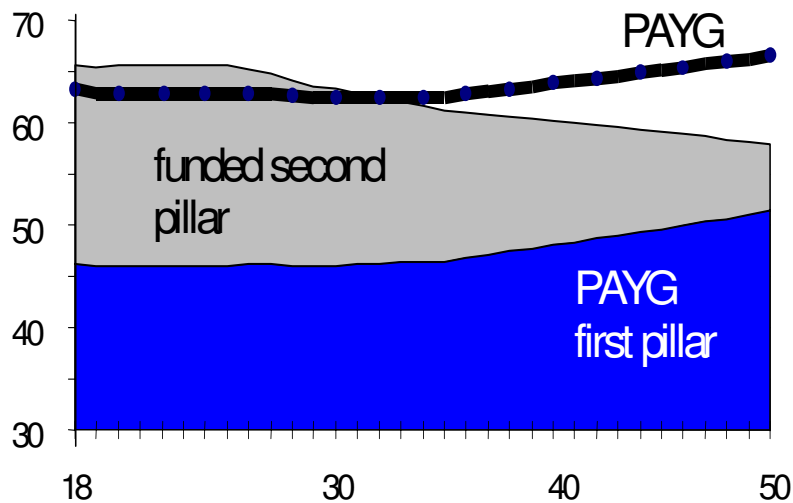
Note: Figure shows replacement rate as a percentage of average net wage
Source: Palacios and Rocha (1998)

Figure 4 shows preliminary data based on the first 50,000 Hungarians who have announced their decision to switch. The data suggest that policymakers have achieved their switching objectives for the age structure of the reformed scheme thus far. Unofficial reports from the pension supervision of the new private pension funds confirm the age pattern continues to hold as the number of voluntary switchers approaches the one-million mark.

Figure 4. **Coverage of funded pensions in Hungary by age and sex, 1997**

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[28] See Palacios and Rocha (1998) for a discussion of the Hungarian reforms.
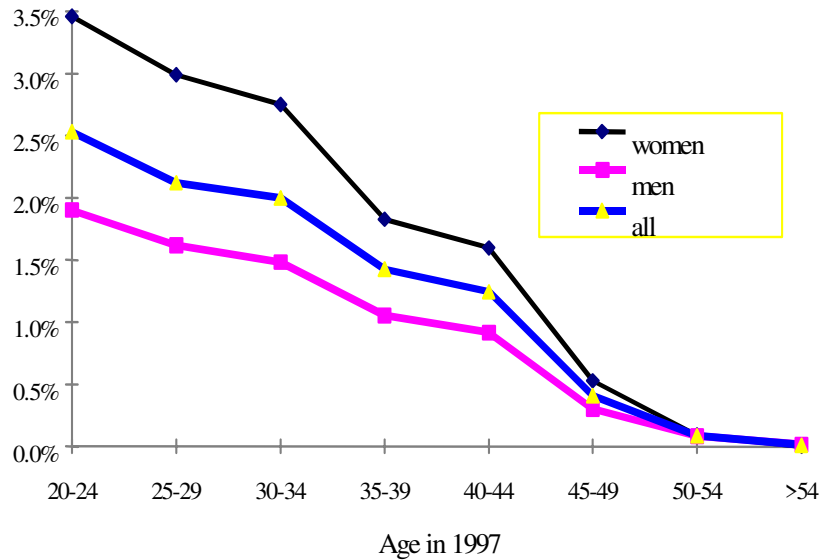
Legend:
- women
- men
- all

Age in 1997

United Kingdom

Two unique features of the pension system in the United Kingdom complicate the analysis of switching. First, there was a large funded sector before reform. This sector, consisting mainly of employer-run defined-benefit pensions, was already able to substitute for the public-sector, defined-benefit plan. These employer-provided schemes covered 45-50 per cent of workers at the time of reform. Secondly, those choosing the new funded, defined contribution 'personal pensions' were able to move back to the state scheme at any point in the future and switching was voluntary even for new labor-market entrants. The appropriate choice variable in analyzing switching behavior is not the total pension earned from switching, but the *marginal* pension earned for each year the individual potentially might switch. Figure 5 shows the incentive structure faced in the first years of the reform, 1988-92.

The Figure shows that increments to personal pensions are greater early on in life. This weighting represents a compound interest effect and the declining value of the contribution that will be paid into the funded scheme as the public-sector, defined-benefit program matures. This is because the rebate for contracting out of the state scheme, known by its acronym, SERPS,[29] is designed *on average* to match the benefit the individual would have received from SERPS. The SERPS curve, in contrast to that for personal pensions, is almost horizontal. This results from the revaluation of individual earnings in early years in line with economy-wide earnings: uprating by prices, for example, would give an upward tilt to the curve. The Figure shows optimum pension choice across the life cycle. The individual would improve their pension by contracting out of SERPS: indeed, at age 20, the value of the rebate for that year is worth four times the amount of SERPS foregone. Over time, the gap between the two closes and after age 50 the personal pension yields a smaller benefit than SERPS. At this point, the individual is better to contract back in to SERPS. This optimum switching strategy would result in a pension of £9,000 a year, compared with £5,000 from staying in SERPS.

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[29] State earnings-related pension scheme. For more details on reform in the United Kingdom, see Disney and Whitehouse (1992*a, b*), Dilnot *et al.* (1994) and Whitehouse (1998).

Figure 5. **Switching incentives in the United Kingdom**
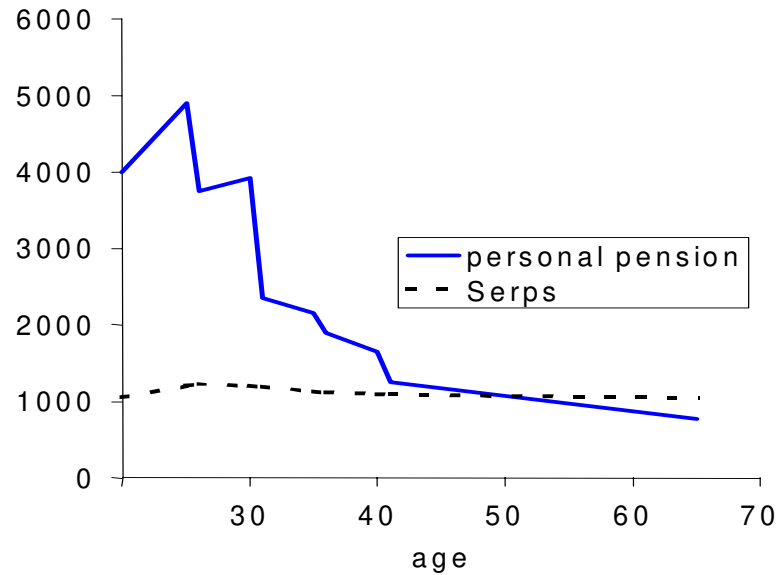
The left-hand bars in Figure 6 show who switched in the first year of reform. The government initially forecast that just 300,000 would switch, although a contingency plan allowed for a maximum of 500,000 switchers. In the event, a total of 3.2 million, or 16 per cent of employees switched in 1988. The failure to predict the numbers switching was because the Government Actuary looked solely at the incentive to switch *on average*, which was close to zero, and ignored the strong relationship with age (see National Audit Office, 1991 and Peacock, 1992).

Switching rates were strongly related to age, as would be expected from Figure 5: 20 per cent of under 35s switched, compared with 5 per cent of over 35s. By 1995, 5.6 million had taken out personal pensions. However, the age pattern of the coverage of personal pensions changed over time. For under 20s, the switching rate fell from 20 per cent to below 5 per cent, while it rose from 20 to 40 per cent of the 25-34 age range. Over the eight-year period, the average age of personal-pension members rose from 29 to 33. This suggests that younger workers were initially persuaded to switch, but that later cohorts of labor-market entrants have delayed this decision until their mid 20s. Taking account of workers already covered by employer plans, the effective switching rate overall was around 80 per cent for men aged 25-55 and 50 per cent for women. Data on switching behavior by earnings show a constant picture. For men earning below £7,500, take-up of personal pensions was 28 per cent, exactly the same rate as men earning over £12,500. For women, the take-up rates in these earnings ranges were 22 and 21 per cent respectively.

Figure 6. **Coverage of personal pensions in the United Kingdom by age, 1987 and 1995** (per cent of employees)
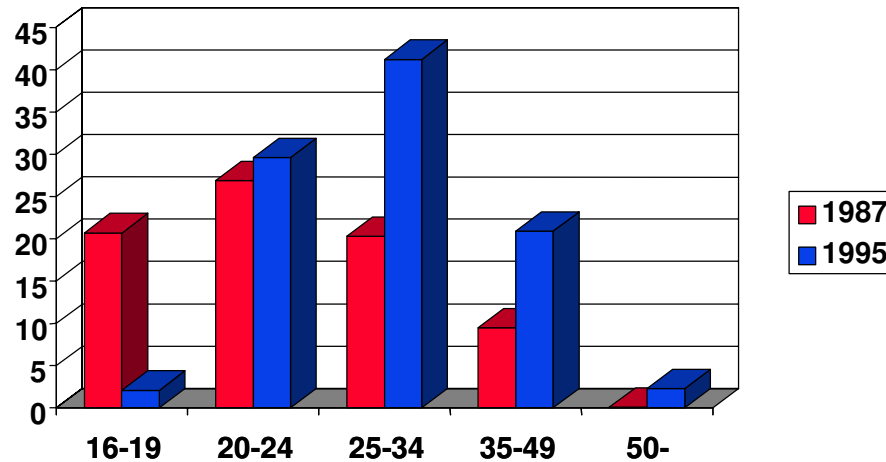
Source: Whitehouse (1998), based on one per cent sample of personal-pension members in Department of Social Security (1997); employment data from quarterly *Labour Force Survey*

Figure 5 showed that the gains to switching for younger workers in the United Kingdom were very large. Between 1988-89 and 1995-96, the government paid some £17.7 billion in rebates of social-security contributions into individuals' pension accounts[30], around 8 per cent of total contribution revenues. But these rebates were far larger than the eventual savings on SERPS benefits in the next century, which Whitehouse (1998) calculates at £9.2 billion. The net cost — £8.5 billion — arises because the government did not adjust the contribution to personal pensions to take account of their increased return and the reduced value of SERPS benefits for younger workers. (See the discussion above on minimizing the fiscal costs of the transition). The government has since reduced the rebate and adjusted it with age to match the SERPS benefits foregone more closely. The net annual cost of contracting out has fallen from a peak of £1.8 billion a year to £0.5 billion.[31]

Argentina

As in the United Kingdom, switching in Argentina was voluntary both for existing workers and for new labor-market entrants. There was no defined-benefit guarantee to the value of the funded pension alternative as offered in Hungary, but switchers are able to move back to the public-sector scheme for the first two years of the reform. The reform was introduced in 1994.

Figure 7, giving data for 1996, shows a strong inverse relationship between switching and age, as shown in Hungary and the United Kingdom. There is some evidence of lower switching rates among the very youngest workers, similar to that in the United Kingdom. However, figures that are more recent suggest that switching rates have risen to close to 100 per cent for new labor-market entrants. As it becomes of residual importance, a logical step would be to phase out the old scheme eventually.

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[30] Department of Social Security (1997), Table H1.01.
[31] Government Actuary's calculations published in Pension Provision Group (1998), Figure 7.1.

Figure 7. **Coverage of funded pensions in Argentina by age and sex, 1996**
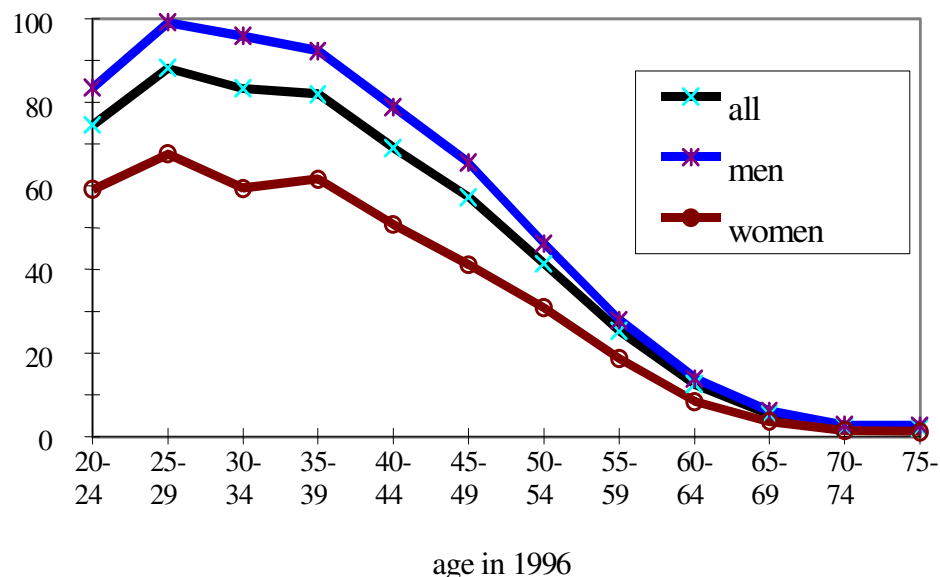
age in 1996

Source: Authors' calculations based on data from Superintendencia de Administradoras de Fondos de Jubilaciones y Pensiones (1997)

Chile

The Chilean reform of 1981 involved a complete transfer of the pension system into private, funded accounts. The government's role is limited to guaranteeing minimum pensions and pension fund returns[32]. Switching was compulsory for new labor-market entrants (beginning in 1983), but voluntary for the existing workforce. Once an individual had switched to the new scheme, there was no option to switch back. Figure 8 shows switching rates by age in 1985. It shows a similar pattern to other countries, with switching strongly inversely correlated with age. The rate close to 100 per cent for the youngest workers partly reflects the fact that switching was compulsory for new labor-market entrants from 1983.

The Chilean switching strategy is notable for several reasons. First, it is somewhat surprising that the authoritarian government of the time opted for a voluntary switch. Secondly, despite being the first reform of its kind anywhere in the world, a very high percentage of workers chose to switch to the new system. This was due partly to the inefficiency of the old scheme and partly to an aggressive public-relations campaign. However, financial incentives — lower payroll taxes and generously valued recognition bonds — were also important.

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[32]   These include the minimum pension guarantee, the relative return guarantee and the guarantee on part of the annuity. These are described in Bertin and Perrotto (1997).

Figure 8. **Coverage of funded pensions in Chile by age, 1985**
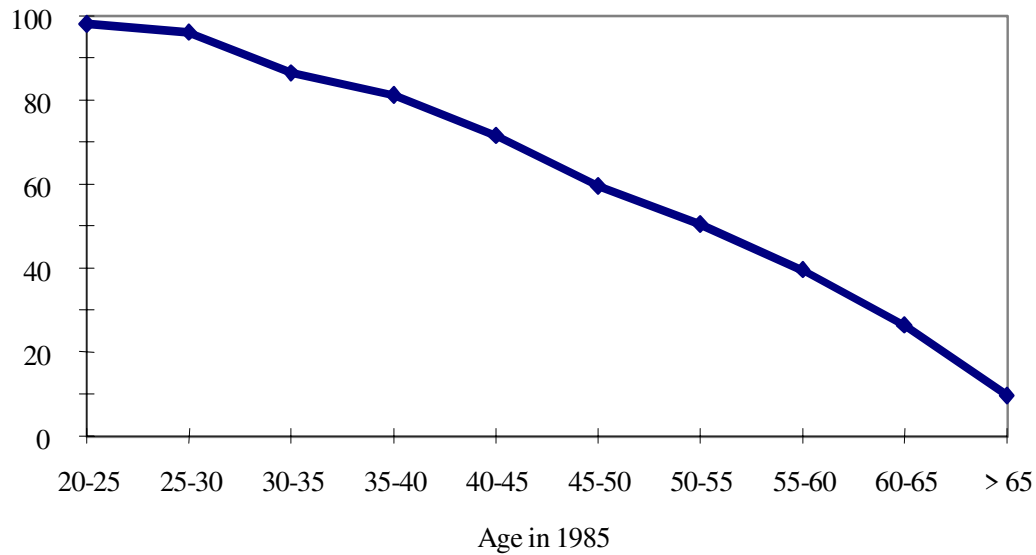
Source: Authors' calculations based on data from Superintendencia de Administradoras de Fondos de Pensiones (1985)

Colombia

Like the Argentine reform, the Colombian reform of 1994 was voluntary both for existing workers and for new labor-market entrants. Switching was a relatively low risk option, because individuals had an indefinite right to return to the old system and a defined-benefit guarantee underpins the performance of the defined-contribution pension funds. Figure 9 shows a similar pattern to other countries, with switching rates for younger workers around 90 per cent. However, the decline in switching with age is much more rapid than other countries, with switching rates of only 10 per cent for 45-54 year olds, compared with over 50 per cent in Argentina and Chile.

Unlike other Latin-American countries, the Colombian public-pension scheme had not been discredited and was not experiencing serious financial difficulties. After the reform, the pay-as-you-go scheme still promised a replacement rate of 85 percent of final earnings, indexed to wage growth for a full career worker. This implied a high rate of return with which the new funded scheme had to compete. For older workers, the policy risk in the public scheme was relatively low and the accumulation period in the funded scheme would be relatively short. For younger workers, the opposite was true and in any case, they could always switch back to the public scheme.

Figure 9. **Coverage of funded pensions in Colombia by age, 1997**

age in 1997
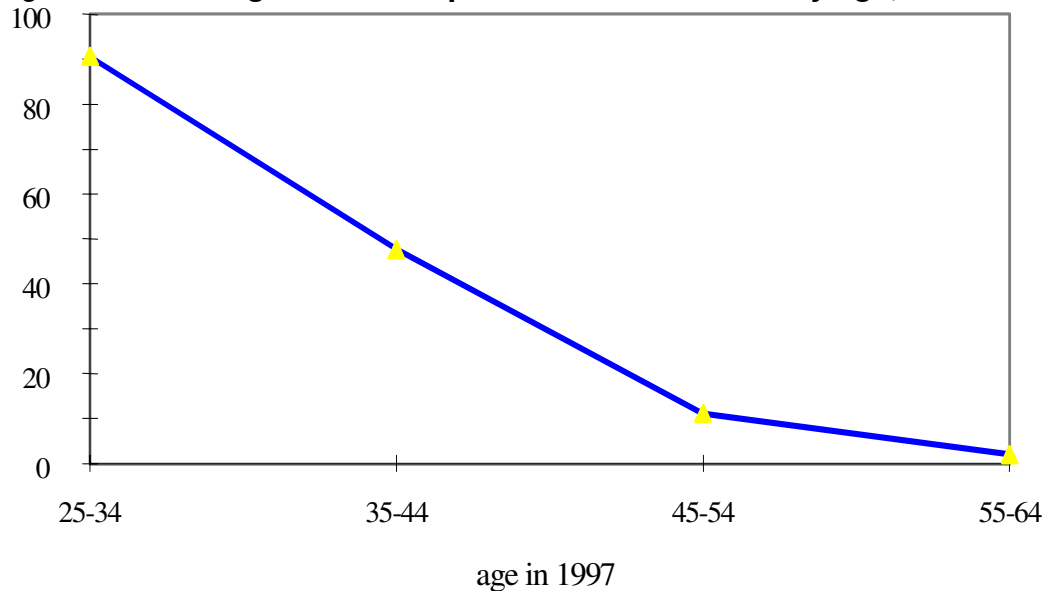
Source: Authors' calculations based on data from ASOFONDOS (1997)

Peru

The new pension system in Peru, introduced in 1993, was also voluntary for both existing workers and new entrants. Although there was no guarantee of the funded pension value, individuals, as in Argentina, could switch back for the first two years of the reform. Switching rates show the same inverse correlation with age as in other countries, but switching rates of 60 per cent for younger workers were lower than in other Latin American countries, where they approached 100 per cent. This probably reflects the lack of clearly defined rules for recognition-bond calculations and of a minimum pension guarantee.

Figure 10. **Coverage of funded pensions in Peru by age and sex, 1997**
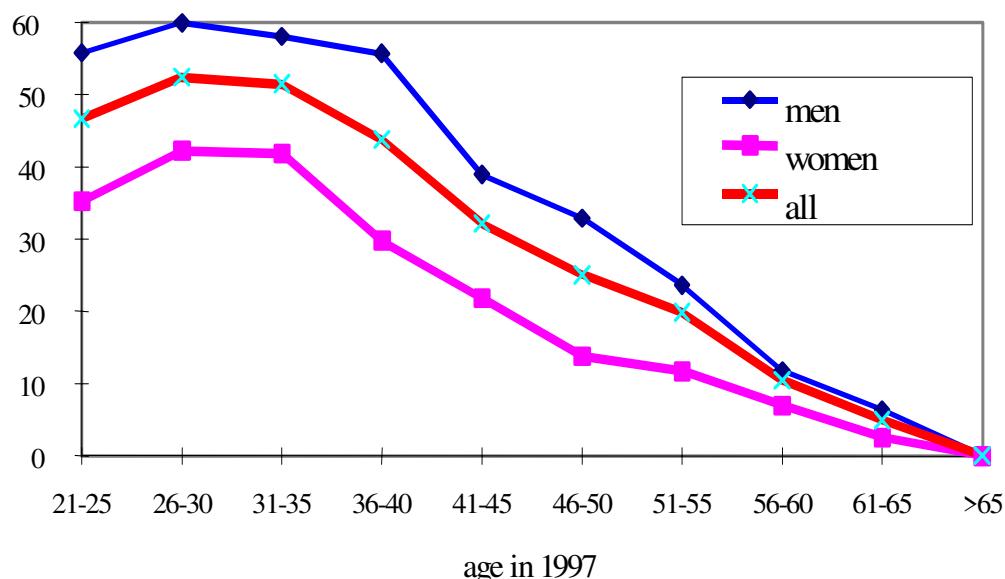
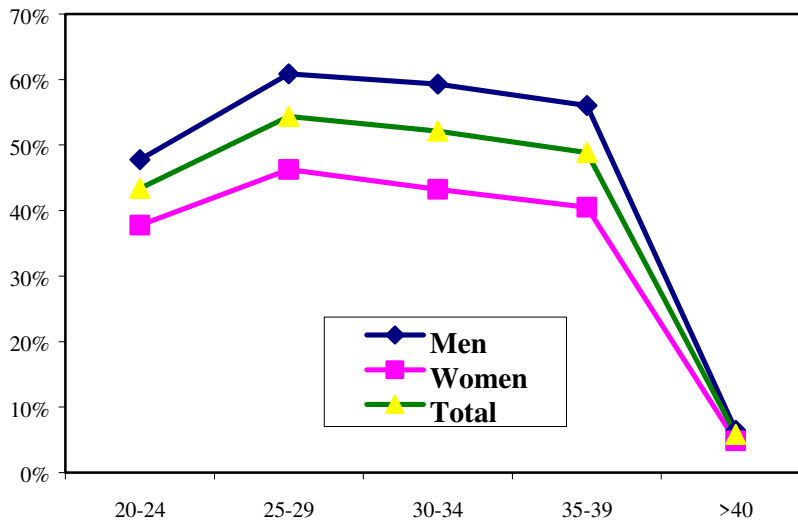*Source:* Authors' calculations based on data from Superintendencia de Administradoras Privadas de Fondos de Pensiones, Peru (1995)

Uruguay

Uruguay's switching policy is the most complex in Latin America. In 1996, approximately 30,000 workers below age 40 and with incomes equivalent to 5,000 pesos a month (in May 1995 values) were forced to switch, as were new entrants with incomes above this level. Workers with incomes below 7,500 pesos a month received an additional incentive to join the funded scheme, since their benefits in the public scheme were reduced by a quarter while half of their payroll contribution was diverted to the second pillar. The government had anticipated that, at most, another 50,000 would voluntarily switch to the mixed scheme. However, external analysis by Marquez (1997) suggested that workers under age 40 would gain from switching to the funded scheme. This analysis was borne out be experience. By the end of 1996, the number of voluntary switchers was six times higher than official projections. By mid-1997, over 400,000 workers had joined the new scheme.

Figure 11 shows switching as of October 1996. Unfortunately, the data are not available on a disaggregated basis above age 40. Nevertheless, it is safe to say that a very small percentage of older workers had chosen to switch to the funded scheme by this time. The 400,000 switchers recorded by mid-1997 are almost equivalent to the number of contributors under age 40. Preliminary evidence suggests younger workers were overcompensated in the switching process. They would have been willing to switch even if the defined benefit had been reduced by more than a quarter. The switching conditions were probably overgenerous and the fiscal cost of the transition greater than required.

Figure 11. **Coverage of funded pensions in Uruguay by age and sex, 1996**

Source: Authors' calculations based on data from Banco de Prevision Social (1997)

7.   Forced switching

Three countries — Bolivia, Kazakhstan and Mexico — have chosen to force all workers to switch to the new private scheme. Not coincidentally, all three countries have completely replaced public schemes with private schemes.[33] Indeed, the desire to bring the public scheme to a definitive conclusion is one of the driving factors behind the choice of a mandatory switch. However, there are several disadvantages to this strategy.

Bolivia and Kazakhstan

The Kazakh and Bolivian reforms force all workers to transfer to the private scheme and to accept the valuation method chosen to recognize their years of contributions to the old defined-benefit plan. One disadvantage is that some workers may challenge this valuation either in the courts or in a political forum. This type of legal challenge was the main reason that reformers in Argentina and Hungary abandoned plans to set an arbitrary cut-off age. The fact that such challenges have not arisen in Kazakhstan and Bolivia might suggest fundamental differences in the legal system or political economy compared with other reforming countries. In Kazakhstan, the reform took a distinctly "top down" form with little input from interest groups or the general public.[34] Another possibility is that the reform was generous enough to pre-empt criticism. In

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[33]   The government role is still present in the form of the minimum pension guarantees in Kazakhstan and Mexico and the new benefit paid to all citizens in Bolivia.   In the terminology of World Bank (1994), these remain multipillar schemes.
[34] Orenstein (1998).

Bolivia, a forced switch was also facilitated by the 'Bonosol', which provides annuities to all Bolivians over the age of 65 financed by privatization proceeds.[35]

While reformers may be able to implement a forced switch under certain conditions, this may increase the potential for later reversal of the reform. For example, if benefits in the first years of the reform are perceived to be lower than under the public scheme, participants who had been forced to switch may have a strong claim against the government for their lost defined-benefit rights. Another possibility is that a forced switch may be easier to reverse in the case leadership changes hands. After all, the switch to the private scheme was not the decision of the voters but of a leadership that has since been rejected by those voters.

To minimize political or legal resistance to the reform while maintaining the forced switching element, the government may be forced to offer a win-win solution to all involved. This could lead to a much higher valuation of terminated defined-benefit rights than would have been necessary to get the majority of workers to switch. Without the ability to price discriminate, the government would have to pay all participants the higher rate (*i.e.,* an intramarginal subsidy) in order to ensure support. Workers would have an incentive to inflate their defined-benefit claims further raising fiscal costs. Of course, in a forced switch, the true value workers ascribe to their defined-benefit pension promise can never be known. True preferences are revealed in a voluntary switch.

Mexico

The Mexican reform provides a clearer example of the tradeoffs that arise when reformers desire an immediate switch for all workers but are constrained concerning valuation of acquired rights. These rights, defined as the ability to continue in the pay-as-you-go scheme, were enshrined in the Mexican Constitution. With this constraint, the only way that the government could achieve an immediate closure of the public defined-benefit scheme was to guarantee switchers that they would get at least as much as they would have if they had remained in the pay-as-you-go scheme. The Mexican lifetime switchback option changes the nature of the switch completely. In a sense, no one was forced to switch to the private scheme since all are guaranteed the pay-as-you-go benefit. For older workers, for whom reliance on the pay-as-you-go scheme is inevitable, there is no justification for the switch whatsoever. In fact, older workers who are disinterested in the performance of their private fund may reduce the efficiency of the sector and its positive impact on capital markets. The costs of administering their accounts are a deadweight loss to society.

8.   **Managing switching behavior**

Most countries have chosen to allow voluntary switching, although four countries —Croatia, El Salvador, Poland, and Uruguay — chose some compulsion for younger workers. Two more — Bolivia and Kazakhstan— forced all workers to switch. El Salvador and Uruguay allow different switching conditions according to income level and gender. In the Chilean, Hungarian and Mexican cases, only new workers were forced to switch in a definitive manner. Argentina and Colombia

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[35] The Bonosol program was replaced with a less generous benefit, the Bolivida, after the reform package had already been passed.

continue to leave the door open to the public scheme even for new entrants. Countries' experience covers the entire range of options.

Compulsion for workers with vested rights in the defined-benefit plan has several disadvantages, especially for workers close to retirement. The fact that only two countries chose this policy supports this contention. Furthermore, we speculate that Bolivia had special circumstances related to the provision of the Bonosol which, when added to a relatively generous valuation of past rights, resulted in a favorable outcome for most workers. Sources in Kazakhstan report that in the first year of the reform, it is not well understood by the public. Even younger workers had to be forced into the new plan because of the intention to reduce long-run target benefit levels.

The pattern of switching in countries with a voluntary reform showed a consistent pattern. Switching is strongly and inversely correlated with age in all cases. The analysis of incentives in Hungary and the United Kingdom showed that this would be expected given the structure of switching incentives. Other countries are likely to show a similar incentive pattern because of backloaded accruals in defined-benefit schemes and the effect of compound interest on defined-contribution returns. Younger workers are likely to perceive greeter risk that the state scheme will be reformed in the future and that pay-as-you-go benefits will be less than initially promised. Both of these point to higher switching rates for younger workers. However, in Argentina, Peru and the United Kingdom, switching rates were lower for the very youngest workers. This is probably a result of myopia: younger workers give little thought to their income 40-or-so years ahead. Where data are available divided by sex, fewer women are found to switch. The only exception is Hungary.[36] This reflects the smaller incentive to switch in the United Kingdom, but in other countries the incentives were the same for both sexes. Finally, where forecasts were made of the numbers switching, they tended to be exceeded (in the United Kingdom and Uruguay, hugely exceeded). However, this usually reflects poor microeconomic analysis of the incentive to switch.

Policy options

Governments have a number of policy options for influencing the numbers who switch voluntarily. The importance of the proportion switching for the success of the reform and for its impact on the public finances suggests that these policies should be considered carefully.

First, the design of the system can affect opportunities for switching. Only a limited window was offered in many countries for switching out of the pay-as-you-go-scheme. This window could be extended if too few workers switched initially. If inertia is likely to be important, the numbers switching can be affected by the default position specified by the government. For example, all current and future workers in Argentina were given a choice between the funded and pay-as-you-go options. But the default for younger workers is that they will be switched. This policy could be adapted so that, for example, all workers under age 30 would default to the funded option, while all over age 30 defaulted to the pay-as-you-go plan.

Secondly, policies can be adjusted to affect directly the incentive to switch by altering the value of pensions in different options. For example in Hungary, the initial reform proposal would have given younger workers far larger benefits from switching, but the government feared that switching would exceed their forecast. By reducing the first-pillar pension accrual rate over time, the returns from switching for younger workers were reduced. An alternative method of adjusting the incentive would be to alter the contribution rate to the second pillar with age. This policy was

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[36] These data are, however, preliminary and cover only 1 per cent of employees.

adopted in the United Kingdom when it was found that incentives for younger workers to switch were too large. A single contribution rate of 7.8 per cent was reduced to 5.8 per cent, and, in 1996, was replaced by an age-related contribution ranging between 2.3 and 9 per cent.

Thirdly, incentives to switch can be affected indirectly. Some countries have offered guarantees of the funded pension value, which clearly reduces the risk of choosing this option and increases the incentive to switch. Also, some countries offer opportunities to switch back to the pay-as-you-go option if returns do not meet expectations (see Table 2).

Finally, the information available to workers is important in affecting their switching decision. The United Kingdom raises the problem of pension mis-selling in a voluntary switch, where people are persuaded to switch when it is not in their interests.[37] Part of the problem in the United Kingdom relates to the unique, complex interaction between existing employer-provided pension plans and the new defined-contribution accounts. But this risk could occur elsewhere. Returning to Figure 2, workers over the age of 40 could be persuaded to switch, and if capital-market returns turn out as expected, then their pension would be below their pay-as-you-go entitlement.

Governments have three possible strategies for dealing with the mis-selling issue. First, they can offer a guarantee or a window for switching back for workers who make the 'wrong' decision. Secondly, regulation can be used to curb the excesses of those marketing private pensions. Thirdly, they can provide information to try to promote rational decision making. In the first year of its reform, Hungary aims to minimize switching errors by disseminating a simulation model of the returns to different pension options. The model is available on the Internet and at a dozen or so information centers located around the country as well as mobile centers. The new private pension funds also use this official model to inform prospective clients. Combined with consumer protection initiatives and a window for reversing the switching decisions, the Hungarian policymakers hope to see a close relationship between switching behavior and incentives.

9.   Conclusions and recommendations

This paper has considered a critical question in the design of pension reform: who should be permitted, persuaded or mandated to join the new pension system. We showed a range of possible options, from an entirely voluntary switch to an entirely mandatory one, via schemes that are mandatory for some workers but voluntary for others. Pension reforms in 13 countries include all possible models. We argued that older workers are best excluded from reform because the economic returns from switching their pensions are likely to be too small to justify the efforts and that the required subsidies or guarantees to persuade them of the benefit of reform are likely to be high. However, having a defined cut-off age for switching is also problematic. It raises the issue of intergenerational equity, treating individuals on either side of the (necessarily arbitrary) cut-off age differently. It also assumes that cohorts are homogeneous in their attitudes to pension reform and to uncertainty of pension values, which is unlikely. For these reasons, we argue that voluntary switching is superior.

Most countries have chosen a partially or completely voluntary switch. The principle objections to a voluntary switch are the continuation of the pay-as-you-go scheme, increasing administrative costs, and uncertainty from the government's perspective over how many people will choose the different options. But the empirical evidence shows remarkably similar patterns

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[37] See Whitehouse (1998), section V.

confirming that, at least in a broad sense, the switching pattern can be anticipated. A rapid transition distinguished from a gradual transition. Depending on the objectives, the switching process can be influenced by several policy levers. Governments can change the conditions of the switch for current workers by adjusting the value of their historical contributions. This valuation should take into account the age-related incentives of the funded scheme. They can alter the contribution rate for the funded scheme or change the design of a reformed pay-as-you-go scheme to affect the incentive to switch. The latter option reduces public pension obligations and helps finance the transition. They can also affect the incentive indirectly, by adjusting explicit or implicit guarantees of the minimum pension, manipulating the default option or the changing the window for switching out of the state scheme. The government should help ensure that workers understand these conditions by providing the information workers will need to make an informed choice.

10.   References

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