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Can Investments in Emerging Markets Help to Solve the Aging Problem?

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CAN INVESTMENTS IN EMERGING MARKETS HELP TO SOLVE THE AGING PROBLEM?

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Working Paper No. 304

June 2000

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CAN INVESTMENTS IN EMERGING MARKETS HELP TO SOLVE THE AGING PROBLEM?

Abstract

Prefunding of pension commitments in OECD economies is increasingly seen as a central strategy to cope with the aging of their populations. This paper argues that investments in emerging markets can help at the margin but are unable to solve the demographic problem. While these investments bring potential advantages through enhanced risk diversification, higher rates of return, and accelerated financial market development, the total effects are likely to be limited. Furthermore, in order to harvest them, capital sending and receiving countries must fulfill various politically and economically challenging requirements. For pension policy, the limited contribution of pre-funding at home and abroad in order to address the demographic problem implies that enhanced emphasis must be given to domestic reforms.

Keywords: Aging, pensions, international investments, emerging markets, risk diversification

JEL Classification: F21, F30, G15, G23, J14

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1. Introduction[*]

Prefunding of pension commitments in OECD economies is increasingly seen as a central strategy to cope with the aging of their populations. All OECD countries run their public pension schemes essentially on an unfunded basis, and population aging and a deterioration in the contributor/beneficiary ratio are bound to further increase the often high pension expenditure as a percent of GDP unless benefits are curtailed and retirement age is increased (see Annex Table A.1). Some countries started to respond by accumulating a reserve fund for their PAYG scheme – most prominently the US and Norway – and all envisage reduced public generosity of the unfunded schemes plus enhanced mandated or voluntary individual retirement savings as a means to cope with population aging in general and the retirement of the babyboom generation in particular (OECD, 1998). Progress among the high-income OECD countries in their reform efforts has been uneven, as witnessed by the different size in implicit pension debts (the accrued-to-date liabilities for current retirees and workers; see Palacios and Pallares-Miralles, 2000; Annex Table A.2) and the situation of generational accounts (an increasingly prominent indicator for the intertemporal imbalance in government accounts, see Kotlikoff and Raffelhueschen, 1999; Auerbach et al., 1999; Annex Table A.3). In consequence, the need for, and size of the effects from funding will be different among the countries and has to be seen in perspective.

While prefunding helps to ease the aging problem, it does not solve it. Unfunded as well as funded schemes need future generations to complete the intergenerational contract by paying contributions in PAYG or buying assets from the elderly in funded schemes. Since all OECD economies are confronted with much the same aging process, there are limited gains from mutual investments. In contrast, aging in developing countries is occurring with delay and in a differentiated manner. This has created expectations that investments in emerging markets may be a vehicle to circumvent or at least substantially ease the pension problem in highly developed, aging societies while at the same time providing developing countries with additional funds to accelerate their catch-up growth.[1] The alternatives are lower benefits, higher contributions or increased retirement age (or a combination of these changes) or enhanced migration from developing countries to compensate for the demographic gap.

This paper argues that investments in emerging markets help at the margin, but do not solve the demographic problem. In order to harvest the potential advantages, capital sending and receiving countries must fulfill various politically and economically challenging requirements. Yet since these conditions are anyhow necessary to make the world benefit from globablization, there are good reasons to pursue them. For pension policy, the limited contribution of pre-funding at home and abroad in order to address the demographic problem implies that enhanced emphasis must be given to

[*] This is a revised version of a paper prepared for the Conference on "The Graying of the Industrial World: Assessing the Economic, Political, and Strategic Implications of the Simultaneous Aging of the Major Industrial Nations," Washington, D.C. January 25-26, 2000. The paper was also presented at the Asset Management Forum for Pension and Endowment Funds on "Emerging Markets: Translating Economic Development into Financial Returns," Dallas, January 12-13, 2000. I am grateful to the audiences of both conferences for good feedback and valuable comments. Special thanks go to Mark Dorfman, Alberto Musalem, Robert Palacios and Anita Schwarz from the World Bank, for their very useful comments, questions and suggestions, and to Ian Mac Arthur for his statistical and editorial support. I take, of course, responsibility for all remaining errors.

[1] "Once freed, money may well flow disproportionately to developing countries. For this is the surest way to beat demography," *Economist*, June 20, 1992. For an early warning against this optimism see Blommenstein (1998).

improving labor market conditions for the elderly and reducing incentives for early retirement. Furthermore, broad-ranging policies need to be implemented so that future, older generations are not unduly burdened with explicit public debt and a deteriorated environment.

The paper is structured in four sections. Section 2 highlights the principal demographic characteristics of aging in developing and developed economies. Section 3 outlines the main potential advantages of investments abroad. Section 4 sketches the requirements for such a policy to be effective and useful supporting policies for its implementation, while Section 5 concludes.

2. Demographic Background

The aging of populations is one of the key motivations for the call to prefund pension commitments (World Bank, 1994). Other arguments in support of funded schemes include lower distortions on factor markets and lower political risks, or higher credibility of the reform process (Holzmann, 2000).

To assess the claim that prefunding – at home and/or abroad – can ease or solve the demographic shift, a number of demographic trends have to be kept in mind:

(i) Two different aspects of demographic change, and their consequences for pension financing, need to be distinguished: a massive increase in residual life expectancy at age 60 or 65, and a rapid decline in reproduction rates.

To cope with an increase in life expectancy at retirement for a given replacement rate requires an increase in the contribution rate, independent of its financing method – funding or PAYG. The scope of the required rate increase may be lower if part of the prefunding happens in emerging economies with a slower aging process. Independent of the financing method, the policy recommendation for dealing with this phenomenon is simple: raise the retirement age so as to leave the relative length of retirement period in adult life constant, or cut pension benefits in reverse proportion. Either method assures that the relative positions of the respective generations (their discounted net payments into or receipts from the pension system) remain unaltered when compared with the situation before the demographic change.

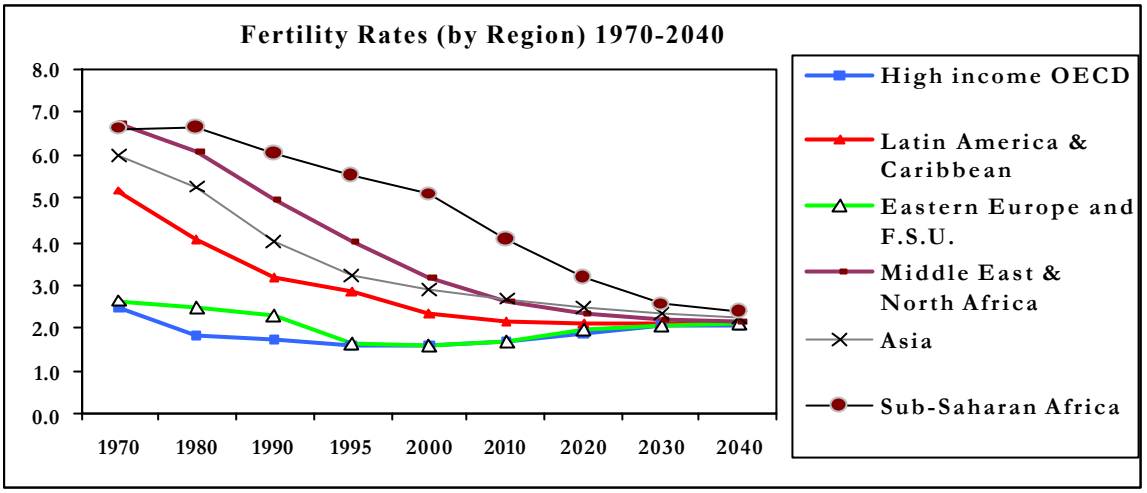
A decline in fertility – holding constant the long-run paths of rates of return on capital and productivity growth – unilaterally decreases the rate of return of the unfunded systems. This has two main consequences: it raises questions of intergenerational redistribution in unfunded schemes, which cannot be easily addressed, and it changes the relative rates of return of unfunded vs. funded schemes, making the latter more attractive.

(ii) Chart 1 and 2 of past and projected life expectancy and fertility rates clearly indicate that in all regions of the world both forces of aging are at work. However, the scope and timing differ among regions.

Since the early 80s the fertility rate in high income OECD countries has been below reproduction level (around 2.1); the same is valid since the early 90s for the ECA countries. All other regions exhibit a strong decline in the fertility rate toward repro-

duction level – the convenient but not necessarily realistic benchmark of demographic projections.

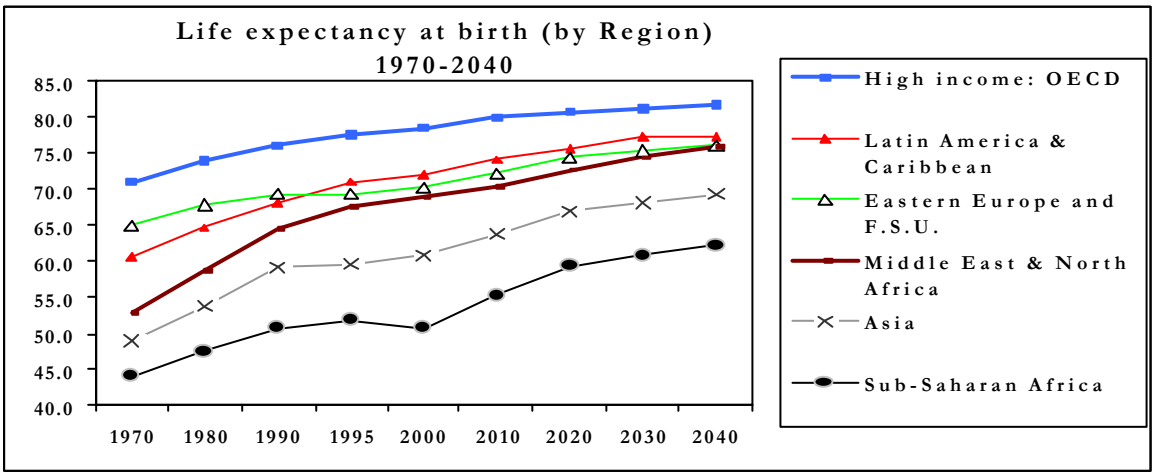
Chart 1: Past and projected total fertility by region, 1970-2040



Source: Palacios and Pallares-Miralles (2000)

The life expectancy at birth (and at retirement age) has also been increasing in a more or less continuous manner in all regions. High income OECD countries exhibit the highest life expectancies but smallest absolute or relative changes. For the other regions the reverse largely holds: the lower the initial level, the larger the improvement. This development indicates a dynamic benchmark character of the high-income OECD countries towards which all other regions converge (unless reversed by AIDS in some regions).

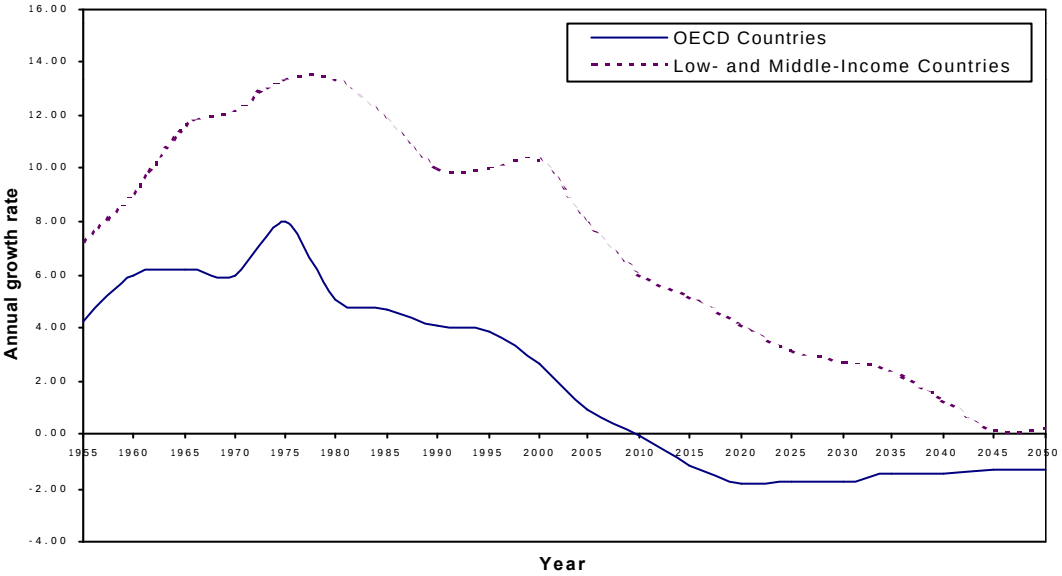
Chart 2: Past and projected life expectancy by region, 1970-2040



Source: Palacios and Pallares-Miralles (2000)

(iii) These common trends in fertility and life expectancy lead to a common aging situation, if aging is defined as an increase in the average age of the population. However, if "population aging" is defined as a transition from a high to low support ratio (population aged 15-60 to population 60+), then the population falls into two groups. In the first, consisting of the high-income OECD populations in Europe, North America, Japan, Australia and New Zealand, the support ratio is declining from an already low base (the Fast Aging Countries: FACs). In the second group (the Slow Aging Countries: SACs), consisting of populations in Africa, Asia and Latin America, the support ratio is also declining, but it will not reach levels currently seen in the first group of countries until the middle of next century. This relates to other salient features important for future economic interdependence (Charts 3 and 4).

Chart 3: Annual Growth Rate of Labor Force (15-60 years), 1955-2050
OECD and Low- and Middle-Income Country Groups



Source: calculations on data from the United Nations, *The Sex and Age Distribution of the World Populations, 1998 Revision*

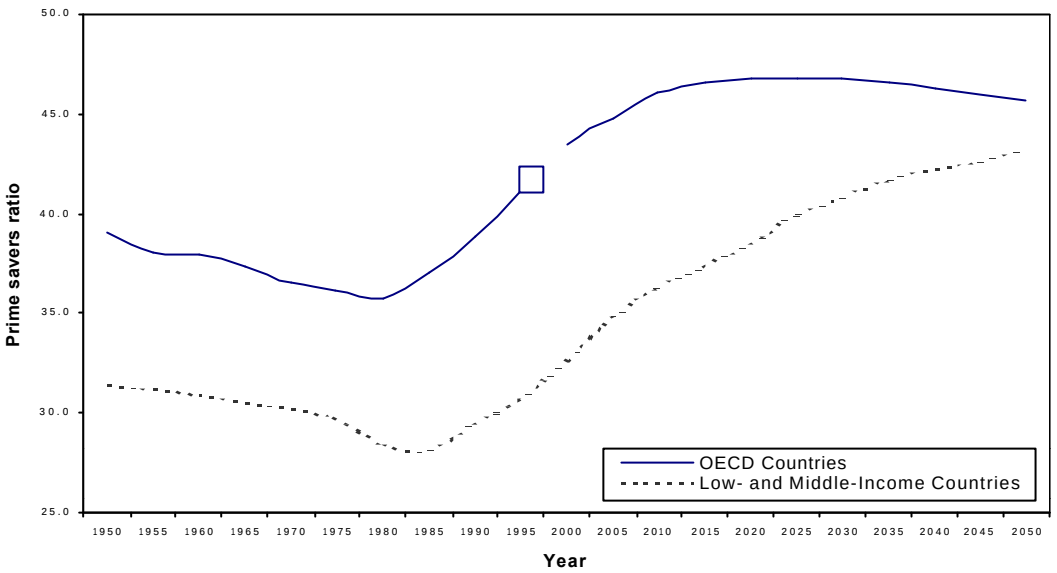
The demographic prospects imply divergent trends in labor force growth in the two regions. FAC populations will age from the middle of the age pyramid as the large baby-boom cohort retires around 2010. SAC populations will age from the bottom, as today's young persons move into the working years, and they will be replaced by much smaller age cohorts as a result of the rapid recent fertility decline. Assuming fixed age- and sex-specific labor force participation rates, labor force growth rates will rapidly decline in the FAC area and turn negative after 2010.[2] In contrast, age distribution changes will lead to a growing labor force in the SAC area, and the share of the working-age population will remain roughly constant despite rapid increases in the elderly population.

The change in the age distribution will shift the balance between primary savers and borrowers in the population, with consequences for the rate of net financial asset accumulation and the rate of return on financial assets. As the baby boom generation

[2] Scenario projections for the European Union claim that increases in the female labor force participation rates toward that of men and in the retirement age can largely compensate for aging in their effects on the support ratio, and hence on pension financing (see Boldrin et al., 1999).

moves through the peak asset accumulation years, the share of primary savers in the adult population (age group 40-59 to population aged 15+) will rise until roughly 2010 in FAC and then start to decline. In SACs this ratio rises from a much lower level and will not stop to increase before the end of the projection period.

Chart 4: Primary Savers Ratio (age group 15-60 years to 15-60), 1950-2050 OECD and Low- and Middle-Income Country Groups



Source: calculations on data from the United Nations, *The Sex and Age Distribution of the World Populations, 1998 Revision*

3. Main Potential Advantages

Against these demographic shifts and differences in the aging process between FACs and SACs, what are the advantages of investing abroad, and can these investments solve the aging problem? This section argues that there are three main advantages to investing in emerging markets – better risk diversification, rate of return increase and improved economic environment –, all of which should ease the aging problem but are unlikely to solve it. To capture these potential advantages demands, of course, meeting critical requirements for macroeconomic management, security of repayment, and financial market development, discussed in section 4.

(i) **Enhanced risk diversification** without net-capital flows can and should be undertaken independently of aging and differences between the regions. In this case the gross flows of capital between developed and developing countries would balance, but the cross-holding of assets would improve the risk-return profile for both. Modern portfolio theory and its major tool, the Capital Asset Pricing Model (CAPM), hold that the world market portfolio is the optimal portfolio in a fully efficient and integrated capital market. For any portfolio under-invested in foreign assets (as a percentage of world market capitalization), there is the prospect of a free lunch: international diversification does lower the risk by eliminating nonsystemic volatility without sacrificing return. Alternatively, globalization will raise the expected return for a given risk level. The diversification benefits consist of reduced risk, usually measured by the annualized standard deviations of monthly returns, resulting from

investment in markets that are relatively uncorrelated, or even better, negatively correlated with the domestic market. International diversification reduces risk better than domestic diversification because securities exhibit stronger correlation as a result of their joint exposure to country-specific shocks (Reisen, 2000).

If the implications of the CAPM were to largely hold, the implications for FACs would be substantial even if no net-capital flows were to take place. A major reservation against funded pensions in the form of personal pensions is the volatility of capital market returns (shares and bonds). Simulations with historic US data from 1871 to 1995 indicate that domestic diversification among stocks and bonds and alternative disbursement/annutization procedures succeeded in reducing the ratio of the maximum and minimum replacement rate for individuals from almost 5 to around 2.5 (Alier and Vittas, 2000). Yet, many of the strategies do not only lead to a lower max/min ratio but also to higher probability of a low absolute replacement rate – a political difficult outcome both with regard to convincing large parts of the population to move more forcefully toward funded personal pensions, and ex post since it is likely to imply major government responsibility to secure a minimum replacement rate/rate of return. Option price estimates in the European context put the costs low if the guaranteed floor under the compound rate of return is 0%. However, as the level of floor rises to 3% p.a., the put option becomes as expensive as 30% of the value of the original investment (Miles and Timmermann, 1999).

There are no estimates (yet) available what benefits a FAC-wide, and further on, a world-wide diversification would provide with regard to the max/min replacement rate ratio. Scenario calculations for Germany, Japan, the UK and US suggest that international diversification among these highly developed economies helps to reduce the volatility of return, but not too much since their financial market returns (stocks and bonds) are mostly correlated in the range of 0.2 to 0.6. More reduction in volatility of the rate of return – with limited reduction in the return level – can be achieved through a multi-pillar structure of unfunded and funded pensions that includes the rate of return of unfunded schemes – the growth of wages (Holzmann, 2000; Annex Table A.4).

The benefits of global diversification, however, may look different from FACs' and SACs' perspectives, depending on the starting condition of the domestic return/risk trade-off, and this is not independent from the period under consideration (Table 3).[3] From the OECD perspective in the mid-1990s, it looked like diversification into emerging markets would allow investors to benefit simultaneously by raising the mean returns and reducing the overall portfolio risks. Then, returns and risk were lower in OECD than in various countries in Latin America and East Asia, which exhibited much higher return and risk, leading to major capital flows to emerging markets. For the SAC investor, it looked like (s)he would have had to buy lower overall risk by lowering the mean portfolio return through diversification into the global portfolio.[4] This has resulted in a reluctance of pension funds in Chile or

[3] Table 3 serves for illustration. It is well understood that means and standard deviations estimated for a period of 24 months have a large sample error. . Calculations over a somewhat longer time period indicate that US pension funds would have gained little in diversifying internationally, but pension funds in Latin America could have substantially improved their risk/return profile if they had invested a main share (or even all) of their assets in the US (see Srinivas and Yermo, 2000).

[4] This appearance is, of course, misleading. Investors could have still maintained the same return and reduced the country risk by other means even before the crisis: (i) investing in negatively correlated markets but with high risk/return profiles (including other emerging markets); (ii) investing in risker assets in the countries which themselves have lower country risk (e.g., buying lower graded bonds); (iii) using leverage (margin buying) to increase the risk/return to lower risk equities.

provident funds in Malaysia to diversify globally. Five years later, and after the financial crisis in East Asia, Russia and part of Latin America, the situation seems reversed. Pension funds in Chile or Singapore have increased their share of foreign investments substantially, but the continued stock market rally in North America and Europe created a reluctance of OECD investors to buy risk reduction through lower returns in emerging markets. For the latter this may prove to be an expensive decision once the reversion towards the mean takes place. Hence, the realization of the potential benefits of international diversification seems to depend on the behavior of (institutional) investors, and their incentive structures may be at odds with CAPM.

Table 1: Total Stock Market Return Indexes
(US$)

	Annualized mean return, %	Annualized Standard deviation	Coefficient of Variation	Correlation with S&P 500
		(Jan. 1993 – Dec. 1996)		
Latin America				
. Argentina	20.3	32.2	1.59	0.44
. Chile	16.1	25.3	1.57	0.22
. Mexico	1.4	37.7	27.05	0.20
East Asia				
. Korea	-2.2	22.7	-10.4	0.01
. Philippines	26.1	29.3	1.12	0.18
. Thailand	8.1	33.1	4.08	0.32
IFCG Latin America	14.2	24.7	1.73	0.24
IFCG Asia	12.9	19.7	1.52	0.23
US, S&P 500	16.4	9.0	0.54	1.00
		(Jan. 1997 – Dec. 1998)		
Latin America				
. Argentina	1.2	36.4	29.95	0.78
. Chile	-7.2	33.0	-4.55	0.69
. Mexico	5.7	40.1	6.99	0.80
East Asia				
. Korea	11.0	82.3	7.45	0.26
. Philippines	-28.2	56.2	-1.99	0.58
. Thailand	-37.2	74.2	-1.99	0.54
IFCG Latin America	-2.0	36.7	-18.25	0.80
IFCG Asia	-25.8	31.5	-1.22	0.66
US, S&P 500	29.0	18.5	0.63	1.00

Source: Calculations from data in IFC, Emerging Stock Markets Factbook 1999.

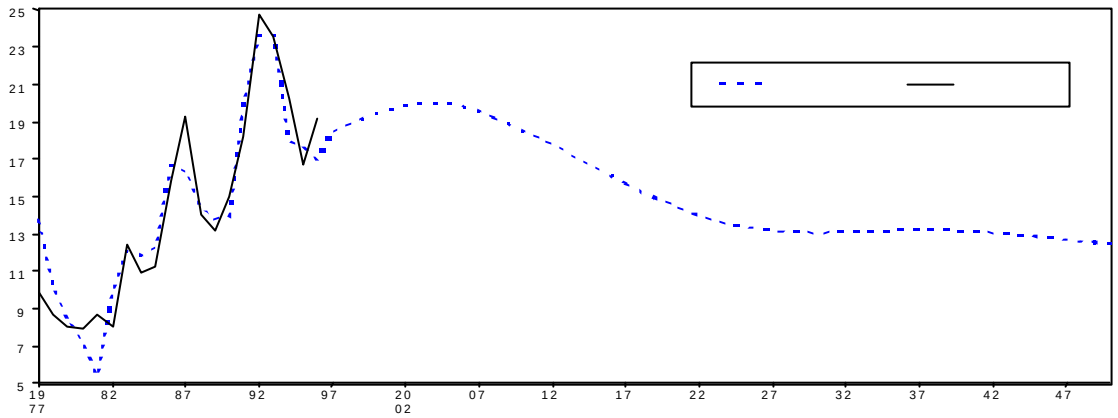
(ii) **Net capital flows to emerging economies** should enhance the benefits of investments for FACs beyond risk diversification. Without capital flows – equivalent to a closed economy setting when abstracting from risk – the neoclassic response to slowing labor force productivity or growth is to substitute capital for labor, leading to an increase in the capital-output ratio and a corresponding reduction in the rate of return to capital.[5] Pari passu, the rate of return to saving declines, leading households to consume rather than save so that the economies' reduced demand for investment is matched by reduced supply of savings. In long-run equilibrium, the result of aging –

[5] Introducing other factors of production, notably human capital (skills and knowledge), may alter the conclusions somewhat. Yet population aging may also negatively impact the growth of human capital formation with negative effects on returns to capital, but the direction and size of such effects remain undetermined for the time being.

independent of changes in the rate of growth of total population – is reduced per capita output and consumption.

The potential impact of a closed economy setting can be highlighted by out-of-sample forecasts in the US context based on an econometric exercise that explains the S&P price/earnings ratio with a standard stock market valuation model, with P/E determined by the prime saving/desaving ratio (population aged 40-60 to 60+), the (inverse of the) Federal discount rate and the annual change in average hourly wages (Reisen, 2000).[6] Keeping the last two constant makes the projected price/earning ratio only dependent on the demographic variable, suggesting a peak very soon of around 20 before starting a long decline to about 14 at around 2030 (Chart 5). While this is all highly speculative, it confirms earlier concerns (Schieber and Shoven, 1994) that asset prices will become negatively effected as US pension funds cease to be a source of net savings once the baby boom generation starts to retire.

Chart 5: S&P 500 price/earning ratio: fitted values and projection



Under an open economy setting, FACs can profit from differences in labor force development and capital-output ratios in SAC, which are in general much less developed. A number of studies (e.g., Cutler et al., 1990; Boersch-Suppan, 1996; Yoo, 1994; Higgins, 1997) have concluded that demographic divergence should stimulate net-capital flows from the most rapidly aging regions (especially Europe and Japan) to less rapidly aging regions (the less developed economies) where the capital-output ratio is lower and the rate of return to capital is higher. With a significant portion of FAC savings being invested in SACs, capital returns and saving rates as well as per capita output would be higher in the FACs vis á vis the autarchy case.

[6] Underlying econometric estimates for Chart 5:

Dependent variable	Explanatory variables		
SP 500 P/E ratio	Prime savers (40–60)/60+	FRBNY discount rate (inverse)	Change of hourly wages
Coefficient	0.09***	46.1***	1.5***
Standard error	(0.02)	(7.7)	(0.45)
	Number of observations: 20 Period: 1977–96	Adjusted R^2: 0.88 *** = significant at the 0.01 level	Durbin-Watson: 1.98

Source: Reisen (2000)

However, more recent macroeconomic simulations come to the conclusion that while such beneficial effects of net capital flows may exist, they are likely to be rather small (OECD, 1998; MacKellar and Reisen, 1998; MacKellar et al., 1999).[7] Based on a neoclassic two-factor multi-regional economic-demographic model, MacKellar et al. (1999) simulate two scenarios for the period 1995 to 2100: an autarchy scenario that holds current capital flow share coefficients essentially constant, and a globalization scenario that allows the capital flow share coefficients to rise in line with the growing share of SACs in global stock market capitalization and GDP. While under the autarchy scenario net-capital flows remain below 1 percent of FACs' GDP and eventually become negative, under the globalization scenario the net-capital flow becomes up to 3 percent of GDP higher, and while decreasing toward the end of the simulation period, it never becomes negative. The starting value in both scenarios is 0.4 percent. This net capital flow translates under the globalization scenario into an increase of net-foreign assets for FACs from 3 percent of GDP (1995) to 90 percent (2050) before again declining. For SACs, their negative net foreign asset position of 13 percent of GDP deteriorates to over 106 percent of GDP (2030) before gradually improving.

Yet, these huge net-capital flows and main changes in the net asset positions in FACs and SACs have limited effects on FACs. While the effects are reversed in SACs, the impact is stronger because the change in the capital-output ratio caused by globalization is greater. Comparing the results of the globalization with the autarchy scenario suggests:

- Global GDP is increased as a result of global efficiency gains from the reallocation of capital by over 1 percent, and that of FACs (SACs) is reduced (increased) due to less (more) capital available in the respective region.
- The lower capital in FACs translates into substantially lower wages (up to over minus 4 percent) but higher rates of return to capital (up to plus 60 basis points). The situation is reversed in SACs with interest rates some 200 basis points lower but wages up to 8 percent higher.
- The saving rate impacts are marginal and ambiguous. Total saving (in percent of regional GDP) tends to be somewhat higher in FACs under the globalization scenario, but lower in SACs.
- The adjusted disposable income per capita for the working age and the elderly populations is up to 1 percent lower.
- When dissaving of assets is added to the disposable income, total resources available for financing consumption of the population aged over 60 is virtually the same under the two scenarios during much of the simulation period.
- The lower retirement income in SACs reflects the lower interest rate insufficiently compensated by higher wages and later higher unfunded pensions (Table 2).

[7] These macroeconomic calculations do not consider that population aging is likely to induce holdings of less risky portfolios. In open economies, it would imply less weight to riskier emerging market securities. In a closed economy, the result would be portfolios weighted toward bonds, and hence a decline in the long-term interest rate.

Table 2: Summary of MacKellar et al. (1999) Simulations Results

	1995	2020	2050	2100
Net capital flows, FACs to SACs (% of FAC GDP)				
Autarchy scenario	0.4	1.05	0.72	-0.18
Globalization scenario	0.4	2.89	3.74	+1.65
Difference		1.83	3.02	+1.82
Net foreign assets, Scenario differences (in % GDP)				
FACs		20.2	63.4	71.2
SACs		-46.4	-64.3	-34.5
GDP (1995$), Scenario differences				
Global GDP		0.53	1.27	1.04
FACs		-1.64	-4.20	-3.31
SACs		+6.25	+7.75	+3.30
Rate of return on capital, FACs %				
Autarchy scenario	10.3	8.7	8.0	7.8
Globalization scenario	10.3	9.0	8.6	8.4
Difference		0.3	0.4	0.6
Average wage, Scenario differences				
FACs		-1.6	- 4.2	-3.3
SACs		+6.3	+7.8	+3.3
Income at retirement, Scenario differences				
FACs		0.13	0.40	2.56
SACs		-0.80	-0.92	-.148

(iii) These sobering, small effects of large capital flows towards emerging markets have, of course, to be seen in perspective. They result from a neoclassic model, and the main driving force is differences in capital stocks in FACs and SACs under the alternative scenarios. Hence, any other effects from enhanced net-capital flows as a result of strengthened prefunding of pension liabilities does not enter. Among the latter, the purging literature notes three main effects: **fostering financial market development, enhancing corporate governance, and greater openness that goes in hand with stronger capital flows**. All these effects are likely to have a stronger impact on SACs, but they are conjectured to be important for many FACs as well:

- The importance of financial market developments for economic growth has been rediscovered in the 1990s – either as an instrument to accelerate the catch-up growth/economic convergence under a neoclassic setting or as an explanation for endogenous economic growth (Levine, 1997). A main ingredient to financial market development may come from funded pensions under decentralized and privatized fund management, and the Chilean experience of high economic growth and financial market development lends some empirical evidence to this hypothesis (Holzmann, 1997; Schmidt-Hebbel, 1998). Similar effects may also emerge in FACs with personal and funded pensions when moving from a bank-based to a financial market-based intermediation.

- A main reason for the improvement in productivity when strengthening funded pension provision may emerge from improved corporate governance. Traditional capital ownership structures in Germany (and many other European countries) is increasingly claimed to be diluted by cross holdings of banks and non-financial companies and quite different from the pattern of ownership in countries in which pension funds manage a major share of the capital. This difference in the governance structure is held responsible for lower productive growth at company and macroeconomic level in Germany and is also claimed to be visible at the cross-country level (Börsch-Suppan and Winter, 1999).
- Last but not least, increased net capital flows are linked with greater openness of an economy on the export and import sides, and there are many arguments for the link between outward orientation and economic growth, supported by endogenous growth consideration and rising empirical evidence (e.g., Grossman and Helpman, 1992; Frenkel and Romer, 1999): (i) the export-import sector serves as a vehicle of technology transfer through the importation of advanced capital goods and as a channel for positive intersectoral externalities through the development of efficient and competitive management, training of skilled workers, and the spillover consequences of scale expansion; (ii) closer economic links increase the transmission of technology, thereby reducing the duplication of research and development activities – because knowledge is a public good, its accumulation increases the rate of technical progress; and, (iii) the opening of trade reduces price distortions, reallocating resources across sectors and increasing economic efficiency.

All these and other effects of enhanced net-capital flows resulting from prefunding pensions are likely to have large positive economic effects in the sending and receiving countries. Although their potential magnitude can currently not even be guessed, one would have to be very brave to assume that the effects would be large enough to solve the aging problem in industrialized countries.

4. Critical Requirements and Supporting Policies

To fully profit from the potential effects of prefunding and increased net-capital flows in FACs and SACs alike, various requirements need to be met, most importantly with regards to appropriate macroeconomic policies. In addition, there are various supporting policies that, while not necessary to achieve the positive effects, are likely to enhance the outcome. This sections sketches out the main relevant arguments in turn.

At the **macroeconomic level**, additional net capital flows require additional saving efforts that translate into an increased current account surplus in FACs. Correspondingly in the receiving SACs the additional resources must be translated into higher capital accumulation (and not only higher consumption) to generate an enhanced output base from which interests and future capital repatriation are paid. These represent no small challenges for both sending and receiving countries.

Enhanced prefunding of pensions in FACs does not automatically translate into higher domestic saving. If pension saving inflates asset prices, illusionary wealth effects may even reduce individual saving efforts and the household saving rate (as percent of GDP). Furthermore, moving from unfunded to funded pensions through debt

financing is also not conducive to enhance domestic saving. While the avenues of how to enhance private savings (from households and enterprises) are complex and uncertain, enhanced public saving through lower public deficits or even surpluses seems to be more certain. International evidence suggests private sector dessaving compensates some 50 percent of public saving effort. Hence, if private saving were to change little, also because the negative wealth effect of outflows on asset prices and a depreciation of the real exchange rate leads to little more saving, the public sector would have to double the target net-capital flows. Assuming the latter in the range of 3 percent of GDP (in line with the globalization scenario reported above), the fiscal stance would have to change by some 6 percent of GDP, a rather unrealistic number that, furthermore, would also be inconsistent with targeted household ownership of pension assets. Yet, how to increase the private saving rate through public actions remains largely unknown.

On the receiving side, the SACs need to make sure that the additional capital inflows translate into enhanced capital accumulation and not (only) into higher consumption. If this does not take place, the output base will not increase accordingly to service the debt with ease or at all. Quite likely, the outflow from FACs to those SACs would stop once the investors perceive the unsustainable macroeconomic position of a country. In the past, such a position was mostly linked with an enlarged fiscal stance/public dissaving fueled by enhanced capital inflows. More recently it is often the private sector in SACs/developing economies that accrues unsustainable foreign debt positions not matched by profitable investments, as witnessed by the recent financial crisis in East Asia. This has led to questions about an increased macroeconomic vulnerability of developing economies in face of rising capital flows, and the evidence of capital controls to contain these effects seems to be mixed (Ariyoshi et al., 2000). Furthermore, even sustained capital inflows can be a mixed blessing and typically create a policy dilemma between external competitiveness and inflation, challenging fiscal, monetary and exchange rate policy simultaneously (see Gacs et al., 1999).

Security of repayment is another important issue. Any borrower likes the loan but not its repayment. Countries are not different, in particular if the economic base for debt service is weak and the generation of a current account surplus can only happen at reduced consumption in order to generate the needed surplus savings. Pressed by a local constituency, politicians may thus decide to declare bankruptcy or simply to refuse to repay the amount fully or on time. With SACs' rising share in the world population, output and military power, their negotiation stance with FACs will rise, rendering such scenarios more likely. While globalization can be thought to increase the costs of short-term opportunistic behavior by individual countries, this may be more than compensated by a coalition of delinquent debtors. What are the possible security arrangements against economic and political default, and what is the role of current and new international organizations? While these questions cannot be easily answered, it appears that without a convincing security structure it will be difficult to convince the working generation in FACs to agree to hold a large share of their retirement assets in emerging markets.

Major and sustained capital flows by pension funds from FACs are likely to **require reasonably developed financial markets** in the receiving country that are sufficiently deep and liquid, well regulated and supervised. Otherwise the absorptive

capacity will be limited and mere price effects will dominate, the possibility for short term changes in the portfolio will be limited and costly, and simply the confidence by the outside investor will be low. Despite significant improvements in the 1990s, very few emerging markets currently fulfil the criteria of a sufficiently developed financial market, and as the experience shows, their fulfillment is protracted and tedious. A shortcut to this goal may be pension reform in emerging markets themselves and the introduction of personal and funded pensions managed by competitive and private pension funds (Vittas, 1999). OECD experience suggests that contractual savings through pension funds and insurance companies is closely linked to enhanced market capitalization and liquidity (Musalem and Catalan, 1999). The more limited experience in emerging markets also suggests that pension funds can make an important contribution to financial market development, and the examples certainly include Chile (Holzmann, 1997), and perhaps Argentina, Hungary and Poland.

While emerging markets generally welcome inflows from pension funds and other foreign investors, they are usually reluctant to grant their pension funds the right to invest abroad. Even if they do, emerging markets seem to share with developed markets the **home bias** of pension funds (and other institutional investors), understood as a much lower share compared to what standard models of global portfolio choice would suggest (Table 3).

Table 3: The Home-Asset Preference in Funded Pension Assets

	1990	1995(c)
Total Pension Assets, bn $		
OECD	4.813	7.865
Non-OECD	109	311
Home-Asset Share, % of Assets (a)		
OECD Pension Assets	92.8	88.9
Non-OECD Pension Assets (b)	100.0	99.3

Notes: (a) Home assets shares refers only to the share of assets invested in the home country of the investor.
(b) Excludes Hong Kong where the foreign asset share is 60 percent.
(c) Estimate.
Source: InterSec Research Company

The reluctance of the authorities to permit outside investment reflects the often low domestic saving in the country and the assessment that the outflows will not compensated by corresponding inflows, leaving the country with a lower base of resources to be invested. More sophisticated explanations point to a higher social value of domestic compared to foreign investment by emerging markets. Independent of these economic justifications, limitations on foreign investments by SACs reduces the diversification of the investment risks in SACs and FACs alike. To overcome these restrictions on (net-) capital flows, the enhanced use of **swap operations between pension funds** and other institutional investors of emerging and developed markets has been proposed. Such swaps exist between pension funds of developed markets, but the only known example for emerging markets is South Africa in the 1990s. Another approach would consist in the use of futures and options, with a moderate net capital flow resulting from margin requirements.

What are the limitations and how can the use of swaps be enhanced? As limitations one could conjecture issues of a thin market with problems such as market-information, pricing, timing, and slicing (across an index) and the need for a market maker. Is there a **role for international financial market institutions** such as the World Bank and regional development banks to act as an honest broker/market creating institution jointly with the private sector in developed and emerging markets? In the same regard, there seems to be an advantage for enhanced coordination between foreign and domestic investors that push for new products, better standards and more transparency. Will competitive markets establish such interactions or does this need the intermediation of an international organization?

5. Conclusion

The saving surplus created by the baby-boom generation in OECD economies and the capital need of less developed economies have created the hope that investments in emerging markets can help to solve the aging problem. Theoretical considerations and limited empirical evidence suggest that potential benefits for enhanced capital flows do exist, but that they are likely to be to modest and, furthermore, require significant policy actions by sending countries, receiving countries, and, perhaps, current or new international organizations.

Potential benefits of investments have been identified at the level of enhanced portfolio diversification without net-capital flows and market strengthening effects, such as accelerated financial market development, enhanced corporate governance and increased economic openness. The effects of net-capital flows toward emerging markets seem to be important for them since they greatly increase the capital-output ratio, but they are less important for the developed economies, at least in a neoclassic setting.
To harvest the limited effects of enhanced capital flows, however, requires policy actions in sending and receiving countries. For the developed markets, it demands an increase in the saving rate that may not necessarily emerge when moving from unfunded to funded pensions; this is likely to require a strengthened fiscal stance (i.e., public saving). The emerging markets have to make sure that the received money is translated into higher capital accumulation and not (only) higher consumption. Otherwise, the flows will eventually dry-up and the resources for debt service will not be easily available.

Last but not least, there are various supporting policies to maximize the effects, and they include financial market development in emerging markets, which may be accelerated by their move toward funded and privately managed pensions, and increased interactions between domestic and foreign institutional investors, which may need the facilitation of current or new international financial institutions.

These sobering results imply that the solution to the aging problem has to be found largely in the countries themselves, through a reformed pension system that is less distortionary for individual labor supply and saving decisions, a lengthening of working life in line with increased life expectancy and corresponding incentives for lifelong learning and changes in the labor market, and policies that do not pass an undue burden to the future, and on average much older, generations, in the form of public debt and a deteriorated environment.

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Table A.1: Public pension spending as percentage of GDP
High-income OECD countries

Country	Year	Pension Spending / GDP (percentage)
Australia	1995	4.6
Austria	1995	14.9
Belgium	1995	12.0
Canada	1995	5.4
Denmark	1996	9.6
Finland	1995	12.9
France	1995	13.3
Germany	1995	12.0
Greece	1993	11.9
Iceland	1995	5.7
Ireland	1996	5.1
Italy	1995	15.0
Japan	1995	6.6
Luxembourg	1995	12.6
Netherlands	1996	11.5
New Zealand	1995	6.5
Norway	1995	8.9
Portugal	1995	9.9
Spain	1995	10.6
Sweden	1995	11.4
Switzerland	1995	12.6
United Kingdom	1995	10.2
United States	1995	7.2

Source: OECD (1998)

Table A.2: Estimates of Implicit Debt in Hifh-income OECD Countries

Base Year Country	**OECD (1994)** Projected 1990	**OECD (1996)** Projected 1994	**IMF (1996)** Projected 1995	**Kune (1996)** Projected* 1990	**IMF (1995)** Accrued 1995	**Kune (1996)** Accrued 1990	**General Govmt. Gross Debt**** **1994**
			Percent of GDP				
Austria	–	298	–	–	–	–	59
Belgium	–	300	–	101	–	75	136
Canada	121	204	214	–	94	–	96
Denmark	–	235	–	117	–	87	69
Finland	–	384	–	–	–	–	–
France	216	318	523	112	265	83	48
Germany	–	348	457	–	221	–	–
Greece	–	–	–	245	–	185	114
Ireland	–	107	–	78	–	55	-
Italy	242	401	560	207	357	157	129
Japan	162	299	261	–	166	–	83
Luxembourg	–	–	–	219	–	156	-
Netherlands	–	214	–	144	–	103	79
Portugal	–	277	–	128	–	93	71
Spain	–	323	–	129	–	93	63
Sweden	–	370	291	–	131	–	92
United Kingdom	156	142	148	92	117	68	46
United States	113	163	206	–	106	–	69
West Germany	157	–	–	186	–	138	50

Source: Palacios and Pallares-Miralles (2000)

Table A.3: International Comparisons of Generational Accounting
Alternative Ways to Achieve Generational Balance

Country	Cut in government purchases		Cut in government transfers		Increase in All taxes		Increase in income tax	
	A	B	A	B	A	B	A	B
Argentina	24.6	29.1	16.8	11.0	10.7	8.4	97.1	75.7
Australia	8.8	10.2	12.1	9.1	5.1	4.8	8.5	8.1
Austria	56.8	76.4	25.0	20.5	20.1	18.4	60.7	55.6
Belgium	11.2	12.4	6.0	4.6	3.7	3.1	11.7	10.0
Brazil	23.8	26.2	21.3	17.9	12.4	11.7	78.9	74.0
Canada	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.2
Denmark	9.9	29.0	4.7	4.5	3.4	4.0	5.8	6.7
Finland	47.6	67.6	26.5	21.2	20.6	19.4	54.1	50.8
Germany	21.1	25.9	17.6	14.1	9.5	9.5	29.5	29.5
Ireland	-2.1	-4.3	-2.5	-4.4	-1.1	-2.1	-2.5	-4.8
Italy	37.0	49.1	18.0	13.3	12.4	10.5	33.3	28.2
Japan	26.0	29.5	28.6	25.3	15.5	15.5	53.6	53.6
Netherlands	21.0	28.7	21.4	22.3	8.5	8.9	14.9	15.6
New Zealand	-1.0	-1.6	-0.8	-0.6	-0.4	-0.4	-0.8	-0.8
Norway	11.5	9.9	9.4	8.1	7.4	6.3	11.3	9.7
Portugal	7.6	9.8	9.6	7.5	4.2	4.2	13.3	13.3
Spain	50.6	62.2	22.5	17.0	17.4	14.5	53.9	44.9
Sweden	37.6	50.5	22.6	18.9	16.1	15.6	42.9	41.9
Thailand	-38.1	-47.7	-185.1	-114.2	-25.0	-25.0	-81.7	-81.8
France	17.2	22.2	11.5	9.8	7.1	6.9	66.0	64.0
United Kingdom	6.6	9.7	9.6	9.5	2.6	2.7	9.4	9.5
United States	18.7	27.0	19.8	20.3	10.5	10.8	23.8	24.4

Notes: Table entries are percentage adjustments needed to achieve generational balance.
A. Education expenditure treated as government consumption.
B. Education expenditure treated as government transfers and distributed by age groups.
na – not available

Source: Kotlikoff and Raffelhueschen (1999).

Table A-4: Risk Diversification for Different Retirement Portfolios National and International, Financial Market and Multi-pillar

Table A: Real rates of return and their correlation at national level, 1953-95

	Germany	Japan	United Kingdom	USA
Rates of return				
Wages	4.8	5.2	3.6	1.0
Interest rates	3.9	3.8	1.9	2.3
Capital return	10.1	10.8	10.8	9.8
Standard deviation				
Wages	3.4	6.1	3.0	2.4
Interest rates	1.1	2.3	3.1	2.9
Capital return	26.3	24.7	25.3	18.3
Correlation				
Wages and interest rate	-0.086	0.238	0.194	-0.197
Wages and capital return	-0.077	0.186	-0.025	0.202
Interest rate and capital return	0.070	0.085	-0.167	0.130

Table B: Correlation of financial market returns between countries, 1953-95

	Germany	*Japan*	*UK*	*USA*
Germany	1.000	0.240	0.552	0.542
Japan	0.349	1.000	0.041	0.060
UK	0.473	0.153	1.000	0.617
USA	0.309	-0.084	0.225	1.000

(lower half: interest rates; upper half: capital returns)

Table C: Real rates of return, and their correlation at international level, 1953-95

(equal country share)

	Interest rate	Capital return	Interest rate & Capital return
Mean	3.0	10.4	6.7
Standard deviation	2.6	23.6	17.2
Correlation			0.115

Table D: Real rates of return and their correlation in a multipillar portfolio, 1953-95

	Germany	Japan	United Kingdom	USA
National portfolio with fixed shares*				
Mean	3.8	3.9	3.4	3.3
Standard deviation	8.1	9.3	7.8	6.0
Correlation (W&(I&C))	-0.08	0.21	0.00	0.04
International portfolio with fixed shares**				
Mean	3.6	3.6	3.6	3.6
Standard deviation	5.4	6.8	5.9	5.8
Correlation (W&(I&C))	-0.140	0.167	0.184	0.218
National optimal portfolio***				
Mean	5.1	8.5	4.9	4.9
Standard deviation	6.6	17.0	7.2	6.3
International optimal portfolio****				
Mean	4.9	7.3	7.3	7.8
Standard deviation	4.3	10.2	10.3	11.4

* 50 percent national wage, 50 percent national financial portfolio with equal shares
** 50 percent national wage, 50% international financial portfolio with equal shares
*** Maximizes mean to standard deviation of portfolio of wages and national financial market
**** Maximizes mean to standard deviation of portfolio of wages and international financial market

Source: Holzmann (2000)

Notes: Tables A through D provide straightforward and simple estimates of the performance of alternative retirement assets, and the risk/return trade-off under alternative portfolio structures. The basic data are annual returns on social security assets (proxied by real wage growth), fixed interest assets (proxied by government bonds), and capital assets (proxied by returns of listed shares) in the 4 main industrialized countries. Since the rates of return are measured in national currency, the estimates abstract from the exchange rate risk. On the other hand the (high) wage growth reflects the development of the past with rising labor force participation and moderate aging. The data is taken from Thompson (1998) and covers the years 1953 to 1995.