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PENSION FUNDS, CAPITAL CONTROLS
AND MACROECONOMIC STABILITY

by

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Résumé

Ce Document technique pèse le pour et le contre de la libéralisation de l'investissement des caisses de retraite étrangères dans les pays en développement, en s'intéressant surtout au cas du Chili. Dans une première partie, ce document analyse : a) les conséquences, pour un petit pays, de l'ouverture à l'investissement de son marché des capitaux sur sa politique macro-économique ; b) les stratégies d'investissement des caisses de retraite privées et les contraintes qui leur sont imposées ; c) l'expérience du Royaume-Uni de la diversification des investissements après l'abolition, en 1979, des contrôles sur les mouvements de capitaux. Dans une seconde partie, normative, les auteurs, bien que n'ayant trouvé que de faibles arguments en faveur de la réglementation de l'investissement des caisses de retraite sur les marchés étrangers (perte des fonds destinés à l'épargne nationale, effet général sur les marchés intérieurs des capitaux) passent cependant en revue les différentes techniques d'une telle réglementation.

Summary

The paper discusses the pros and cons of liberalising foreign investment of pension assets in developing countries, with particular reference to Chile. The positive part of the paper examines the impact on macroeconomic policy of a small country's opening its equity market for investment; the investment strategies of, and the restrictions imposed upon, privately-managed pension funds; and the specific British experience with portfolio diversification after the dismantling of capital controls in 1979. The normative part, while finding only a weak case for regulating foreign pension investment (loss of savings, domestic capital markets), discusses various techniques of such regulation.

Preface

One of the central tenets of comprehensive reform is the establishment of a financially sound social safety net. An important part of the social safety net to reduce poverty is the provision of income security for a nation's older citizens. As a consequence of medical improvements and declining fertility, both informal and formal systems of old-age income maintenance have become strained in both developing and in OECD countries alike. Chile, which revamped the structure of its pension system 15 years ago with a radical shift from a public Pay-As-You-Go to a privately-managed fully funded system, has become a role model for developing and industrial countries undertaking similar changes.

In the past 15 years, Chile has seen its pension funds deliver high financial returns, stimulate the domestic capital market and help raising domestic savings. But Chile's pension assets have been almost exclusively invested at home, exposing retirees to large idiosyncratic risk. The Chilean authorities are thus considering opening their pension system for investing an increasing share of these assets abroad. The current paper by John Williamson, Senior Fellow at the Institute for International Economics in Washington, D.C., and by Helmut Reisen, Head of Research Programme at the OECD Development Centre, tries to assist in that decision by analysing the pros and cons of deregulating foreign pension fund investment. The paper, which is part of the research programme "From Reform to Growth", has been presented to a conference on pension privatisations held at Pontificia Universidad Catolica de Chile, Santiago, on 26-27 January 1994.

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1. Introduction

It is well known that high capital mobility introduces an important constraint on macroeconomic policy. The question therefore arises as to whether free international investment by pension funds might have a macroeconomic cost that needs to be weighed against its presumed microeconomic advantages in terms of permitting retirees to enjoy the benefits of international diversification (an improved combination of risk and return). If so, the further question arises of whether a novel form of exchange control — e.g., a requirement that foreign investment by pension funds be allowed only when there is equal inward investment by foreign pension funds — might help to overcome the macroeconomic costs without losing the micro gains.

This paper starts with an analysis of the impact of a small country opening up its stock (equity) market for investment from abroad, focusing on the question of the extent to which this will constrain macroeconomic policy. It then proceeds to examine the investment strategies of, and the restrictions imposed upon, privately-managed pension funds in the OECD area. This is followed by a discussion of UK experience after the liberalization of capital controls in 1979.

The paper then turns to normative issues. We argue that since the diversification of pension funds fosters stock market integration rather than interest linkages, it does little to limit short-term monetary sovereignty. We conclude that the case for regulating this form of capital mobility is weak once a country has got to the point where it does not need to fear a major net loss of savings. The remainder of the paper discusses various techniques by which the foreign investment of pension funds could be regulated, were our main conclusion regarding the pointlessness of such regulation to be rejected. For example, one possibility would be to limit domestic pension funds to portfolio swaps with foreign pension funds. We also discuss whether there is a case for transitory controls on pension funds while the size of their portfolios is growing particularly rapidly.

2. The Implications of Stock Market Integration

A classic result of the international monetary theory developed by Robert Mundell in the 1960s states that high (strictly speaking, perfect) capital mobility and fixed exchange rates preclude the use of monetary policy to stabilize the economy (Mundell 1968, chapter 18). To express the same point in another way, a way that has been made familiar in the debate on European monetary integration: fixed exchange rates, free capital mobility, and monetary independence constitute an "impossible trinity". Note that in this context a "fixed exchange rate" does not mean just an unalterably pegged exchange rate: it includes also an exchange rate whose value is determined by the

authorities, even if subject to a crawling peg and guided by a target for the real exchange rate.

However, as shown in later sections of this paper, pension funds invest primarily in stocks (equities) rather than the bonds that are hypothesised to be perfect substitutes in the Mundell-inspired literature. Standard macroeconomic models do not contain a stock market² (despite the fact that in some countries a larger part of personal wealth is held in the form of equities than of bonds), so that one cannot simply appeal to familiar results to understand the implications of stock market integration. We therefore attempt to think through the implications from first principles. With apologies to those economists who find such informality aesthetically offensive, we do this without constructing a formal model.

The interesting case to analyse is that in which capital mobility would be perfect in the conventional sense, i.e. bonds are perfect substitutes, but for the continued existence of capital controls³. The question is then what effect the elimination of controls on cross-border flows of equity capital would have on a country's monetary independence.

Consider the simplest possible model, in which arbitrage between the bond and stock markets equilibrates rates of return in the two markets. The bond market is conventionally modelled as trading short-term assets with a known nominal interest rate r , while the rate of return on equities consists of the sum of the dividend yield and capital gains. Let dividends per share be d , let the price of a share be e , assume perfect foresight, and use a hat to denote a rate of change. Then perfect arbitrage between the two markets implies:

$$r = d/e + \hat{e}/e.$$

If the right hand side is equated to the equivalent expression for the world market, and that is in turn equal to the foreign rate of interest r^* , then arbitrage through the equity market would indeed ensure the equality of domestic and foreign interest rates, i.e. it would result in the loss of monetary sovereignty.

Now ask whether the assumptions needed to establish that result constitute a useful first approximation to reality. Ask in particular whether it is sensible to assume perfect foresight in the rate of change of share prices, given that the theory of portfolio diversification that is used to explain and guide equity investment is based on *inability* to foresee changes in share prices correctly. The answer is clearly that it is not useful even as a first approximation, and the implication is that one should not expect to find arbitrage equating yields between equity and bond markets. It follows immediately that linking equity markets should not be expected to equate interest rates or, therefore, to eliminate monetary sovereignty.

Of course, one should still expect that opening the equity market will have an impact on aggregate demand unless this is deliberately prevented by the central bank. Consider the case in which both inflows and outflows of equity investment are liberalised. Suppose that this results in a net inflow of equity investment⁴. This will bid up the value of the stock market, producing a positive wealth effect and a lower cost of capital, both of which will tend to increase demand. In order to hold the exchange rate constant, the central bank will have to supply more domestic money to the foreign buyers of stocks, which they will of course pass on to the domestic sellers. If the central bank wishes to hold the money supply (or, indeed, aggregate demand, in either real or nominal terms) constant, it will have to increase the interest rate. The result will be contrasting movements in the expected return on equities (lower) and on bonds (higher); thus the possibility of sterilising the impact of an inflow of equity capital indeed depends upon arbitrage between the equity and bond markets not being too high.

The final part of this theoretical section examines what difference the existence of equity-capital mobility makes to the response of an economy to various shocks. It is again assumed that equity capital is the only form of capital that is internationally mobile. The shocks that we examine are (a) a tightening of monetary policy, and (b) a decreased desire to hold local equities as a result of less optimistic expectations of their future yield.

Consider first the impact of a tighter monetary policy. The higher interest rate on bonds must be expected to depress the local equity market as well, which will raise holding yields and thus attract an inflow of equity capital from abroad. This will tend to limit the effectiveness of monetary policy, just as does any other form of capital mobility. The imperfection of arbitrage between bond and equity markets will, however, limit the extent to which monetary policy is undermined.

Consider next the impact of a portfolio shock in the form of a sudden decrease in the desire to hold local equities, say as a result of a downward reevaluation of the likelihood of future earnings growth in the domestic economy. It is of crucial importance to specify also whose expectations undergo revision. There are three possibilities: foreigners, local investors, and both.

A pessimistic revision of expectations by foreigners obviously has no impact on the domestic economy in the case where there is no capital mobility⁵. When there are foreign holdings, attempted liquidation of those holdings will drive the stock market down; since domestic holders do not by assumption share the pessimistic reevaluation that initiated the sales of stock, they will buy up shares from the foreigners who will use their receipts to buy foreign exchange, thus placing pressure on the reserves and/or the exchange rate, depending on the exchange-rate regime. If the central bank attempts to defend the exchange rate and sterilise the impact on the money supply, it will have to reduce interest

rates, thus aggravating the loss of reserves but diminishing the decline in the stock market. Mobility of equity capital is in this case destabilizing.

If local investors revise their expectations downward but foreigners do not, then the fall in the stock market will tend to induce additional inward investment that will limit the size of the stock market decline relative to the case of no capital mobility. Reserves will rise, and even a central bank that tried to stabilize might decide not to sterilise this inflow as the increased money supply and lower interest rates would tend to offset the negative impact on demand of a lower stock market. Mobility of equity capital is in this case unambiguously stabilizing.

However, both of the above cases seem rather unconvincing, at least as responses to "a disappointing political development, a sudden decrease in the price of the main exportable good or an increase in the price of the main importable good" (Corbo and Hernández 1993, p. 5). A more neutral assumption would be that the expectations of both foreign and local investors undergo a similar downward revision. In that case there is no reason why there would be any capital outflow: the stock market will decline to the degree needed to persuade investors as a group to continue holding the existing stocks, but that will involve no net sales by foreigners. (This assertion needs to be qualified to the extent that a group of domestically-based market-makers automatically increase their portfolios in a declining market, but this can surely not be a major factor.) Indeed, the impact of a given downward revision of expectations will be less in the case where portfolios are internationally diversified, because that part of domestically-owned wealth that is invested abroad will be protected against the capital loss from the fall in the domestic stock market. (See Gavin 1991a for a rigorous demonstration of this proposition.)

3. Investment Strategies of Pension Funds in the OECD Area

Individual wealth in the OECD area is increasingly managed by institutional investors. Fully funded, privately managed pension funds have so far been important (as a per centage of financial assets and GDP) in only a handful of OECD countries, such as the US, the UK, the Netherlands, Switzerland, Canada and Australia (see Table 1). Elsewhere, private funded schemes have seen their development hampered by the scale of state social security pension provision (Davis, 1992). State social security in the OECD mostly provides a compulsory, indexed, defined-benefit, and unfunded pension scheme. However, aging populations, with a rising proportion of retirees, will further strain existing social security systems. Policymakers are thus faced with the unappealing choice of either decreasing benefits or of increasing social security taxes. At the same time, the need to tackle unemployment is exerting strong pressure to control labour costs.

These pressures can be expected to stimulate strong growth in private funded pensions and create incentives to seek maximum returns on pension fund assets (Davanzo and Kautz, 1992). According to the European Federation for Retirement Provision (see *The Guardian*, 5 October 1993), every 1 per cent improvement in pension funds' investment returns will reduce employers' costs by 2 to 3 per cent of the payroll. The need for high returns on pension assets implies a need for global diversification. Pension assets will dominate investment trends and capital flows around the world.

Before we examine how pension funds *actually do invest* their assets, it is useful to spell out how pension funds *should invest* to maximise return for given risk. Modern portfolio theory (see, for example, Solnik, 1988) and its major tool, the Capital Asset Pricing Model (CAPM), hold that the world market portfolio is the optimal term portfolio in a fully efficient and integrated international capital market. For any portfolio underinvested in foreign assets (as a percentage of world market capitalisation) there is the prospect of a free lunch: international diversification can lower risk by eliminating nonsystemic volatility without sacrificing expected return⁷. Alternatively, global diversification will raise the expected return for a given level of risk. The diversification benefits consist of reduced risk, usually measured by the annualised standard deviation of monthly returns, by investing in markets which are relatively uncorrelated (or even negatively correlated) with the investor's domestic market. International diversification reduces risk faster than domestic diversification because domestic securities exhibit stronger correlation as a result of their joint exposure to country-specific shocks. International diversification should cover both stocks and bonds; efficient portfolios made up of only stocks display a substantially higher risk for the same level of return than efficient portfolios made up of both stocks and bonds (Solnik and Noetzlin, 1982).

Since OECD stock markets are already highly integrated⁸, their monthly returns display correlation coefficients on the order of 50 to 90 per cent. By contrast, stock markets in Latin America and Asia still display negative or very low correlation with those in the industrialised countries. Note, however, that equity returns in those developing countries that have opened their markets to foreign portfolio investment have become more closely correlated with the returns in developed markets in recent years, with coefficients around 40 per cent (Mullin, 1993). Of course, investment in emerging markets not only reduces risk, it is also likely to raise the mean return of portfolios.

Growth in the OECD has proved to be and is expected to remain substantially below growth in many non-OECD countries. Through 1994, the OECD (1993) predicts growth to average 2.7 per cent in the OECD area, 6.9 per cent in the so-called dynamic Asian economies, and 6 to 7 per cent in both Argentina and Chile. Stock market returns cannot outpace GDP growth in the longer run: share prices cannot rise faster than the dividends which give them their value, nor can dividends rise faster than the profits from which they are paid. Profits in turn can scarcely rise faster than the economy, as that

would mean shareholders winning consistently at the expense of someone else. Investment in high-growth non-OECD countries thus promises higher returns than it does for slow-growth OECD countries as long as the market is less than perfectly efficient at arbitraging away such differences. Pension funds are long-term contractual savings institutions, unlike investment funds which need to stand ready to meet at short notice requests for reimbursements. The portfolio choice of pension funds will thus not only be guided by optimising risk-return tradeoffs, but will have to be aligned to the structure of their liabilities. The definition of retiree benefits (nominal vs. real, and defined-contribution vs. defined-benefit schemes), the maturity structure of receipts, and expenses will feature prominently among the determinants of portfolio investment.

In most OECD countries, quantitative limits to international investment still constrain the portfolio management of pension funds (see next section). How do pension funds invest when such limits are absent? Coote (1993) has recently looked at this question by examining *in-house investment guidelines* of life insurance and pension institutions in Australia, the Netherlands, Switzerland and the United Kingdom. The investment behaviour of these largely unconstrained institutions may be indicative of the future for those countries that decide to relax their official restrictions on international investment. Here is a short summary of Coote's findings:

(1) Pension funds take a *conservative* approach to international investment, which is motivated more by risk-reducing portfolio diversification than by expectations of superior long-term returns. The emphasis on diversification benefits is reflected in the fact that in-house guidelines specify both *minimum and maximum* limits to foreign investment; it is considered just as imprudent not to have a minimum foreign exposure as to hold too many foreign assets (see Table 2).

(2) Investment guidelines usually specify benchmarks for the purpose of defining a neutral long-term investment position, with a breakdown for the three major international asset classes, namely equities, fixed-interest instruments, and real estate. Limits to foreign equity holdings are usually the highest, those for foreign property holdings the lowest among the three asset classes. The preference for equities reflects the advantage to participants in defined-contribution pension funds of acquiring assets of long duration with high yields and an expectation that their price movements will broadly offset inflation, a role for which equities are ideally suited. Bonds are suitable as a core holding for defined-benefit pension funds with liabilities defined in nominal terms.

(3) Regional specifications cover in most guidelines minimum and maximum investment limits in three major regions — Europe, North America, and Asia Pacific. The benchmark here is often a commonly reported index such as the Morgan Stanley Market Capitalisation Weighted Accumulation Index⁹. The share of countries in this benchmark depends on the capitalisation value of their respective stock markets; countries may not

be overweight or underweight by more than 5 per cent of their share in the benchmark. (Note that neither Latin America nor Africa were mentioned by Coote.) The development of forward currency markets has now led most pension funds to recognise that investment in a foreign asset and investment in a foreign currency involve two separate investment decisions.

(4) Pension fund portfolios nonetheless often continue to display a home bias. Goldstein and Mussa (1993, p. 24) list the possible explanations as "transactions costs, externally-imposed prudential limits on foreign assets, uncertainties about expected returns, higher (than warranted) risk perceptions about foreign assets due to relative unfamiliarity with those markets and institutions", and express their own belief that the latter factor is the most important. Moreover, currency matching requirements sometimes obligate the holding of excess reserves when the currency composition of assets and liabilities is mismatched; such requirements make foreign investment less attractive¹⁰. Another factor, which militates particularly against pension fund investment into emerging markets, is liquidity risk (Davis 1991). Yet a further frequent explanation is the role of employee representatives, who typically favour investment at home because of a protectionist assumption that home investment promotes social welfare. In some countries, like Germany, the track record of (positive) inflation-adjusted returns on domestic government bonds and the strength of the domestic currency have also made foreign investment look less compelling. However, while pension funds have not so far pursued diversification into foreign assets to the extent predicted by modern portfolio theory, namely to the global portfolio, there is currently a clear trend to reduce the home bias of pension fund investment, so that those funds with low foreign exposure are now rapidly investing abroad, foremost in equities.

(5) There is a strong tendency for portfolio behaviour to conform to industry norms, a result of the principal-agent problem. For a pension fund manager, a strategy of low personal risk is to do what the others are doing. If they are all wrong in their choices, the manager will not be held *personally* accountable. But for the principal, the sponsoring companies and the pension beneficiaries, the damage will be done.

It should be noted that future investment behaviour may be less conservative than that described by the Coote report. An increasing number of US and UK companies are turning away from traditional defined-benefit retirement plans, which guarantee employees a specific pension by investing their cash in a company-wide fund, towards defined-contribution pensions, which give employees the chance to choose from a variety of investment options, most of which are mutual funds. In the future, therefore, pension funds are likely to stress return objectives more than in the past, especially while risk-free assets (such as deposits) yield returns as low as currently in the United States.

There is currently widespread enthusiasm about the long-run prospects for portfolio flows into emerging markets based on the calculation of risk-return tradeoffs. Yet, the enthusiasm may easily be overdone. It seems obvious that in a large, well-diversified economy such as the United States there should be enough opportunities to find poorly correlated equity returns and hence more potential for *domestic* diversification benefits than in a small, mono-structured economy. To compare standard deviations of monthly returns of a joint US index (such as the SP 500) and their correlation with smaller counterparts is thus to exaggerate the benefits of foreign diversification, because one US index would hide the domestic diversification potential for the US investor. Diversification benefits can also be overstated by the common use of monthly returns, since the correlation of stock returns falls with the frequency of observation. Since performance checks for pension funds occur often on a quarterly basis, an efficient frontier based on quarterly or longer observations (not readily available from IFC) is likely to provide a more realistic and lower estimate of the risk reduction implied by foreign investment. Standard deviations of monthly returns may also be a poor risk guide to the extent that *event risk* becomes more important (Howell *et al.*, 1992). Diversification will not eliminate systemic risks such as the 1987 crash when all markets are likely to be correlated. Finally, the low correlation of stock returns between mature and emerging markets which is currently observed cannot persist with heavy flows between these markets. The flows will help break down the historically low correlations between OECD and non-OECD stocks, just as happened with intra-OECD correlations, which strengthened during the 1980s (Mullin, 1993).

To the extent that economic development requires a long period of permanent (as opposed to temporary) capital inflows, this survey of investment strategies reveals pension funds as a particularly suitable vehicle for such inflows. In contrast to managed funds (country and mutual funds) and private domestic and foreign investors who switch assets rapidly in the search for short-term returns (Gooptu, 1993), pension funds (like life insurance companies) can be taken as a risk-averse group interested in participating in long-term investment. Pension funds are usually not forced to withdraw their assets suddenly due to a short-term demand for funds. Moreover, unlike money market funds and bond houses, pension funds are primarily interested in foreign equity investment. Pension funds in OECD countries are huge potential sources of financing for developing countries. Yet, as will be shown in the next section, regulations in many OECD countries still constitute a barrier to releasing that flow.

4. Restrictions on Foreign Investment

Many OECD countries still retain restrictions on international investment by pension funds (Table 3). While most capital-account items have been brought within the full discipline of the OECD Code of Liberalisation of Capital Movements¹¹ and have been

effectively liberalised during the 1980s, investment abroad by pension funds still remains outside the scope of the Code. Restrictions are not only incorporated in exchange controls, but also in tax laws and in legislation covering financial institutions. These restrictions can be classified by the type of investment instrument (limits on foreign real estate, bonds, shares), by issuer (government vs. private), by country of origin of the issuer, by whether the instruments are traded on recognised exchanges, and by the currency in which the instrument is denominated. Restrictions can take the form of outright prohibitions, limits for particular categories of investment, or incentives offered for particular investments.

For pension funds (and other institutional investors, such as life insurance companies or mutual funds), the distinction between capital controls and restrictions is to a certain extent muted. Prudential concern is often cited as a major motive for imposing government restrictions on investment by pension funds, both at home and abroad. Authorities feel a duty to protect the financial interest of individuals who have entrusted their savings to funds. Foreign investments come under particular scrutiny in some countries, because of deficiencies in information about local business and financial conditions, including regulatory standards for the issuance of securities, settlement risk, transfer risk, and sovereign (default) risk. But these are risks which can be dealt with by the market; and other motivations for government restrictions on foreign investment closely resemble those for the more "classical" capital controls, such as the retention of domestic savings and of monetary autonomy (see Gusen 1993, pp. 18-20).

Restrictions on foreign investment by pension funds are often motivated by the desire to retain domestic savings for investment at home. True, it is sometimes argued that capital controls are so porous that their removal would do little to increase the export of capital. However, the mere fact that it is always possible for owners of wealth to place their funds abroad retail, at a premium, through a parallel market does not imply that controls that prevent institutions from exporting capital wholesale, at the official rate, have no effect in limiting the export of capital. Capital controls can prevent the placement abroad of long-term institutional savings. Tight restrictions, such as found in Germany, are mirrored by a low proportion of foreign assets in the portfolio of pension funds. The same observation holds for a number of other OECD countries, such as Denmark, France, Norway, Sweden, and, with regard to public pension funds, the Netherlands.

The ceilings on the share of foreign assets imposed by other OECD countries where pension funds are of any significance are generally considered to be non-binding. Examples are Japan and Switzerland, where such ceilings have been set at 30 per cent. Australian, Canadian, UK and US pension funds are subject to "prudent man rule". That rule gives pension funds considerable latitude with their portfolio investments provided they can demonstrate to authorities that their investment behaviour as a whole is

"prudent". A prudent approach to investment is interpreted to imply avoidance of excessive concentration and self-investment, as well as speculative investments.

When pension funds are free to invest abroad, they tend to extend the foreign asset share up to around 20 to 30 per cent, as seen with private Dutch and UK funds¹². Most empirical work on efficient frontiers displays minimum risk (for given return) in precisely the range chosen by unconstrained pension funds, i.e. at a foreign assets share which is located between 20 and 30 per cent (e.g. Greenwood, 1993). While UK and private Dutch funds have already arrived at that level, pension funds in most of the other OECD countries have only started their portfolio diversification towards optimal risk-return trade-offs. The process of portfolio adjustment does not occur overnight but stretches out over a decade or so.

In Europe, the drive towards foreign investment by pension funds could be threatened by EC regulation (see *The Guardian*, 5 Oct. 93). A draft directive, originally proposed by Sir Leon Brittan as a measure to liberalise capital markets and create a level playing field for financial institutions, runs the risk of emerging as a protectionist measure: a majority of EU governments are now pushing for a limit of 20 per cent on the proportion of assets which may be invested abroad¹³, where "abroad" is interpreted to include the rest of the European Union. The proposed directive would establish a European norm which could encourage or even oblige future governments to order the repatriation of foreign investments where they exceed the 20 per cent limit (as is already the case in the UK, Belgium, and Ireland).

5. Abolition of Capital Controls: The UK Experience

In the United Kingdom pension funds already accounted for an important proportion of personal savings and of GDP (around 20 per cent) when capital controls were dismantled in October 1979. The UK experience may thus provide some insights relevant to countries considering dismantling capital controls in the presence of domestic institutional investors.

On theoretical grounds, it is usually expected that liberalising capital inflows, and even outflows, will produce a net capital inflow, a positive wealth effect and an appreciation of the real value of the domestic currency (Fischer and Reisen, 1993). Kenen (1993) shows that, in a two-period model, the liberalisation of outflow controls may lead to the repatriation of domestic assets — a net capital inflow — because controls on outflows "tax" the option of re-exporting capital later, and so reduce the incentive to repatriate capital now. Similarly, Labán and Larraín (1993) show that a liberalisation of outflows — specifically, a reduction in the minimum capital repatriation period for foreign investment — reduces the irreversibility of inward investment and therefore the option

value of waiting before moving funds in, thus potentially increasing net inward investment. Realignment of portfolio structures and the once-and-for-all attempt by foreign and domestic investors to increase their claims on a newly liberalised economy has sometimes created a spending boom, caused by the wealth effect due to the (at times euphoric) revaluation of domestic assets. All these forces will lead to a real appreciation of the domestic currency, in particular when liberalisation is followed (rather than preceded) by a stabilization policy which drives real interest rates up.

In contrast to these hypotheses, the abolition of UK capital controls in the presence of important domestic institutional investors (notably pension funds) generated a wealth loss due to the disappearance of the "investment currency" premium and heavy net outward portfolio flows, with new foreign demand for sterling assets significantly lower than the demand by UK residents for overseas assets. The net effect of portfolio flows was to raise interest rates and to depreciate sterling, even though the currency appreciated heavily in real terms due to other factors. (Although a definite decomposition of sterling's appreciation during 1979-82 has never been achieved¹⁴, with the development of North Sea oil, the second oil price shock, and sweeping policy changes under Margaret Thatcher coinciding with the abolition of capital controls, the fact that net portfolio flows became strongly negative implies that the abolition of capital controls limited rather than intensified the appreciation.)

The Bank of England (1981) argued that a net outflow was to be expected in the British context, given the importance of the investment currency premium over the long period when capital controls had been in place. With respect to portfolio investment, the UK controls had limited residents' purchase of foreign exchange for the purpose of investment overseas to the proceeds from the sale of existing foreign securities or from foreign currency borrowing. This constituted the "investment currency" market, in which there was a premium over the official exchange rate, which was mostly in the range of 30 to 50 per cent, or on occasion even higher (Artis and Taylor, 1989). The size of the premium demonstrates the effectiveness of capital controls in locking in domestic savings.

The Bank of England (1981) argued that their removal triggered portfolio adjustment through four channels. First, the loss of the "investment currency" premium constituted a *reduction in the wealth* of investors who had previously been holding overseas securities, and a disruption to their previous portfolio balance. Attempts to restore the pre-abolition share of foreign assets in portfolios would give rise to capital outflows. Second, the abolition of the premium directly reduced the *sterling price* of foreign securities, which would induce investors to raise the desired portfolio share of foreign assets beyond pre-abolition levels, as long as foreign currency yields and risks remained unchanged. Third, some *refinancing in sterling* of investment originally financed with foreign currency borrowing was to be expected. Fourth, on top of the three stock-

adjustment effects, a continuing *flow effect* was required to maintain portfolio balance as wealth increased.

Once controls were abolished, UK pension funds became the driving force for important net capital outflows. Net outward portfolio flows, which had been virtually nil when controls were still in place, cumulated to £36 billion during 1980-85. As shown in Table 4, the net overseas share of the assets of nonbank financial institutions rose from 5.9 per cent in 1979 (equivalent to £8.9 billion) to 14.3 per cent in 1985 (£67.6 billion). Pension funds invested almost exclusively in foreign equities, withdrawing funds from illiquid property and low-return government bonds. The foreign asset share of pension funds rose to 15 per cent in 1985, up from 7 per cent in 1979, and rose further to around 30 per cent by 1993. The switch in portfolio flows and the rise of foreign asset shares in portfolios can be put down as the "effect" of abolishing capital controls (Artis and Taylor, 1988) — implying that controls had been very effective in preventing global diversification of UK portfolios as long as they existed. The OECD (1990) noted a further stimulus to outward portfolio investment from 1988 on, when the government started retiring debt, creating a lack of suitable domestic investment assets.

Measures of financial market integration usually focus on interest rate parity conditions. Such a focus is justified by the concern that high capital mobility erodes the effectiveness of monetary policy as an instrument to manage the domestic economy under a regime of fixed (or managed) exchange rates. UK capital controls had indeed inhibited full interest arbitrage (a further indication of their effectiveness); their removal subsequently had a dramatic effect in eliminating deviations from covered interest parity (Artis and Taylor, 1988)¹⁵. But it is unlikely that pension funds contributed in any great measure to short-term interest arbitrage, since their post-abolition portfolio shifts mainly involved replacing property and government bonds by foreign equity purchases.

Pension funds, as the driving force of post-abolition portfolio outflows, could nevertheless be held responsible for changes in the sterling exchange rate and interest rate *levels*. The Bank of England (1981) concluded that capital controls had contained the demand for foreign currency, and that removing them depreciated the pound and increased interest rates. Evidence in favour of this position can be found in the behaviour of onshore/offshore interest differentials: pre-abolition differentials in favour of offshore rates fell after abolition (Artis and Taylor, 1988).

The global integration of the UK stock market has undoubtedly been fostered primarily through pension funds after capital controls were dismantled. While no significant increase in the correlation of *short-run* stock market returns could be detected, the UK stock exchange became cointegrated with Continental Europe and Japan, although not with the US (Taylor and Tonks, 1989). The cointegration of different sets of stock market returns suggests that in the long run these returns are highly correlated, with

the implication that the benefits from international diversification will be reduced. It is revealing for the importance of UK pension funds in fostering stock market integration to compare Taylor's and Tonk's findings with the development of the asset mix of UK pension funds over the 1980s (Davis, 1991). While the share of US paper in UK pension assets (for which no rise in integration was detected) fell from 56 to 30 per cent, the share of Japanese and European paper rose from some 30 per cent to 59 per cent.

6. Capital Mobility and Macroeconomic Management

The evidence thus indicates that the global diversification of pension fund assets fosters stock-market integration rather than interest rate linkages. This justifies the attempt to analyse the implications of equity-capital mobility in Section 2 above: while pension funds will doubtless undertake marginal investments in fixed-interest assets, they are primarily equity investors and their main impact on monetary autonomy will come as a result of arbitrage between the stock and bond markets. Since that arbitrage is very imperfect, stock-market integration does little to curb short-term monetary autonomy. The fear that allowing pension funds to place their assets abroad would further limit the ability of the central bank to conduct an autonomous monetary and exchange-rate policy is thus misplaced.

Are the other arguments in favour of limiting capital mobility more persuasive when applied to the specific case of pension funds? The most important of these arguments relates to the desire to keep funds at home, in order to finance the domestic investment that is needed to promote growth. This can be a legitimate consideration at an early stage of the development process, or under conditions of great political uncertainty, since foreign investors cannot be expected to place even a small part of their portfolio in local assets in return for a modest premium on their expected rate of return if the economic risks of investing in the local economy are supplemented by political risks specific to foreign investors. In the absence of offsetting inward investment, a liberalisation of outflows does indeed imply a net loss of savings to finance local investment. In contrast, once a country has got to the stage of being able to reassure foreign investors that they face no additional risks simply on account of being foreign, the potential exists for mutual gain through two-way investment that diversifies the portfolios of both parties, with local investors gaining greater security for a modest cost in lower expected yields, and the foreign investors gaining a greater expected yield for a modest cost in terms of less security. Indeed, a developing country can expect net inward investment, simply because the capital-labour ratio is relatively low and hence profit opportunities are likely to be relatively high.

Reasonable assumptions suggest, for example, that Chile could expect to have a net balance of inward investment under a scenario of full liberalisation. In the not too

distant future, OECD pension funds could hold 20 per cent of their assets abroad (as described above, this is the ceiling now being discussed at the European Union, a compromise found in OECD discussions, and a number close to the mean and mode of in-house investment guidelines). Respecting market weights (percentage share of world stock market capitalisation) within that 20 per cent limit, \$79 billion would have been invested in emerging markets and \$3.2 billion of it in Chile, on the basis of 1992 assets. If OECD pension funds held a global portfolio as suggested by modern portfolio theory, they would hold \$16 billion in Chile and almost \$400 billion in all twenty emerging markets.

Table 5 compares the preceding estimates for pension-related inflows to the outflows likely after further liberalisation. Currently, net foreign assets related to pension funds are negative (a net inflow), since Chile's pension funds are only starting to invest abroad. Even if the current 3 per cent limit for outward investment was fully exploited, this would mean only \$375 million held abroad, still short of the \$500 million estimated to be currently invested in Chile. If Chile's pension system was allowed to invest 20 per cent instead of 3 per cent abroad, and OECD pension schemes behaved likewise, nothing much would change in *net* flow terms compared to the current situation. Under the unrealistic assumption that both Chile's and OECD pension fund would end up with a global portfolio, Chile would enjoy net pension-related inward investment of \$3.6 billion. All these numbers apply to estimated end-1992 assets, and extrapolation assumes implicitly that Chile's pension fund assets do not grow at a faster rate than do those of OECD pension funds. Chile's net foreign asset position would, of course, be raised by faster relative growth of its pension assets and reduced by relatively faster growth of its stock market capitalisation.

It has been argued that it would be a mistake to vary capital controls with a view to trying to fine tune the flow of capital, because of the possible perverse effect whereby a liberalisation of outflow controls could stimulate a net inflow (Williamson 1993). Our analysis in Section 4 above also pointed to this possibility. However, one context in which this analysis seems of questionable relevance concerns outward investment by domestically-based pension funds (as opposed to the right of foreign funds to repatriate their holdings at will). Specifically, it is difficult to see any reason why legalising foreign investment by pension funds should encourage inward investment (except insofar as it reduces domestic asset prices and thus increases the incentive to buy domestic assets). Thus liberalisation of outward investment by pension funds would seem a rather sensible response to embarrassingly large capital inflows that threaten the ability to maintain a competitive exchange rate.

Another problem with liberalising capital outflows is that this may erode the tax base, but this also hardly seems a relevant consideration with regard to foreign investment by pension funds.

We therefore conclude that foreign investment by pension funds, both inward and outward, should be one of the first components of the capital account to be liberalised. The fact that a number of OECD countries still maintain regulations that limit outward investment by their pension funds is both anomalous and harmful to the interests of developing countries, and the discussion within the European Union of changes that would roll back past liberalisation is even more regrettable. In addition, once a developing country has got to the point of appearing sufficiently reassuring to foreign investors that they perceive no risk of being treated less favourably simply because they are foreign, there is no reason for the country to fear a net loss of savings as a result of liberalising investment by pension funds. In particular, we have argued that at that point the desirability of maintaining a degree of monetary autonomy and a competitive exchange rate do not imply any need to prohibit foreign investment by pension funds.

It is often suggested that an important reason for delaying the liberalisation of outward investment by pension funds are the positive externalities that these funds provide for the widening and deepening of capital markets. For example, Vittas (1992) suggests that contractual savings institutions, essentially pension funds and life insurance companies, play a crucial role in mobilising long-term financial resources and developing equity and bond markets (government, corporate, and mortgage). They thus fill the gap in the supply of long-term finance that exists in most developing countries, as well as facilitating the privatisation of state-owned enterprises and promoting greater dispersion of corporate ownership. We would regard this argument as reinforcing the caveat expressed in the preceding paragraph, that liberalisation should not be undertaken prior to a situation where foreign investors can be expected to replace any outward flow of savings by domestic pension funds.

7. Techniques for Regulating Foreign Investment by Pension Funds

For completeness, we add a brief discussion of various techniques by which the foreign investment of pension funds could be regulated, were our main recommendation regarding the inadvisability of such regulation to be rejected.

(1) One possible technique would be to limit domestic pension funds to portfolio swaps with foreign pension funds¹⁶. If the exchange control regulations prohibited reinvestment of dividends, then the only impact of the pension funds on the foreign exchange market would be the difference between the realised returns on inward versus outward investment over the period in question.

Unlike many proposals for capital controls, this one appears to be administratively feasible. Pension funds are well-defined legal entities that are in any event regulated, and it would not seem difficult to ensure that they undertook all foreign investments through a swap market.

This proposal would achieve complete insulation of the domestic economy from changes in the portfolio preferences of foreign investors. Consider, for example, the sort of shock which we established at the end of Section 2 was capable of destabilising the domestic economy, namely a downward revision of expectations for domestic earnings that was not shared by local investors. Under this scenario foreign pension funds would start to sell shares, but in order to get their funds out they would have to find a national pension fund that was willing to liquidate some of its foreign holdings and repatriate its funds. Since the national pension fund would invest its earnings in the domestic stock market, there would be no reason for any major change in the price of domestic equities; the price that would adjust to reequilibrate the market would be the premium/discount on the foreign exchange rate at which pension-fund swaps were undertaken. Some spillover on domestic markets could still occur, but only to the extent that the foreign pension funds decided to invest in other assets like bonds, and even then a move that would depress stock prices would tend to increase bond prices so that there would be no first-order effects on aggregate demand. Hence this proposal would provide an effective solution, though one to a problem that we argued to be nonexistent.

The big disadvantage of the proposal is that it would preclude developing countries financing a net resource transfer from investment by pension funds. Of course, there are times when inward investment is excessive and hence a mechanism that repels an inflow of reserves can be helpful. But if one believes that long-term investments on an equity basis provide a superior form in which to tap foreign capital, then foregoing net pension fund inflows is a high price to pay for solving a non-existent long-run problem even if there may sometimes be an incidental short-run benefit in limiting unwanted inflows as well, especially when one recognises that it is equally likely that the inflows may at other times be very much wanted on short-run grounds.

(2) Another idea is to create a special foreign exchange market for capital movements by pension funds, with its own freely floating exchange rate. Except for legal form, this proposal appears to be identical to the preceding one; in both cases an investment by a pension fund would have to be matched by an equal investment in the opposite direction, at an exchange rate determined by supply and demand of pension funds alone. Hence it too would be administratively feasible, conjuncturely pointless, and developmentally damaging.

(3) It has also been suggested that it might be advisable to subject pension funds to capital controls during a transitional period when such funds were growing particularly rapidly. Presumably the fear is that there is a danger that without such controls pension funds will be net outward investors during this transitional period.

This fear does not seem very likely to be justified. Pension funds in many OECD countries have already reached maturity, so that their investments in a newly-liberalising developing country are likely to build up much more quickly than the foreign investments of that country's pension funds. We would not object strenuously if a country decided that

it wished to liberalise gradually, as many of the OECD countries have done, from time to time raising the ceiling for the proportion of assets that a pension fund was entitled to hold abroad. On the other hand, we are doubtful whether such gradualism is likely to have much impact on behaviour, given the evidence that pension funds themselves tend to respond to newfound freedom to invest abroad rather cautiously.

Notes

1. An earlier version of this paper was presented to a conference on pensions privatisation held at PUC-Santiago on 26-27 January 1994.
2. Macroeconomic models that include a stock market are Blanchard (1981), Buitter (1987), and several papers of Michael Gavin (1989, 1991a, 1991b).
3. If bonds are perfect substitutes and there are no effective controls on the movement of bond capital, then we know that the country has no monetary independence whether or not the movement of equity capital is restricted. If bonds are imperfect substitutes, then it will have a degree of monetary independence whether or not the movement of equity capital is restricted. Hence the interesting case is the one discussed in the text.
4. Note that liberalising only the inflow of equity capital would have the same qualitative effects as are identified here, while liberalising only the outflow would have a converse set of consequences. (The effects of liberalising outflows when inflows are already liberalised are more debatable, as discussed subsequently.)
6. This case is analysed in Corbo and Hernández (1993, p.6), although without recognising the crucial importance of the implicit assumption that it is only foreigners who make a pessimistic reevaluation of the country's prospects.
7. The CAPM claims that the world market portfolio must be on the *efficient frontier* and that it is thus impossible to beat the market, whence the idea of a passive index fund approach. Such a portfolio strategy can be self-destroying when markets are not efficient. A case in point is the Japanese stock market bubble when in late 1989 the Tokyo market was worth 45 per cent of world market capitalisation. For those investors following the index approach, this meant an extreme degree of concentration, not risk-reducing diversification, and subsequent tears.
8. Roll (1992) finds that different stock market returns among OECD markets are due to differences in the countries' industrial structure and the behaviour of exchange rates.
9. This finding contradicts an earlier study by Davis (1991) based on interviews with UK pension fund managers who mostly appeared unwilling to use global indexation even as a benchmark.

10. Solnik (1988) categorises the concern as a "misconception". Pension funds need to worry about the real purchasing power of their assets, and long-term deviations from purchasing power parity have been widely observed. But currency risk gets partly diversified away in a well-diversified portfolio, or it can be hedged. Furthermore, foreign-currency assets can protect the real purchasing power of pension assets since foreign goods represent a sizeable part of any consumption basket, as well as reducing domestic monetary risk.
11. The Codes commit OECD Member countries to eliminate any restrictions on capital movements between one another on operations listed in the Codes. Not listed so far, and thus not under a general liberalisation commitment, are mortgage and consumer credits and investment abroad by institutional investors, such as life insurance companies and pension funds.
12. As discussed earlier, the higher potential for diversification within large economies such as the United States and Japan will result in a smaller share of foreign assets held by pension funds domiciled there.
13. As a compromise between the differing attitudes among OECD countries, OECD's CMIT/CMF Joint Working Group recently recommended allowing institutional investors to place at least 20 per cent of their assets abroad, and to match liabilities in foreign currencies with foreign-currency assets up to at least equal value.
14. Despite the efforts of Bean, 1988, and Buiters, 1988.
15. Liberalisation also reduced sharply the elasticity of long-term rates in response to short-term rates within the United Kingdom, while the correlation with foreign long rates increased (Blundell-Wignall and Browne, 1991). The weakened liquidity effect implied a further loss of power for monetary policy to influence private spending.
16. This possibility was first suggested by Alan Gelb of the World Bank.

Table 1. Pension fund assets in selected OECD countries, 1992

	Asset size, bn. US\$			Asset mix	
	Total	thereof: private	Total as % of GDP	Foreign asset share % of total	% of funds invested in emerging markets
1. United States	3 315	2 265	56.4	4.6	n.a.
2. Japan	728	362	19.8	8.2	n.a.
3. United Kingdom	644	544	61.9	28.0	78
4. Netherlands	242	147	75.5	13.8	56
5. Canada	230	108	40.9	9.2	n.a.
6. Switzerland	188	125	78.2	7.7	8
7. Germany	114	85	6.4	4.3	0
8. Sweden	81	0	33.0	1.0	n.a.
9. Australia	67	34	23.3	14.6	n.a.
10. France	41	n.a.	3.1	1.9	n.a.
11. Denmark	40	21	28.1	4.0	2.9
12. Ireland	16	n.a.	32.8	35.0	n.a.
13. Italy	11	n.a.	0.9	4.1	n.a.
14. Norway	6	4	5.3	0	0
15. Spain	5	n.a.	0.9	1.0	n.a.
16. Belgium	4	n.a.	0.2	31.1	n.a.
17. Portugal	2	n.a.	2.4	3.2	n.a.
Total OECD	5 740				

Source: InterSec Research Corp., London Representative Office; European Federation for Retirement Provision (as reported in *The Guardian*, 5 October 1993).
OECD, Main Economic Indicators, September 1993.

Table 2. **Maximum guideline limits for foreign investment of pension funds and life insurance companies**
(percentage distribution)

Class intervals	All sample pension funds	Australia	Netherlands	Switzerland	UK
<10	15	10	33	40	9
11-20	33	30	13	27	36
21-30	30	20	27	27	18
>30	22	40	27	7	36

Source: Coote (1993).

Table 3. **Regulatory constraints on foreign investment by pension funds in selected OECD countries**

Country	Regulation	Source
Australia	No governmental limits to foreign investment	Coote, 1993
Austria	No more than 20 per cent of assets in bonds, domestic bank deposits and cash reserves denominated in foreign currencies. No more than 10 per cent of employed funds in foreign real estate.	Gusen , 1993
Canada	The ceiling (formerly 10 per cent) is progressively raised to reach 20 per cent for 1995 and thereafter. A tax of 1 per cent per month is levied on excess foreign property holdings.	Gusen, 1993
Denmark	Must hold at least 60 per cent of assets in domestic debt instruments (real estate, investment trusts and shares limited to 40 per cent). Only " small proportion " can be invested internationally.	Davis, 1992
Germany	4 per cent limit on foreign asset holdings. 5 per cent of assets can be invested in foreign bonds.	Gusen, 1993 IMF, 1993
Japan	Nonbinding at 30 per cent of assets in the general account.	World Bank, 1993
Netherlands	No more than 5 per cent of the General Civil Service Pension Fund. 'Prudent man' rule for private funds.	Gusen, 1993 Davis, 1992
Norway	Foreign investment prohibited	Gusen, 1993
Portugal	No more than 20 per cent of the EC listed securities	Gusen, 1993
Switzerland	25 per cent limit on equity holdings of foreign-based companies; 20 per cent limit on foreign currency cash or bonds. Total foreign investment limit 30 per cent.	Coote, 1993
United Kingdom	No ceiling; 'prudent man' concept	Davis, 1992
United States	No ceiling; 'prudent man' concept	Davis, 1992

Table 4. **UK: Pension Funds and Portfolio Flows, 1979 and After**

	1979	1985
1. Portfolio of Pension funds		
- foreign assets, %	7	15
- gov't bonds, %	22	18
- property, %	18	10
2. Portfolio of Nonbank Financial Institutions	7.3	16.4
- gross overseas, %	5.9	14.3
- net overseas, %		
	1975-79	1980-85
3. Portfolio flows, net outward, £ bn. p.a.	-0.3	6.0

Sources: Davis (92); Artis and Taylor (89).

Table 5. **Chile: Pension-related asset position**

	Inward	Outward	Net foreign assets
1. End 1992	0.5	0.0	-0.5
2. Assuming 20% ceiling on foreign assets for both OECD and Chile's pension funds	3.2	2.5	-0.7
3. Assuming investment along World Stock Market Capitalisation	16.0	12.4	-3.6

Note: Applies to estimated pension fund assets end 1992, when Chile's pension funds held assets of \$12.5 billion.

Source: Banco Central de Chile, *Boletín Mensual*; IFC, *Emerging Stock Markets Factbook*, 1993.

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