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Policy and implementation issues in reforming pension systems

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INTRODUCTION

In the light of the existing financing problems of pay-as-you-go social security pension systems and the greater difficulties they will face in future as the demographic situation deteriorates, the issue of pension reform is becoming a matter of growing importance in OECD countries, developing countries and countries in transition. This paper seeks to facilitate discussion of the underlying economic issues by offering a schematic presentation of the various benefits and costs arising from the various alternatives available in respect of reform, with the major emphasis being on a shift towards funding. It is hard to exaggerate the importance of correct policy choices in this area: for all countries, government policy is the overriding influence on the structure of retirement income provision; and such choices will in turn have strong positive or negative effects on both welfare and growth. Specifically, the paper considers the potential consequences arising from the choices between:

- pay-as-you-go and funding
- mandatory versus voluntary provision of funded pensions
- the issue of fiscal privileges for private funded pensions
- public versus private administration of funded schemes
- occupational versus personal funded pensions
- defined contribution versus defined benefit funded pensions
- internal versus external funding
- portfolio regulation versus prudent man rules for funded pensions
- mandatory indexation or discretionary indexation of benefits.

The issues are to some extent sequential, in that for example the issue of fiscal privileges only arises for funded pensions, and the issue of portfolio regulations versus prudent man rules are only relevant for externally funded pensions. In each case the basic issue is presented, followed by a table listing the main *costs* and benefits of the alternatives, and lastly an assessment is made of the overall balance of the argument from the author's point of view. The tables include an assessment from the point of view of:

- retirement income security
- financing issues
- effects on labour markets
- effects on capital markets

and also include a list of countries whose experience warrants further attention in respect of the topic concerned. It should be noted that the topics covered are in some cases potentially vast, notably the pay-as-you-go/funding split and that between defined benefit and defined contribution. Hence, an issues-oriented paper of limited length can at most cover these topics in a general rather than detailed manner. Some references are provided for further study. Moreover, in many cases the appropriate balance of choices will depend on the particular circumstances in the country in question (e.g. effects on labour market incentives often depend on whether pension contributions are seen as saving or as a tax). Close study of national circumstances is hence warranted.

Beyond country-specific circumstances, this last point applies strongly to the distinction between countries that have relatively developed financial markets and institutions and those that do not. Developing and transition economies often have fledgling stock markets with few securities traded, a paucity of financial instruments, few regulatory safeguards, inadequate information disclosure, and a patchwork of government subsidies and financial instability which make securities and companies difficult to value. In transition economies, even basic legal systems protecting property rights and ensuring legal rights in bankruptcy may not be established. Fraud may be rife, and even in its absence administrative costs charged by financial intermediaries may be very high. Meanwhile, where there are few listed companies, there is little possibility of diversification. Inflation can be very high and unpredictable, which renders financial assets vulnerable to real losses. Share and bond prices are typically volatile and vulnerable to effects of purchases and sales by foreign investors, as well as insider manipulation. Partly reflecting such conditions, a “savings culture” may be absent among the public and/or “short-termism” may be rife among investors. In such conditions, standard judgements applicable to pension reforms may need to be modified. We seek in the paper to reflect these points when necessary; an Annex notes some general preconditions for pension reform in developing and transition economies.

1 FUNDING AND PAY-AS-YOU-GO

The issue: Should pension benefits be financed in advance by the accumulation of financial or real assets, or should they be financed directly by contributions from current employees? Note that a key difference between the former and the latter is that funding is more likely to be actuarially fair, with contributions and benefits being closely linked, while pay-as-you-go is typically not actuarially fair (e.g. owing to an objective of redistribution). “Defined contribution” pay-as-you-go can be conceived but is not common (it requires reserves to cover shortfalls from year to year). Pay-as-you-go may be “basic” covering needs for subsistence in retirement on a flat rate basis, or “insurance” based, which seeks to maintain pre-retirement living standards by provision of earnings-related pensions.

Benefits and costs: 1. Funding and pay-as-you-go

	Funding	Pay-as-you-go
Retirement income security	<p>May invest internationally and hence diversify risk away from the performance of the domestic economy.</p> <p>May be less vulnerable to “political risk” of a reduction in replacement ratios, if property rights under funding are considered more inviolable than accrued rights to pensions under pay-as-you-go.</p> <p>May reduce <u>old-age</u> poverty by mandating saving.</p> <p><i>Is vulnerable to risk of overall asset market volatility, notably losses in real value of assets that may be sustained following unexpected inflation (if there are no reliable indexed instruments available).</i></p> <p><i>May be more vulnerable to fraud than pay-as-you-go.</i></p> <p><i>Is typically unable to redistribute income to the <u>lifetime</u> poor; low income workers and those with broken careers may suffer low pensions. Given social preferences to redistribute, another system of social assistance will tend to be set up in any case.</i></p>	<p>Is not vulnerable to asset market volatility.</p> <p>Can provide immediate pensions without waiting for assets to build up.</p> <p>May be used by governments to redistribute income to the lifetime poor, or to older generations in the context of rapid economic growth.</p> <p><i>Dependent on the performance of the domestic economy, notably in terms of wage and productivity growth. Returns to individuals may fall sharply as population ages.</i></p> <p><i>Often involves unintended transfers to the rich, who enter the workforce later and live longer than the poor.</i></p> <p><i>Relies on the goodwill of future generations of workers to pay pensions (pensions are subject to “political risk”). This may manifest itself in cuts in replacement rates or failure to index pensions.</i></p>
Financing issues	<p>Offers a potentially lower cost of pension provision, as long as the return on assets exceeds the growth rate of the wage bill.</p> <p>Spreads the burden of provision across the generations and over time, and is likely to require less extreme peaks in contribution rates as a consequence.</p> <p>If it increases saving and investment may have direct and “endogenous” effects on economic growth, thus facilitating future pension provision by raising GNP.</p> <p>Eases burden of remaining pay-as-you-go, notably reducing the political pressure to make it more generous.</p> <p><i>Usually is subject to higher administrative and regulatory costs, especially for personal pensions.</i></p> <p><i>The costs of transition from pay-as-you-go may make switching to funding unattractive, notably the issue of the generation being forced to “pay twice” in case of tax financing. Whereas bond financing allows a spreading of these costs between generations, this solution may generate financial market difficulties such as loss of credit rating.</i></p>	<p>Typically benefits from lower administrative costs than funding.</p> <p><i>Requires continued rapid population and wage growth to be viable; is particularly vulnerable to population ageing and its impact on required contribution rates; ultimately the system may become unviable.</i></p> <p><i>Concentrates the burden of provision on generations that are working as the population ages.</i></p> <p><i>Depending on the benefit formula, costs may rise faster than ageing owing to early retirement and disability provisions. There may also be direct political manipulation of benefit formulae.</i></p> <p><i>Evasion of contributions may drive up contribution rates for remaining payers.</i></p> <p><i>Owing to high contribution rates and/or subsidies from general revenue, may crowd-out government expenditure on valuable public goods (education, infrastructure), reducing growth.</i></p> <p><i>Builds up long-term expectations that are hard to reverse (a “built-in constituency” of the middle aged and elderly).</i></p>

Benefits and costs: 1. Funding and pay-as-you-go (continued)

<p>Effects on labour markets</p>	<p>Since funded schemes (especially defined contribution schemes) are more actuarially fair than pay-as-you-go, they typically have a less distortionary impact on labour supply decisions, boosting labour force participation.</p> <p>Workers may be more willing to accept adjustments in working conditions (“labour market flexibility”) if they have a stake in profitability via a defined contribution pension fund; more generally, at a national level the conflict of capital and labour could be alleviated.</p> <p><i>Occupational funded schemes (notably defined benefit) may hinder labour mobility, and also lead firms to press workers into early retirement.</i></p>	<p>Are usually freely transferable between jobs without any loss.</p> <p><i>Contributions are more likely to be seen as taxes, as the systems are usually not actuarially fair. They thus reduce labour supply and/or may lead to widespread evasion of contributions and misallocation of labour to the “black economy”.</i></p> <p><i>Typically has provisions which encourage early retirement, thus raising the costs of the plan unduly and depriving the economy of productive workers.</i></p> <p><i>Contributions may also affect labour demand and induce substitution of capital for labour to the extent that the cost of contributions falls on the employer (e.g. if there are wage rigidities and products are sold in competitive markets), also impacting on overall competitiveness of the economy.</i></p>
<p>Effects on capital markets</p>	<p>May generate increases in national saving, especially if mandatory, (and as long as funding does not induce governments to raise consumption). This in turn increases the stock of fixed capital and output from which pensions are paid.</p> <p>Is likely to generate increases in the supply of long term assets, thus encouraging productive investment as well as boosting development of capital markets (including “qualitative improvements” such as disclosure, innovation, regulation, better accounting) and improving resource allocation. Facilitates privatisation.</p> <p><i>At a national level, demographic change may lead to sharp changes in capital accumulation that may destabilise capital markets; at a global level, if funding becomes predominant, rates of return on financial assets may decline.</i></p> <p><i>If funded schemes are forced to hold domestic assets, they may generate “bubbles” in narrow markets; or if they hold government paper, the government may be tempted to spend more.</i></p> <p><i>Requires a degree of financial development (banking system, regulation, capital markets, see Annex) to be viable; more generally, increased saving only benefits growth if it is well allocated.</i></p>	<p><i>Pay-as-you-go may reduce saving, especially if benefit promises are generous and considered to be credible. This is particularly because the first generation receives “free pensions” in excess of their saving, while succeeding generations pay taxes in the expectation of a pension rather than saving for it; lower saving will reduce capital accumulation and growth.</i></p> <p><i>Generous and credible insurance-based pay-as-you-go systems will tend to “crowd-out” voluntary funded pension schemes.</i></p> <p><i>Generates “implicit government debt” which may impact on cost of funds in international financial markets, credit ratings, etc.</i></p>
<p>Country examples</p>	<p>Funded social security schemes: Sweden, Finland. Funded occupational schemes: Switzerland, Denmark, Australia. Funded personal schemes: Chile.</p>	<p>Basic pay-as-you-go: all OECD countries. Insurance-based pay-as-you-go: Germany, France, Italy, United States.</p>

Assessment: One important aspect of the pay-as-you-go funding choice is that in equilibrium the rate of return to pay-as-you-go is equal to the growth of wages times the old age dependency ratio, while that of funding is the interest rate net of administrative costs times the passivity ratio (years of retirement/years of work). Initially pay-as-you-go seems cheap as there are few retirees (a low dependency ratio), but costs rise as the population ages and hence the dependency ratio rises faster than the passivity ratio. In our view, given differing risks both may be best employed, as a hedge. Its comparative advantage in terms of redistribution suggests pay-as-you-go should be basic – to act as a form of safety net for poverty alleviation – and funding should cover the needs for maintenance of pre-retirement living standards. This is because a comprehensive pay-as-you-go system is likely to engender considerable economic distortions (early retirement, disability pensions, evasion), as well as being vulnerable to the effects of population ageing. It may be added that labour market inefficiencies increase with the narrowness of the tax base. Funding’s overall economic and financial benefits – including development of equity and corporate bonds markets and qualitative improvements to financial markets – must also be taken into account. In addition, the “endogenous growth” effects of an increase in capital investment on labour productivity, which can raise the economic growth rate, may be particularly powerful in transition and developing countries if a switch from pay-as-you-go to funding induces a shift from the labour-intensive and low productivity “informal” sector to the capital-intensive and high productivity “formal” sector. On the other hand, funding may require a certain level of domestic financial development to be viable, unless assets are to be invested internationally. Benefits of funding are vulnerable to inefficient investment and high administrative costs.

2 MANDATORY VERSUS VOLUNTARY PROVISION OF FUNDED PENSIONS

The issue: Should pension provision be obligatory for all members of the workforce, and hence (in the case of occupational plans) also for employers, or should the provision of pensions be voluntary, with employers and/or employees choosing to provide pensions on the basis of self interest, in the light of any incentives that may be provided. Note that given they involve a degree of redistribution, pay-as-you-go schemes are usually compulsory; i.e. the choice only arises for funded schemes. (The exception – not covered in detail here – is “insurance-based” pay-as-you-go schemes as in the UK and Japan, from which opting out is feasible in the context of a substitute funded scheme.)

Benefits and costs: 2. Mandatory versus voluntary provision of funded pensions

	Voluntary provision	Mandatory provision
Retirement income security	<p>Allows a greater degree of individual choice in the level of retirement income security.</p> <p><i>Leaves “myopic” individuals at risk of poverty in old age. Unwillingness to save may be rife in transition economies where the state has traditionally been all-embracing and financial markets are viewed with suspicion.</i></p> <p><i>Voluntary provision may lead to a skewed pattern of coverage, with middle class, organised labour, workers in large firms, men, being disproportionately covered.</i></p> <p><i>Faces difficulty of adverse selection in annuities market (where costs of annuities reflect the worst risks owing to asymmetries of information between annuitants and insurers), especially if there is an option of “lump sum” benefits, implying only those expecting to live long will require annuities.</i></p> <p><i>Voluntary schemes cannot feature redistribution.</i></p> <p><i>Low-income workers are less likely to save voluntarily or be attracted by tax privileges (owing to lack of taxable income).</i></p>	<p>Ensures all individuals have basic cover for retirement income needs, as is necessary in the absence of the “extended family”.</p> <p>Overcomes the adverse selection problems of private annuities markets, as long as annuitisation of benefits is the only option.</p> <p>Overcomes the free rider problem that individuals might refuse to save for retirement if they know society will protect them from poverty (note: governments may overlay investment risk with a minimum income guarantee).</p> <p><i>Where pension provision is itself a novelty (i.e. it does not replace pay-as-you-go) it may hasten the demise of informal networks of support.</i></p> <p><i>Low-income workers forced to save at a high rate may lose out on lifetime consumption, especially if they tend to die earlier than the better off.</i></p> <p><i>Mandatory funded schemes tend to be defined contribution (generally on grounds of economic efficiency but also to minimise costs to the corporate sector), offering greater risks in some respects to workers than defined benefit.</i></p>
Financing issues	<p>For occupational schemes, allows firms in financial difficulty to avoid costs of provision, which might otherwise hasten bankruptcy (i.e. given the option not to set up a scheme).</p> <p>More generally, firms will only set up schemes when these are justified on cost grounds, e.g. taking advantage of economies of scale in administration and investment.</p> <p><i>Requires forms of tax incentive to encourage take-up across the entire workforce, thus raising the cost to the state. The tax benefits accrue particularly to higher income workers who would have saved in any case.</i></p> <p><i>Requires considerable and costly information dissemination.</i></p>	<p>The government need not gather costly information on individuals’ preferences</p> <p>The government need not offer tax incentives. Funded schemes on a compulsory basis are more likely to relieve social security of its burden of provision.</p> <p><i>For compulsory occupational schemes, companies cannot avoid pension obligations, which may reduce labour demand and/or impact on competitiveness.</i></p> <p><i>Since there are economies of scale, there are high average administrative costs as a proportion of assets initially as mandatory funded schemes are phased in.</i></p> <p><i>A mandatory funded scheme puts a considerable onus on government to provide strong safeguards in terms of regulation and insurance, which may be costly.</i></p>

Benefits and costs: 2. Mandatory versus voluntary provision of funded pensions (continued)

Effects on labour markets	Limits labour market disincentive effects if contributions are seen as saving. <i>For occupational schemes, may hinder labour mobility, notably if terms of voluntary schemes are not standardised</i>	Facilitates labour mobility if scheme is uniform in terms of vesting and offers transferability. <i>May worsen disincentive effects on labour supply if contributions are seen as a tax; at low rates of return ultimately may lead to early retirement, evasion and shift of labour to the "informal sector".</i>
Effects on capital markets	<i>Voluntary provision is likely to induce shifts between types of asset accumulation without affecting the overall level of saving.</i>	Compulsion is more likely to generate an increase in saving, as lower income individuals who have no discretionary saving and face liquidity constraints on borrowing are forced to accumulate assets. Impacts also on national saving as long as governments do not cut saving as a consequence.
Country examples	Funded occupational schemes: United Kingdom, Netherlands, United States, Japan. Funded personal schemes: Most OECD countries.	Funded social security schemes: Sweden, Finland. Funded occupational schemes: Switzerland, Denmark, Australia. Funded personal schemes: Chile.

Assessment: For relatively advanced countries, we feel that equity and efficiency are best balanced by compulsion in “basic” social security (i.e. flat rate payments) only; development of an efficient occupational pension sector based on opting out of earnings-related social security, with appropriate tax incentives, should be sufficient to attract employers and employees. However, where a pre-existing voluntary system is wholly absent, where a “savings culture” is wholly absent and/or even basic social security schemes are moribund (e.g. in transition economies), a mandatory funded scheme may be appropriate.

3 FISCAL PRIVILEGES OF PRIVATE FUNDED PENSIONS

The issue: Pensions may be taxed at three points, when money is contributed, when investment income is earned and when retirement benefits are paid to scheme members. Should saving for (funded) pensions benefit from tax privileges or are these undesirable and unnecessary? The privilege considered is exemption of asset income (the expenditure tax). The alternative is to tax investment income (comprehensive income tax). A subsidiary choice is whether to tax contributions or benefit payments. The taxation of benefit payments offers benefits of tax deferral to recipients, as well as giving a larger “pool” of saving on which income is earned.

Benefits and costs: 3. Fiscal privileges of private funded pensions

	Privileges	No privileges
Retirement income security	<p>Increases the likely take-up of funded pensions when provision is voluntary, thus ensuring post retirement living standards are maintained.</p> <p>By appropriate provisions, can ensure that saving is in the form of contractual annuities which are the best means to protect against longevity risk (owing to myopia and consequent disregard of longevity risk, most people would not voluntarily save in this manner).</p> <p><i>Tax-privileged schemes often include tax-free lump sums, which are easily dissipated rather than being used for retirement income purposes.</i></p>	<p><i>Reduces the likely take-up of funded pensions when provision is voluntary.</i></p> <p><i>If the tax authorities do not make the distinction between nominal and real returns (i.e. nominal returns are taxed) a comprehensive income tax also induces a growing distortion dependent on the rate of inflation which may impact on overall saving.</i></p>
Financing issues	<p><i>Increases the costs to the public finances of providing a given level of funded benefits, although an offset can be provided by lower social security burdens due to increased 'opting out' of state provision and/or means testing.</i></p> <p><i>Is more likely to benefit high income earners (i.e. tax benefits may be regressive).</i></p>	<p>If there are no tax benefits and provision is compulsory, the cost to the state is reduced without loss of coverage.</p> <p><i>Increases the cost to the individual or the company of providing a given level of benefits.</i></p> <p><i>Taxation of funds pooled across individuals with varying marginal tax rates is administratively complex and costly.</i></p>
Effects on labour markets	<p>By encouraging development of occupational funds as a means of saving, enable the employer to take advantage of the uses of such funds for managing the workforce.</p>	
Effects on capital markets	<p>Minimises distortion to saving decisions (technically, with an expenditure tax the post-tax rate of return equals the pre-tax rate, and consumption is taxed at the same rate now and in the future).</p> <p>May increase or reduce saving, depending on the income and substitution effect (distribution of target savers) and the effect on holdings of other financial instruments.</p> <p><i>If not universally applied, distorts the choice of saving instrument towards pensions and away from other forms of saving.</i></p>	<p>Treats equally the different uses to which income may be put – saving is seen as just another commodity, like consumption – and hence maintains neutrality between consumption and saving.</p> <p>As a “second best option” to an expenditure tax, maintains equal treatment for all types of saving</p> <p><i>However, it also reduces the incentive to save by driving post-tax rates of return below the pre-tax rate.</i></p>
Country examples	<p>United Kingdom, United States, Netherlands.</p>	<p>Australia, Denmark, New Zealand.</p>

Assessment: Whether there is a case for special treatment of pensions relative to other forms of retirement saving may depend on the view taken that contractual annuities as offered by pension funds have unique features in retirement income provision, absent from other forms of saving. Inability to dissipate pension funds prior to, and in most cases after, retirement is the key feature in this regard. We consider the advantage of contractual annuities decisive, and hence suggest that pension funds should be tax advantaged even if other forms of saving are not, as long as most or all of pension pay-outs are in annuity form. Measures to minimise

abuse of tax privileges by high earners are nonetheless clearly justified, as are limitations to the degree to which benefits may be taken as lump-sums.

4 PUBLIC VERSUS PRIVATE ADMINISTRATION OF FUNDED SCHEMES

The issue: Should the administration and investment of the assets accumulated by funded schemes be in the hands of the public authorities, or decentralised to many pension funds and asset managers in the private sector?

Benefits and costs: 4. Public versus private administration of funded schemes

	Public administration	Private administration
Retirement income security	<p>Public funds are able to engage in redistribution if desired.</p> <p><i>Public funds are often invested solely in government bonds which may in developing or transition countries offer a low or negative real return (acting as a hidden tax); even in advanced countries, bonds are relatively easy to devalue with inflation.</i></p> <p><i>Even if assets other than government bonds may be held, investment is likely to be focused on domestic assets and hence returns will be tied to the performance of the domestic economy.</i></p> <p><i>Owing to weak incentive structures and/or political interference, portfolios are unlikely to be appropriately invested for optimal combinations of risk and return. Even where investment is efficient, governments may be tempted to tax away a large part of returns.</i></p>	<p>Assets are likely to be better diversified and efficiently allocated and hence are more secure.</p> <p>Is likely to include international investment, thus diversifying risks away from the domestic economy and financial markets.</p> <p><i>The success of private administration depends heavily on the performance of the asset management sector, which may be influenced by the degree of competition, representation of foreign firms, etc. An inefficient asset management sector may take excessive risks, or indulge in abuses such as “front running” portfolios with pension monies.</i></p> <p><i>Privately administered occupational funds may be vulnerable to fraud at the level of the employer.</i></p>
Financing issues	<p>Costs of administration may be lower – although owing to lack of profit-incentives to civil servants, there may also be less pressure to ensure costs are minimised.</p> <p><i>Is nevertheless likely to increase overall costs of benefit provision, owing to low rates of return for given risk arising from poor investment of funds.</i></p> <p><i>Diseconomies of scale in asset management may apply, notably inability to shift investments without “moving the market”.</i></p>	<p>Efficient investment should reduce costs by raising rates of return for a given risk.</p> <p><i>Fund size may be uneconomically small; administrative costs may be higher.</i></p> <p><i>Marketing costs of personal pensions are high.</i></p> <p><i>The more complex regulatory structure required by private asset management (to protect workers in the presence of asymmetric information) increases costs for both personal and occupational funds.</i></p>

Benefits and costs: 4. Public versus private administration of funded schemes (continued)

Effects on labour markets	<p>A single “pool” of assets makes it feasible to standardise terms for defined benefit schemes, thus increasing labour mobility (but terms may also be standardised by appropriate regulation of decentralised schemes, notably for defined contribution).</p> <p><i>If returns are low and/or there are forms of redistribution, contributions are more likely to be viewed as taxation, thus distorting labour supply decisions or engendering evasion.</i></p>	<p>Labour market distortions are less likely as contributions to privately administered funds are more likely to be seen as saving which is invested at a market rate of return and not taxation.</p>
Effects on capital markets	<p><i>By mandating investment in government bonds, may divert fixed investment away from its most profitable uses to investment projects preferred by politicians in their own interests, including bailing out of state enterprises.</i></p> <p><i>Existence of a trust fund may also induce higher government consumption, in which case there will be no productive assets to back benefit promises.</i></p> <p><i>Private sector may be crowded out from access to finance, reducing growth.</i></p> <p><i>Public managers may exert undue influence on the corporate sector (“backdoor nationalisation”).</i></p>	<p>Is more likely to ensure development of capital markets; efficient allocation of financial assets to the investments which are most profitable; and international investment.</p> <p>As with public funds, private managers may exert influence on the corporate sector, but this may be a positive one (“shareholder value”).</p> <p><i>Issues of “capital market institutionalisation” arise (e.g. short-termism, difficulties in small firm financing, excess volatility of asset prices).</i></p>
Country examples	<p>Sweden, Malaysia, Singapore.</p>	<p>United Kingdom, United States, Netherlands.</p>

Assessment: We see no strong arguments in favour of public investment of pension monies, and many against. The lack of transparency in the disposal of funds by a public agency and weak incentive structures as well as vulnerability to shortsighted political influence engenders many of the problems. It is nonetheless crucial that regulation of private asset managers should be adequate, and the market structure of asset managers is such as to favour efficient investment of portfolios.

5 OCCUPATIONAL VERSUS PERSONAL FUNDED PENSIONS

The issue: If there are to be decentralised funded pensions, should they be managed at the level of the company on behalf of the workforce, or should there be individual accounts, run by private sector asset managers? Regulation is essential for both, but the nature and locus of regulation differs.

Benefits and costs: 5. Occupational versus personal funded pensions

	Occupational	Personal
Retirement income security	<p>By offering a diversified pool of clients to the annuities market, is likely to reduce the cost of annuities, thus encouraging this form of provision and reducing longevity risk.</p> <p>Offers the possibility of a defined benefit pension which is not feasible in the absence of a guarantor (although it may be noted that industry-wide schemes and occupational or group schemes run by life insurers are alternatives to self-directed single-employer occupational schemes, and may also offer defined benefits).</p> <p><i>In standardising terms, contributions, etc. across the company, tends to entail a "standard" package of benefits that may not be suitable for all.</i></p> <p><i>The "firm life cycle" may influence the security of benefits, depending on funding standards. This has been shortening in recent years.</i></p> <p><i>Financial distress may give incentives to underfund, or lacking legal safeguards even to "raid the pension fund", especially in transition economies.</i></p>	<p>Personal pensions may be more readily tailored to individual requirements in terms of retirement income provision.</p> <p><i>Is dependent on the investment ability and financial stability of financial institutions that provide personal pensions (typically the insurance sector).</i></p> <p><i>Except where annuities are compulsory, is likely to increase the cost of annuities owing to the risk of adverse selection.</i></p> <p><i>Tend to be exclusively defined contribution.</i></p> <p><i>Individuals may be unable to evaluate the quality of investment managers, risking considerable losses of retirement income.</i></p> <p><i>Particularly if the individual is in control of the asset allocation, may be excessively cautious and thus generate low returns, cutting the replacement ratio – or not contribute enough.</i></p>
Financing issues	<p>For a defined benefit fund, the sponsoring firm is likely to put pressure on the asset manager to perform well, and thus help to reduce costs, since the firm has to make up any shortfall.</p> <p>The sponsoring firm is less likely to impose unduly high degrees of risk aversion on the asset manager than would individuals.</p> <p>Administrative costs are likely to be moderate, partly owing to lower information costs.</p> <p><i>Given economies of scale, may not be suited to small-scale employers</i></p> <p><i>An occupational defined contribution fund may fail to optimise risk and return, choosing investment managers for relationship reasons or investing cautiously to avoid lawsuits.</i></p>	<p><i>If switching between managers is costly, the asset manager is likely to face lesser incentives to maximise return (the only motivation is to maintain reputation).</i></p> <p><i>Administrative costs are typically very high owing to the expense of individual accounts and contracts, advertising costs and possibly monopoly elements.</i></p> <p><i>In the case of voluntary provision, individuals may be persuaded to take personal pensions against their better interests by salesmen motivated by commission.</i></p> <p><i>Information provision to individuals becomes vital, which imposes costs.</i></p>
Effects on labour markets	<p><i>Occupational schemes (especially defined benefit) are likely to impose barriers to labour mobility, often imposed deliberately by employers.</i></p>	<p>Personal pensions are readily transferable between employers.</p>

Benefits and costs: 5. Occupational versus personal funded pensions (continued)

Effects on capital markets	A capital market where defined benefit funds are dominant investors may be more likely to be characterised by efficient asset allocation.	<i>May force individuals to save more than necessary owing to the higher cost of annuities. More stringent investment rules may be needed to protect individuals, distorting asset allocation.</i>
Country examples	Netherlands, Switzerland, Australia.	Chile.

Assessment: We consider that occupational funds are superior to personal pensions, as long as regulations protect the pension fund’s assets against bankruptcy of the sponsor and labour mobility problems of occupational funds are minimised by appropriate regulation. That said, in economies such as those in transition, where most firms are small or start-ups on the one hand or at risk of financial distress on the other, the case for private pensions becomes stronger.

6 DEFINED CONTRIBUTION VERSUS DEFINED BENEFIT FUNDED PENSIONS

The issue: Should replacement ratios (pension as a proportion of salary) provided by funded pensions be purely dependent on the returns on assets employed, or should there be a form of insurance/risk sharing overlaid which provides a guarantee of replacement ratios (and which requires a guarantor such as an employer, group of employers, public body or insurance company)?

Benefits and costs: 6. Defined contribution versus defined benefit funded pensions

	Defined contribution (dc)	Defined benefit (db)
Retirement income security	<p>Eliminates risk of losses in db funds when individuals have many employers, which arise especially when accrued benefits are not indexed or vesting is slow (dc is better suited to economies with high labour mobility).</p> <p>Even for an individual with a single employer, tying the pension effectively to average earnings over the career may be less risky than final salary.</p> <p>Diversifies employment and investment risk more effectively.</p> <p>Actuarial fairness is more readily ensured in dc funds.</p> <p>Allows individuals to choose their own preferred pattern of saving and accumulation.</p> <p><i>Pensions are vulnerable to the size of early contributions, which may be omitted or dissipated on transfer between employers.</i></p> <p><i>Risk of inadequate contributions if they are not set at a high mandatory level.</i></p> <p><i>Replacement rate is dependent on the returns obtainable in the market, and hence is vulnerable to protracted low returns, to capital market volatility just prior to retirement, to quality of investment management and to changes in annuity rates.</i></p> <p><i>Adverse selection in annuities applies strongly to personal dc funds. They may even offer lump sums as the only option, increasing longevity risk.</i></p> <p><i>Risk-sharing of the type present in db funds is not feasible.</i></p> <p><i>Informed individual choice is dependent on understanding of complex financial information.</i></p>	<p>Offers forms of retirement income insurance and risk sharing protecting the worker against risks to capital markets, by fixing the replacement rate; (i) risk sharing between employee and firm, which is efficient if real wage risk is diversifiable to employers and not to employees and (ii) transfer of risk of asset price volatility from old to young workers.</p> <p>In some countries, db funds also benefit from state insurance.</p> <p>Provision in the form of contractual annuities protects worker from longevity risk.</p> <p>If integrated with social security, may provide protection against social security cuts.</p> <p>Disablement cover and survivors' benefits usually included.</p> <p><i>Vulnerable to underfunding of benefits in case of bankruptcy of sponsor. Even if well funded, provision of db guarantee requires continuing existence and financial viability of sponsor.</i></p> <p><i>A final-salary base makes pensions sensitive to salary levels late in the career; vulnerable to strategic manipulation and internal transfers e.g. to managers (an average-salary scheme avoids this problem).</i></p> <p><i>Risk of losses on transfers between firms particularly when accrued benefits are not indexed or vesting is slow. (Better suited to economies with low labour mobility.)</i></p> <p><i>Issue of disposition of surplus arises, which is not present for dc funds (where returns as well as risks accrue to workers). Surplus stripping or even benefit cuts may occur in take-overs if regulation is weak.</i></p>

Benefits and costs: 6. Defined contribution versus defined benefit funded pensions (continued)

<p>Financing issues</p>	<p>For occupational funds, dc is less costly and risky to the sponsor as the “insurance” element of db need not be provided.</p> <p>Administrative and regulatory costs are often lower than for db.</p> <p><i>Agency costs affecting the efficiency of investment arise for occupational dc plans, as the employer has less incentive to maximise return (asset managers may be chosen for relationship reasons, or portfolio risk limited to avoid lawsuits from employees).</i></p> <p><i>Risk-averse individuals may impose a cautious investment policy, contrary to their long-term interests</i></p>	<p>For occupational db funds, the employer will seek to maximise returns on assets so as to reduce his costs.</p> <p><i>Administrative costs are typically higher than for dc by a factor of 2-3.</i></p> <p><i>Subjects the sponsor to much higher costs of regulation than dc funds.</i></p> <p><i>Strict minimum funding rules (by increasing the risk of shortfall) may increase the cost of provision by limiting holdings of volatile assets.</i></p> <p><i>For the state, insurance of db obligations may lead to a danger of large and unexpected losses, if risk and moral hazard are poorly controlled.</i></p>
<p>Effects on labour markets</p>	<p>Labour market flexibility is increased by the relatively higher transferability of dc pensions.</p> <p>As dc funds are actuarially fair, contributions are likely to be seen as saving, thus minimising distortion to incentives.</p> <p>Dc funds usually vest immediately, thus further enhancing labour market flexibility.</p>	<p>Db funds reduce costs of labour turnover for employers, (such costs are linked in particular to the firm-specific human capital that older workers may develop).</p> <p>May encourage employers to invest in training their workforces.</p> <p>Because pensions typically depend on earnings at retirement, provides incentives to work hard throughout career.</p> <p><i>Db funds are more likely to generate early retirement incentives, thus engendering losses of productive workers to the economy.</i></p> <p><i>Db funds are likely to reduce labour mobility, as transfers typically lead to losses of accrued rights (exceptions are industry-wide funds, or funds with “transfer circuits”).</i></p>
<p>Effects on capital markets</p>	<p><i>Dc funds may be more cautiously invested given the direct risk to the individual member, particularly when members are in control of investment decisions (for occupational dc funds, firms may also invest cautiously owing to fear of litigation in case of price falls). The demand for bonds may be higher and equities lower than would otherwise be the case.</i></p>	<p>Because of risk sharing, investment of db funds may be less risk-averse; and because of costs to firm, employers are more likely to press asset managers to perform well.</p> <p><i>On the other hand, investment strategies of defined benefit funds may be distorted by the minimum funding rules (if there are considerable costs to shortfalls, bond investment or hedging may be encouraged), tax exemption and accounting practices.</i></p>
<p>Country examples</p>	<p>Denmark, Australia.</p>	<p>Netherlands (externally funded), Germany (internally funded).</p>

Assessment: Concerning the overall balance between defined benefit and defined contribution, a degree of neutrality may be advisable, allowing market forces and individual preferences to play a major role. But some economic and policy issues also arise. There are advantages of defined benefit in terms of retirement-income security, particularly for long-term employees; a premium on the predictability of defined benefits may be a particular feature of transition economies given long experience of an all-embracing welfare state. On the other hand, broader economic difficulties may also arise in terms of labour mobility, etc. These features imply that in the interests of economic efficiency and equity, defined benefit

plans should be complemented by regulations to overcome the key problems which arise notably for early-leavers (for example, ensuring rapid vesting, actuarially-fair transfer values, indexation of accrued benefits and ideally transfer circuits) as well as minimum funding rules. Labour mobility may also be facilitated by industry-wide defined benefit schemes. In the absence of appropriate regulation and/or such industry-wide schemes, and particularly if typical individual also have many jobs over a lifetime, the balance of advantage may shift to defined contribution funds, notably owing to considerations of labour mobility, despite the greater financial market risks to which members are exposed. If firms are typically short-lived, there may again be benefits to defined contribution. Equally, it should be noted that if regulations impose an excessive burden on employers and/or firms are extremely short-lived, defined benefit funds may not be viable.

7 INTERNAL VERSUS EXTERNAL FUNDING

The issue: For occupational schemes, should funding be undertaken within the balance sheet of the sponsor or should the monies accumulated be invested directly in the capital markets?

Benefits and costs: 7. Internal versus external funding

	Internal funding	External funding
Retirement income security	<p><i>The member is at greater risk if the sponsor goes bankrupt because the assets backing the pension are not diversified or separated from the sponsor.</i></p> <p><i>The risk of default is particularly heightened when the workforce ages or the industry declines, as well as more generally in transition and developing economies.</i></p> <p><i>Must be defined benefit.</i></p>	<p>Enables assets to be diversified both within the domestic economy and globally.</p> <p>Is much more able to cope with changes in the size and age of the workforce, as long as funding is adequate (especially if the tax system allows provision for “projected” and not just “accrued” benefits).</p>
Financing issues	<p>Delays the cost to the firm till the benefit is paid (although the liability should appear on the balance sheet). Asset-liability balance is not affected by market volatility.</p> <p><i>Requires forms of mutual or public insurance to be viable, which increases costs and may give rise to moral hazard.</i></p>	<p>May front-load the cost when the assets are accumulated.</p> <p><i>For defined benefit schemes, requires topping up when asset markets are weak, a period which may also coincide with financial difficulties for the sponsoring firm.</i></p>
Effects on labour markets	<p><i>Is often linked to long vesting periods which sharply reduce labour mobility. Also, owing to the difficulty of cash transfers, these are usually not permitted.</i></p>	<p>External funding may be better for employment generation in the economy if it aids the growth of small firms by facilitating capital market development.</p>

Benefits and costs: 7. Internal versus external funding (continued)

<p>Effects on capital markets</p>	<p>Provides a form of cheap capital to sponsors which may increase fixed investment. Is viable even when capital markets are poorly developed.</p> <p><i>But because internal funding does not face a market test, resources may be misallocated.</i></p> <p><i>The capital markets do not benefit directly. Internal funding is likely to benefit existing firms at the expense of start-ups and small firms.</i></p> <p><i>Firms utilising this method may face credit-rating difficulties.</i></p>	<p>Increases the supply of long-term funds to the capital market, so long as individuals do not decumulate their assets <i>pari passu</i>. The precise effect will depend on the type of minimum funding regulation in operation, as well as the scope for international investment.</p> <p><i>Is not feasible in the absence of basic capital market infrastructure, unless all assets are to be invested abroad. The risk in undeveloped markets is that assets are invested in speculative or risky assets – real estate, loans to related parties and equity stakes in related firms.</i></p>
<p>Country examples</p>	<p>Germany, Japan (to a diminishing extent).</p>	<p>United Kingdom, United States, Netherlands.</p>

Assessment: External funding is in our view superior. For defined benefit funds, it offers a diversified and hence less risky alternative backup for the benefit promise, as well as offering the possibility of unplanned benefit increases if the plan is in surplus. Internal funding may require insurance schemes to be viable, and typically impose severe limits on transferability. For occupational externally-invested funds, extra protection against creditors of a bankrupt firm is afforded when the fund is separated from the firm and self-investment is banned or severely restricted.

8 PORTFOLIO REGULATION VERSUS PRUDENT MAN RULES FOR FUNDED PENSIONS

The issue: Quantitative regulation of portfolio distributions is imposed in a number of countries, with the ostensible aim of protecting pension fund beneficiaries, or benefit insurers, although motives such as ensuring a steady demand for government bonds may also play a part. Limits are often imposed on holdings of assets with relatively volatile returns, such as equities and property, as well as foreign assets, even if their mean return is relatively high. “Prudent man rules” enjoin sensible diversification with no such limits, except on self investment, enabling the full range of assets to be held in order to reach the risk/return frontier.

Benefits and costs: 8. Portfolio regulation versus prudent man rules for funded pensions

	Portfolio regulation	Prudent man rules
Retirement income security	<p>May be suited to a situation when capital markets and asset management sectors are underdeveloped. This applies notably if fund managers as well as regulators are highly inexperienced and the markets volatile and open to manipulation by insiders. Risk may easily become excessive in such cases. Also compliance with portfolio limits is more readily verified and monitored than for prudent man rules.</p> <p><i>May lead to portfolios which are vulnerable to inflation risk (largely invested in nominal fixed assets), unless there is a range of indexed instruments available.</i></p> <p><i>Is likely to entail domestically-focused portfolios which make pensions vulnerable to performance of the economy.</i></p> <p><i>May entail direction of investment to “socially desirable” but unprofitable uses.</i></p>	<p>Is likely to offer portfolios with higher return over the longer term and which are globally diversified.</p> <p><i>May lead to portfolios which are vulnerable to market risk in the short term (real assets), although this is of less relevance to the time horizon needed for pensions. In the absence of an appropriate investment culture, may permit blatantly short-termist investment.</i></p>
Financing issues	<p>Investment in “safe” assets is likely to limit the scope for major losses in nominal terms, <i>although it increases risk in real terms.</i></p> <p><i>Is likely to increase costs owing to lower rates of return. This may either discourage provision or raise costs to the provider.</i></p>	<p>May lead to lower financing costs, albeit at higher risk.</p> <p><i>If risks are excessive, costs of default may fall on the public purse.</i></p>
Effects on labour markets	<p><i>If returns are seen as unduly low, may lead to evasion of contributions and distortion to labour supply.</i></p>	<p>By encouraging equity finance, may be helpful to employment creation.</p>
Effects on capital markets	<p>Keeps domestic saving available to the domestic economy.</p> <p><i>Is more likely to lead to investment in bonds rather than equities, and to discourage international investment. The former limits benefits to the capital market and may lead to higher public consumption. The latter is an essential element in diversification of risks to the domestic economy. It may also provide a safety valve to prevent pension asset accumulation leading to asset price inflation.</i></p>	<p>Is more likely to encourage equity holdings and to permit international investment.</p> <p>Permitting capital outflows for pension funds may encourage inflows, as international investors become confident capital controls will not be reintroduced.</p>
Country examples	Germany, Denmark, Sweden.	United Kingdom, United States.

Assessment: Research suggests that most OECD countries with strong portfolio regulations offer lower returns than those with prudent man, albeit also with somewhat lower volatility. Only in the case of self-investment and concerning the need for adequate diversification – as in a prudent man rule – would modern portfolio theory agree with the need for quantitative portfolio regulation. Prudent man rules also have the benefit of flexibility – their interpretation

can evolve over time. There may be external benefits to the economy via greater supplies of risk capital relative to asset restrictions, as well as inflows of international capital encouraged by international investment of domestic institutions. Portfolio regulations would seem in many cases to be set neither to help the company nor to protect the beneficiary, but rather to help governments sell bonds to a captive market, and protect them from the danger of having to “bail out” a bankrupt pension fund. In the process, they effectively limit the supply of equity capital, hindering small and growing companies. On the other hand, regulations could be justified as a temporary measure in developing or transition economies. Besides the points noted in the table, one could add the issue of high market risks, the difficulty of enforcing a prudent man rule ex-post where financial market investment is not part of the “culture”, lack of a savings culture and the danger of short-termism if investment were liberalised.

9 MANDATORY INDEXATION OR DISCRETIONARY INDEXATION OF BENEFITS

The issue: Should pension benefits be indexed to inflation on a regular basis, or solely at the discretion of the provider? Note that the two absolutes are not the only options, as there is also the possibility of limited mandatory indexation up to a certain inflation rate. Indexation provisions differ between defined benefit and defined contribution funds, where the former usually face a choice whether to index existing pensions every year while the issue of indexation for the latter is more a question of annuity design.

Benefits and costs: 9. Mandatory indexation or discretionary indexation of benefits

	Mandatory indexation	Discretionary indexation
Retirement income security	Protects the recipient against inflation, as long as the scheme remains viable, which is of particular importance to the very old. <i>In the case of mandatory indexed annuities, requires markets for index linked assets, and may give a low real benefit.</i>	<i>Puts recipients in danger of loss during periods of inflation, and more generally when they become very old and “real” benefit cuts accumulate.</i>
Financing issues	<i>For defined benefit funds, increases costs to the provider, especially if there are constraints on “shortfalls”.</i>	For defined benefit funds, allows more flexibility to the provider to provide indexation when asset performance allows.
Effects on labour markets	<i>Indexation shifts inflation risk to younger workers, who may seek to evade contributions as a consequence.</i>	
Effects on capital markets	May encourage development of markets for index-linked assets, as well as hedging strategies to prevent shortfalls.	May encourage investment in equities owing to lesser shortfall risk.
Country examples	Germany (full indexation), United Kingdom (partial indexation).	United States, Japan.

Assessment: We consider that indexation, at least up to a certain level (subject to a ‘prudent man’ asset management rule being in operation), is appropriate as a balance between retirement income security and cost. This is particularly the case if there is a ready supply of indexed assets.

10 FURTHER STRUCTURAL AND REGULATORY ISSUES FOR FUNDED PENSION SCHEMES

	Benefits	Costs
Compulsory annuities	Ensures that assets accumulated for retirement are not dissipated in consumption, thus protecting the elderly against longevity risk. Also protects against adverse selection's effects on the costs of voluntary annuities.	<i>For dc funds, exposes individuals to the varying costs of annuities, as well as commissions, and requires the existence of a developed insurance sector. Individuals who risk to die young may lose out by being "pooled" with others.</i>
Portability	Ensures that the economy and individuals benefit from ability to readily change employer without loss.	<i>Limits the degree to which employers can use pensions to manage their workforces</i>
Benefit insurance	Protects individuals against the losses that may be incurred when defined benefits are not adequately funded. May be particularly appropriate where capital markets are less developed, and the risk of market volatility or provider bankruptcy is high.	<i>Risks to cause moral hazard and risk taking by pension fund managers, unless there is close monitoring of behaviour.</i>
Minimum funding rules	Ensures that funded defined benefit plans actually accumulate the assets to cover obligations should the sponsor default.	<i>If strict, reduce flexibility in investment and may lead to a focus on lower-yielding assets.</i>
International investment	Permits diversification globally which reduces risk for a given return. The benefits are especially great when domestic markets are narrow and illiquid, have only a limited absorption capacity and represent only a limited range of industrial sectors.	<i>If assets are free to flow abroad, the potential benefits of funding in terms of development of domestic capital markets are more limited than would otherwise be the case.</i>

CONCLUSIONS

Government plays a central role in retirement income provision, be it public or private. There are a number of reasons for this involvement, most notably that:

- individuals may fail to prepare for their old age;
- private insurance alone may not provide against many risks;
- individuals may suffer lifetime poverty, and that owing to lack of information individuals may be unable to assess the quality of pension arrangements; and
- individuals may be exploited when there are elements of monopoly power to private pension arrangements.

In this article we have sought to provide a schematic listing of the main considerations arising from various policy choices, linked mainly to a strategy of introducing elements of funding. In doing so, we have also put forward our own preferences on each point. On balance, we tend to favour the “World Bank” mixed solution of a pay-as-you-go system at a low level to redistribute and protect against old-age-poverty, with other retirement income needs fulfilled by a funded system. A mixture of both approaches has a benefit in diversification of investment, insolvency and political risks. Among other choices, we tend to prefer a voluntary to a mandatory funded scheme, benefiting from fiscal privileges, with assets administered privately, mainly occupational funds which may be either defined benefit or defined contribution, being externally funded, having prudent man rules for asset allocation and limited mandatory indexation of benefits.

It is important to add, though, that the optimal choices are likely to differ strongly between countries depending on the underlying structural situation; notably the state of the existing pay-as-you-go scheme, the development of capital markets, existing private schemes and willingness to allow international investment. In other words, pension reform must be carefully tailored to the existing circumstances of a country. For example, portfolio restrictions may be appropriate as a temporary measure early in the process of financial development; occupational schemes require a financially-viable corporate sector (see also Annex).

One may add that there are many other questions to address besides those mentioned, some of which are also relevant to pay-as-you-go schemes. These include the appropriate contribution rate, the floor and ceiling on contributions and benefits, the normal retirement age and any exceptions to it, treatment of civil servants and the self-employed, sharing of costs between workers and employers, disability insurance, means testing, payroll and general taxation, and treatment of survivors. Elimination of early retirement and raising of retirement age should be a priority in all cases.

It remains to note that these various policy choices are by no means the only contributions governments can make to retirement income security. More indirectly, the provision of a stable macro-environment of low inflation and steady economic growth, via its influence on the returns on capital market instruments, will also influence the cost of providing pensions. Absence of capital controls will ensure market risk may be diversified across the global economy.

ANNEX: SOME PRECONDITIONS TO PENSION REFORM IN DEVELOPING AND TRANSITION ECONOMIES

This Annex briefly notes some preconditions for any reforms leading to funding, which are pointed out in the literature (see references). One is availability of personnel skilled in asset management (as well as support staff such as actuaries, accountants, auditors, financial management experts, attorneys and computer specialists). These may be scarce, implying a need for joint ventures with foreign firms. Pension funds may only be attractive when other financial assets such as deposits and bonds are (effectively) taxed, which is not often the case. Erratic changes in fiscal treatment are very damaging. Laws governing prudence, self-dealing and other aspects of fiduciary behaviour, and concerning settlement of property disputes and bankruptcies are necessary prior to introducing funding to prevent excessive financial risk.

To be effective, social security and pension reform requires a streamlining of the regulatory framework, including not only pension providers themselves but also providers of other financial services such as insurance, payment services, the securities markets and in the legal, accounting and auditing areas. Regulators should be independent of the regulated institutions. To ensure systemic stability, and compliance with solvency, investment and consumer protection rules, regulators have to exercise effective supervision via off-site surveillance and on-site inspections. They need effective intervention powers to enforce corrective measures. They must establish objective criteria for entry and exit, setting out authorisation criteria for insurance companies and pension fund managers, establishing rules for the exit of insolvent firms, and opening the market for new entry from domestic and foreign firms.

In this context, a country which is unable to manage well an unfunded or funded public pension system, because of administrative inefficiency, shortage of skilled personnel or political interference, would most likely be unable to regulate and supervise a private pension system, be it mandatory or voluntary. Ability to enact clear rules and penalise malfeasance in a predictable way will likely be lacking in such cases.

A sound banking sector is as essential precondition for pension reform, as funded pensions typically hold some bank assets, so weak banks threaten retirement income security. Banks are also necessary (as providers of services such as collateral, clearing and settlement) for security markets to grow and provide alternative pension fund investments. On the regulatory side, such a stable banking sector requires a system of licensing, supervision, closure and a lender of last resort facility. Efficient and liquid government bond markets are also essential, given the role such bonds have as pension fund investments early on in financial-sector development. Also, a strong insurance sector – and a profession of actuaries – is needed in order to provide a competitive annuity market which is an essential counterpart to a defined contribution pension fund sector, if individuals are to be protected against longevity risk.

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