THE IMPLICATIONS OF AGING FOR THE STRUCTURE AND STABILITY OF FINANCIAL MARKETS

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Introduction

Analysts have become increasingly concerned about how anticipated demographic changes will affect financial markets. There is general agreement that the share of world population over 65 will rise as the current century progresses. Reasoning out of the life cycle theory of saving, it is assumed that saving rates will tend to decline. One study concludes that the expected pattern of dissaving could lead to balance of payments problems in countries where there is a higher percentage of retirees than in others, and that there will be a shift in the pattern of ownership of financial claims from OECD to emerging market economies as the residents of OECD countries age more rapidly over the next several decades (Davis 2006). Meanwhile, some consequences of demographic changes are already evident – in particular, the increased presence of institutional investors such as pension and mutual funds – and the purpose of this paper is to describe how that development has altered the structure and functions of national and international markets in ways that have important implications for financial stability and the conduct of monetary policy.

The paper begins by describing the increased dominance of institutional investors in OECD countries and their rapid growth in emerging economies. Part II discusses these investors' role in enhancing the volatility of capital flows and exacerbating the procyclicality of the global financial system and the potential for systemic risk. The next section argues that the shift from bank-dominated to market-based systems entails a loss of monetary control that impedes central banks' ability to conduct countercyclical policies and has contributed to excessive credit expansion and asset bubbles. The final section offers policy choices and recommendations to better accommodate the structural and institutional changes already underway that are likely to intensify under the ongoing pressures of ageing.

Part I: Institutional Investors and the Transformation of Financial Markets

The increased dominance of institutional investors in advanced economies and their rapid rate of growth in many emerging economies are transforming the structure and functions of national financial systems around the globe. In OECD countries, assets under management by institutional investors [1] rose from $13.8 trillion to $46.8 trillion from 1990 to year-end 2003, and from 77.6 to 157.8 percent of the aggregate GDP of these countries. All three of the major institutional groups (insurance companies, pension funds and investment companies) – all of which are used by households as repositories for retirement savings - experienced particularly strong growth in this period, but the rate of growth of investment companies was exceptional.[2] (Table 1).

[1] Institutional investors include insurance companies, pension funds, investment companies, hedge funds, real estate investment trusts (REITS) and private equity and venture capital funds. Investment companies include closed-end and managed investment companies, mutual funds and unit investment trusts.

[2] Assets under management by investment companies in OECD countries climbed from $2.6 trillion to $16.2 trillion from 1990 to 2003, rising from 14.8 to 49.0 percent of total OECD GDP.

While the expansion of institutional investors as a group has been rapid in all OECD countries, the investment channels selected by households in individual countries reflect significant differences. In some of the major industrial countries – the U.S., France and Italy – investment companies have become the largest segment of the institutional investor sector but they have only recently caught up with insurance companies in Germany. In Japan and the U.K., however, insurance companies are the dominant institutional sector with investment companies lagging behind. Pension funds hold the largest share of institutional investor assets in the Netherlands and have the second largest share in the U.S. and the U.K. (Table 2).

Rapid growth in assets under management by institutional investors has not been confined to OECD countries. In the decade from 1992 to 2002, both pension funds and investment companies made substantial gains in the financial sectors of emerging market economies in Latin America and Eastern Europe as reforms were implemented to complement or gradually replace pay-as-you-go social security systems with fully funded, defined contribution systems. Propelled by expansion in Chile and Mexico, assets of pension funds rose from 0.9 to 9.2 percent of the aggregate GDP of 10 Latin American countries over this period[3] while those of five Eastern European countries climbed from zero to 3.8 percent of their GDP. For four Asian countries, the gain was from 11.2 to 21.5 percent of their total GDP. Two of those countries – Malaysia and Singapore – have government-sponsored, fully funded defined contribution systems for civilian workers that hold assets in excess of 50 percent of GDP. (Table 3).

Growth rates for mutual fund assets in emerging economies have been even more rapid than for pension funds in recent years, rising from 13.2 to 18.0 percent of aggregate GDP for nine Asian countries and from 8.6 to 16.0 percent for seven Latin American countries in the period 1998 through 2004. The most dramatic expansion of this investment channel occurred in eight of the emerging market economies in Europe where the value of assets under management by mutual funds climbed from 0.4 to 6.1 percent of their aggregate GDP over the six-year period. (Table 4).

As these data indicate, an ongoing, global shift in household savings from depository institutions to institutional investment pools is well underway. The factors that have induced this shift vary among countries but a common thread is the new emphasis on private pension and retirement funding as government-funded pensions come under pressure.[4] But there are other contributing factors as well: growing wealth, tax incentives, opportunities to diversity holdings, increased liquidity and the

[3] From 1980 through year-end 2003, Chilean pension assets grew from negligible amounts to 60 percent of GDP. Bolivian pension assets reached 30 percent of GDP in 2003 after the shift from a pay-as-you-go to a fully funded, defined-contribution system in 1997 (Chan-Lau 2004).

[4] Recent (2004) reforms to publicly funded systems in OECD countries include cutting benefits and increasing individual contributions in Japan and raising the retirement age and allowing contributions to complementary private pension funds in Italy. In its 2005 *Annual Report*, the Bank for International Settlements noted that pension and health-related spending for the OECD countries was projected to rise on average by nearly seven percent of GDP over the next four decades. In its view, "Further policy action will thus become increasingly unavoidable" (p. 32).

contributions to efficiency resulting from technological advances, financial liberalization and product innovation (Davis 2003).

While an examination of all these factors in all the countries that have experienced substantial changes in their financial markets is beyond the scope of this paper, brief discussions of developments in the U.S. and in emerging market economies may be helpful in indicating the ways in which these shifts have developed in advanced and developing markets.

The Role of Pension Funds in Reshaping the U.S. Financial Sector

For centuries, banks were the dominant financial institutions in Western economies and evidence of the erosion of their dominance only emerged in the post-WW II era. In the U.S., the decline in depository institutions' share of total financial sector assets began in the 1950s and accelerated in the l980s and 1990s. By 2005, the combined share of banks, savings institutions and credit unions was 24.8 percent of the total for all sectors – less than half of what it had been in 1955 (57.8 percent). Over the same period, the assets of pension funds and mutual funds rose from 14.0 percent to 36.8 percent of total financial sector assets (Table 6). In the years from 1975 through 2005, households' shifted the majority of their holdings of financial assets from deposits into mutual fund shares and pension fund reserves (Table 7).

The growth in pension fund assets was spurred by the funding requirements of the Employee Retirement Investment Security Act (ERISA) of 1975 with a spectacular increase in households' pension fund reserves over the decade from 1975 to 1985 and continued strong growth through the 1990s. (Table 7). It is now widely believed that privately funded plans are needed as supplements to social security and that perception has prompted an even more rapid growth in individual retirement accounts (IRAs) over the last decade. In 1995, IRAs held fewer assets than either defined benefit or defined contribution funds but, by 2005, an almost three-fold increase pushed the value of IRAs higher than any other type of U.S. retirement plan (Table 8).

In addition to these private pension funds and retirement accounts, publicly funded plans outside the social security system have also grown in size and importance. Retirement funds for state and local government employees doubled from 1995 to 2005 and funds for federal government employees almost doubled over the same period. The increasing importance of these public and private funds is due not only to their role as repositories of benefits for current and future retirees, but also to their added weight and influence as participants in financial markets. At year-end 2005, total assets of U.S. private and public pension funds and individual retirement accounts had risen to $12.2 trillion – an amount comparable to the nation's annual output and 26 percent of the $47 trillion U.S. financial market (Table 8).

Rapid growth in U.S. investment company assets is linked to that of pension funds but began almost a decade later as mutual funds became the recipients of a rising volume of retirement savings channeled into defined contribution plans. The remarkable

expansion of these two institutional segments undercut banks' dominance of financial markets not only by reducing the flow of household savings into deposits but – as their appetite for securities grew – providing an additional incentive for banks to securitize assets rather than hold them in portfolio.[5] Moreover, as their diversification requirements expanded demand in capital markets, pension and mutual funds contributed to the equally spectacular rise in the assets of the housing-related government sponsored enterprises (GSEs such as Fannie Mae and Freddie Mac) and federally-related mortgage pools, as well as the group of asset-backed securities issuers that include the finance affiliates of automobile manufacturers, credit card issuers, private mortgage companies and other non-bank lenders. (Table 6). As a result, the U.S. capital markets have become the primary source for both business and consumer investment and borrowing.

Given these changes in the instruments and channels for saving and investment, it is not surprising that the activities of institutions have changed as well. Asset management has become the dominant function in U.S. financial markets and trading has become the principal activity. Bank lending remains important, particularly for small business borrowers without direct access to capital markets, but banks, too, compete in capital markets by managing mutual funds and offering asset-management services through their trust departments. And since passage of the 1999 Gramm-Leach-Bliley Act, larger banks have expanded their securities, asset-management and insurance operations through financial holding companies.

The largest banks have extended their activities beyond traditional lending in other ways as well. Since the 1970s, these institutions have been the dominant foreign exchange market-makers. More recently, they have developed a highly profitable niche providing financial insurance as dealers in derivatives and sellers of contingent and committed lines of credit to back securities issues. In short, supported by the special relationship with the central bank and access to its lender-of-last-resort facilities that their unique role in the payments system confers, banks have become financial insurers, stretching their shrinking resources to cushion the effects of changes in interest and exchange rates on the value of the uninsured assets of institutional investors.

Pension Funds and Investment Companies in Emerging Market Economies

The growth in privatized pension funds and investment companies in emerging market economies was facilitated by the establishment of stock markets in a number of countries in the 1980s and 1990s. The number of countries that had established markets rose from 31 in 1985 to 48 in 1994 and to 67 at year-end 1998. Propelled by the rise in listed companies from 8,916 to 19,397, market capitalization had jumped from $171 billion to $1,929 trillion by 1994 - rising from 3.8 to 14.6 percent of the aggregate market capitalization of advanced economies, but falling back after the financial crises that followed in the 1990s (International Finance Corporation 1996).

[5] The primary incentive for the securitization of bank loans was the adoption of the BIS capital adequacy standards in 1988.

At the same time that stock markets were being created and expanded, mandatory pension systems were established in many emerging market countries. Chile privatized its pension system in 1981, but other countries only began the process of reforming public funds in the 1990s.[6] Many have included a privatized component by adopting the "three pillar" model advocated by the World Bank in its 1994 report on pension funds world-wide.[7] In those emerging economies that have established funded systems, the rise in assets under management by pension funds from 6.3 percent of their combined GDP in 1992 to 20.3 percent in 2002 is evidence that shifts of savings into these channels is transforming their financial systems as rapidly and effectively as occurred earlier in advanced economies (Table 3).

Meanwhile, the International Finance Corporation (IFC) assisted many emerging economies in developing public and private domestic mutual funds or investment trusts, either by investing in their domestic funds or advising their governments in establishing a regulatory framework for the industry. But the main thrust of the IFC's program in the 1990s was the establishment of international emerging market equity funds to channel foreign capital into the domestic markets of developing countries and improve their functioning (IFC 1996). The success of these efforts is reflected in the rapid growth in emerging market countries' mutual funds in the period from 1998 through 2004 that resulted in an additional impetus for the shift in savings from banks to the capital markets (Table 4).

Nevertheless, pension funds have grown more rapidly than securities markets in Latin America and Eastern Europe and the strengthening that has occurred is reflected in the increased depth and liquidity in their government bond markets (Chan-Lau 2004). While the establishment of local currency-denominated yield curves has contributed to the development of domestic corporate bond markets, low liquidity, underdeveloped underwriting procedures and high transactions costs have impeded their growth. The growth of equity markets in emerging economies also appears to have lagged the expansion of institutional investors and, like the corporate bond markets, has inhibited opportunities for diversification and encouraged capital outflows. As these investment channels outpace the supply of local securities, the markets in many of these countries have become increasingly susceptible to the development of asset price bubbles. Investment inflows from institutional investors in OECD countries compound the problem.

[6] Reforms were enacted in Peru (1993), Argentina (1994), Colombia (1994), Uruguay (1995), Bolivia (1997), Mexico (1997) and El Salvador (1998). In 1997, Hungary, Poland and Kazakhstan enacted legislation mandating the creation of private pension plans (Srinivas and Yermo 1999).

[7] This approach retains a government-funded first pillar to alleviate poverty in old age, establishes a second pillar to manage workers' mandatory contributions to provide retirement income, and advocates a third pillar that encourages additional, voluntary contributions to savings for retirement. In several Latin American countries, the second pillar is privatized as in the Chilean model. Other countries retain a government role in collecting funds from employers but privatize their management. Others, like Malaysia, require mandatory contributions to a funded system but retain centralized national control (Valdes-Prieto 1994)

Part II: Institutional Investors and Financial Stability

> The asset allocation decisions of these institutions have important implications for capital flows and asset prices across asset classes and national borders. Going forward, the size and influence of these institutions can be expected to grow, particularly as some of these institutions are still in their infancy in many countries. Demographic trends and pension reforms will likely reinforce the creation of more and larger asset gatherers. Relatively small changes in the portfolios of such institutions may increasingly affect global financial markets. Unlike financial markets dominated by banks, capital markets tend to transmit changes in risk appetite, credit assessments, or perceived economic fundamentals more broadly, much faster, and more directly (IMF 2005b, p. 67)[8]

As the IMF notes, institutional investors are subject to the same credit risks as banks but are more susceptible to market risks. And, because they tend to be large institutions, their decisions "make markets" (*ibid.,* p. 65).[9] Some of the ways these institutions add to or undermine the stability of financial markets can be discussed in terms of their role in increasing or diminishing the volatility of interest and exchange rates, capital flows and asset prices; their contributions to the growing procyclicality of financial systems and in augmenting systemic risk.

Volatility

With a few notable exceptions, interest and exchange rates in global financial markets remained relatively stable after the downturn in 2001. Many attribute this to the growing sophistication of derivatives markets – especially credit derivatives – that have helped distribute risk to a wider group of investors. Others argue that hedge funds' speculative activity has reduced volatility by broadening and deepening market liquidity. In addition, the continuation of relatively stable asset prices and interest rates is seen as the result of conscious efforts by the U.S., European and Japanese central banks to communicate prospective changes in policy rates and make changes small so as not to surprise highly leveraged financial institutions.

But the decline in interest and exchange rate volatility appears to have contributed to increasingly volatile capital flows in 2004 and 2005 that exacerbated global imbalances. As was the case in the early 1990s, low interest rates in advanced economies sparked a search for yield that drove cross-border flows to historically high levels in those years. A substantial portion of the funding for these flows was borrowed in the

[8] The IMF adds that this is "particularly relevant for small or narrow asset classes, such as emerging market external bond markets, which total about $265 billion. This is no more than about 0.5 percent of the …$45 trillion assets under management of institutional investors in mature economies" (*ibid.,* p. 67).

[9] As discussed, even in emerging economies, pension funds are large relative to the size of financial markets (Chan-Lau 2004).

external or so-called "euro" banking and securities markets which have also contributed to the growth of institutional investors. [10] These markets are primary sources for the expanding leverage in the global financial system. They provide funding for the cross-border carry trade transactions that drive the expansion of financial leverage and, as discussed below, tighten the linkages between sectors and markets that exacerbate the potential for systemic risk.[11]

Capital flows into the US. In 2004 and 2005 were exceptionally large ($1.44 trillion and $1.29 trillion respectively) – much larger than the amount needed to finance the U.S. current account deficit (BEA 2004 and 2005) - were mostly investments of private rather than official foreign investors[12] and put ongoing, downward pressure on U.S. interest rates. The excess inflow was borrowed by U.S. residents ($855.5 billion in 2004; $491.7 billion in 2005) and reinvested abroad, primarily for direct investments. Thus, driven by investors' aggressive search for yield and the persistence of debt-financed speculation, excess inflows into the U.S. were recycled back into the global economy - and, in some cases, to the countries that had supplied them - in ways that exacerbated existing payments imbalances.[13]

The Procyclical Influence of Institutional Investors

In its 2002 *Annual Report*, the BIS called attention to "the inherent procyclicality of market-based financial systems" (p.151). Markets supply more funds at lower cost in a boom and ration access (and raise costs) in a downturn. Bank-dominated systems that are

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[10]. Since their inception in the early 1970s, both the market for cross-border bank loans and the international bond and note market ($21.1 trillion and $14 trillion respectively at year-end 2005) have primarily financed the largest banks, investment banks and hedge funds in advanced economies rather than non-financial borrowers or borrowers and issuers in emerging economies. At year-end 2005, 63.9 percent of total cross-border and foreign currency claims of BIS reporting banks were interbank claims and holdings of securities issued by other financial institutions, while 75.2 percent of outstanding international bonds and notes were issues of financial institutions. Loans to emerging economies have remained below 8 percent since their precipitous decline during the Asian financial crisis while international bonds and notes issued by these countries peaked at 6.2 percent of outstandings at year-end 2005. On the other hand, the new surge of foreign portfolio investment into emerging markets in the third quarter of 2005 was characterized by the BIS as "massive" in terms of the relative size of their economies (BIS 2006).

[11] Cross-border carry trades involve borrowing in a low-yielding currency and investing in assets denominated in a higher yielding currency. Beginning in the mid-1990s, significant increases in carry trade transactions have helped drive up activity in both credit and foreign exchange markets and have played a major role in the depreciation of funding currencies and appreciation of investment currencies.

[12] While large increases in international reserves by Japan and China had fueled over a quarter of the inflow in 2004, foreign official investors accounted for only 17 percent of new foreign investment in the U.S. in 2005.

[13] For example, the larger share of inflows accounted for by private investors was largely due to a pick-up in yen lending by Japanese banks that countered the surge in foreign investment in Japanese equities and the resulting upward pressure on the yen by fueling renewed carry trade activity as a substitute for central bank intervention. Given the short-term interest rate differential between the yen and the dollar, investments in dollars funded by borrowing in yen were profitable. But continued low long-term rates in the U.S. ensured that more leveraged flows would be routed into emerging economies in the second half of 2005, including many of the countries that were acquiring and holding additional dollar-denominated reserves in the U.S. Thus, a substantial portion of their current account "savings" were recycled back to these countries in the form of foreign ownership of their real and financial assets.

subject to central banks' quantitative monetary tools such as reserve and liquidity requirements have, in the past, been able to serve as the conduits for countercyclical policy aimed at moderating the spikes and troughs inherent in market-based systems by supplying credit generated by the central bank in a downturn and rationing credit in a boom as they respond to the costs imposed by the monetary authority. This aspect of procyclicality – the erosion of monetary control – is discussed below. But there are other ways in which systems dominated by institutional investors contribute to procyclicality.

In the most recent downturn, for example, constraints on investment and employment were prolonged as large corporations struggled to cover short-falls in their defined benefit pension plans.[14] In the U.S., these plans had been net sellers of assets after 1994 when stock prices were rising, relying on appreciation to cover their growing liabilities, and did not resume net purchases until 2003. All other U.S. pension plans remained net purchasers of assets in the same period, with the largest net acquisitions by IRAs. As stock prices fell, all plans suffered losses but defined benefit plans had the largest losses and experienced the slowest recovery.[15]

As pressure to meet funding requirements escalated, companies were forced to divert income into pension investments rather than the ongoing operations of the firm. In some cases, perceptions about the impact of funding obligations on balance sheets and future growth depressed stock prices and led to downgrades in credit ratings that resulted in higher costs of borrowing. Comparison of the losses of various types of plans suggests that, because of their investment decisions, the corporate sponsors of defined benefit plans not only exacerbated the procyclical impact of the downturn on their own net worth but on that of their employees and beneficiaries as well.

Another characteristic of the shift to market-based systems is the procyclical nature of the wealth effect on household balance sheets. While the face value of households' holdings of bank deposits remains constant over the business cycle, the value of their credit market instruments and corporate equities – held directly or indirectly through pension and mutual funds – fluctuates, rising during a boom and falling in a downturn. Spending tends to increase as these assets appreciate and decline as they depreciate in value. Thus, to the extent that increases in households' marketable financial assets augment the wealth effect, its influence in amplifying booms and downturns grows.

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[14] The most visible examples were funds in the Netherlands and the defined benefit plans of automobile manufacturers in the U.S. Their problems and the scale of problems in other countries resulted in actual and proposed reforms in 2005 that prompted pension plans in the U.S., the Euro area and especially the Netherlands to purchase long-dated assets to minimize shortfalls (BIS 2005b). The new U.S. law signed in August 2006 will require pension plans to acquire fully funded status by 2011 and is expected to encourage plans to move out of equities and into bonds (Scholtes 2006).

[15] The value of U.S. defined benefit plans' assets fell $530 billion between 1999 and 2002 – a drop of -25.5 percent. Defined contribution plans' losses totaled -21.1 percent, those of state and local government retirement plans fell -11.8 percent and IRA Accounts were down by -7.8 percent while the assets of federal government retirement plans actually grew by 13.4 percent in this period. All plans had regained 1999 levels or were higher by year-end 2003 except defined benefit plans. Their value was only slightly higher than in 1997 (Federal Reserve, *Flow of Funds).*

For example, one way asset bubbles and their collapse caused damage in both advanced and emerging market countries was through losses in pension fund and retirement accounts invested in marketable securities. In the U.S., the bubble in stock prices accounted for a phenomenal 71 percent rise in households' net worth and an 86 percent increase in the value of pension fund reserves between 1994 and 1999, constituting a "wealth effect" that contributed to rising consumption and declining personal saving. After the market break, net worth fell 6.4 percent from year-end 1999 to 2002 but pension fund reserves fell 12.3 percent (Federal Reserve, *Flow of Funds).* While the percentage losses were small relative to previous gains, the IMF reported that the retreat in equity prices had produced a negative wealth effect equal to 70 percent of households' disposable income (IMF 2002).

The Federal Reserve's efforts to counter these effects with ample provisions of liquidity and low interest rates provided the conditions for households to refinance debt and use appreciating equity in real estate to finance continued consumption. In addition to pushing up the prices of homes, low interest rates contributed to a rebound in stock prices in 2003 that raised net worth (12.2 percent) and pension fund reserves (16.0 percent) (Federal Reserve, *Flow of Funds).* But the policy response entailed a further increase in household debt that many observers – including the BIS (2003) - believe will worsen any eventual downturn. [16]

These two examples of procyclical developments point to yet another important consequence of the changes in channels for savings. As the IMF's April 2005 *Global Financial Stability Report* observed, increasing the exposure of individuals to direct rather than indirect forms of risk has made the household sector the "shock absorber of last resort" in the financial system (IMF 2005a, p.5)

Systemic Risk

The expansion of leverage points to another significant consequence of the change in structure from bank-dominated to market-based systems and one that poses increased risk for systemic stability. As they have experienced greater competition from institutional investors, banks have accepted the greater risks involved in leveraged transactions and off-balance-sheet commitments as a means to expand operations and profits and minimize regulatory costs. While the shift to liability management began in the 1960s, it was initially focused on purchased deposits. Over time, banks have come to rely more on non-deposit liabilities for funding, intensifying their use of borrowed funds in the 1990s. By year-end 2003, for example, funds borrowed under repurchase agreements (repos) and

[16] As a share of GDP, household debt reached 84.3 percent in 2003 and climbed further to 92.1 percent at year-end 2005 (Federal Reserve, *Flow of Funds).*

in the federal funds (interbank) market were a larger share of U.S. banks' liabilities than checkable deposits.[17]

As U.S. banks moved into a wider range of nonbanking activities after passage of the Gramm/Leach/Bliley Act in 1999, their need for non-deposit liabilities grew. Although nonbanks are not allowed to accept deposits, deposits are among the indirect sources of funding for many similar nonbank operations among different financial sectors[18]. Banks' borrowing and lending in the repo, federal funds and euro markets increases their interactions with other banks and institutional investors such as investment banks, insurance companies and hedge funds. Repos and euro market borrowing are primary sources of funding for proprietary trading and carry trade activity. As financial institutions' search for profits has taken them further away from traditional services to nonfinancial customers and increased the scale of trading for their own accounts, the growth in their borrowing as a share of total credit flows and in their claims on and liabilities to other financial institutions has tightened the links between sectors and increased the probability that problems in one group of institutions will spill over into others.[19]

The ready availability of funding for carry trades and proprietary trading has driven up the amount of speculative activity in the global system. Both the BIS and the IMF have argued that increased speculation has made the global financial sector more vulnerable to shifts in economic activity or interest rates. The IMF believes that carry trades clearly contribute to herding and magnify the risk of large movements in prices and shrinking market liquidity if positions have to be reversed (IMF 2004).[20]

Meanwhile, the risk to systemic stability posed by leveraged position-taking has intensified with ongoing concentration in the global financial system. Ironically, the greatest degree of concentration has occurred in the markets for credit derivatives and

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[17] Banks reported outstanding federal funds and security repurchase agreements of $1,069.2 billion compared with checkable balances at all depository institutions of $998.5 billion (Federal Reserve, *Flow of Funds).*

[18] As *The Economist* observed: "Asset management, once so tribal, is becoming a giant melting-pot" (November 18, 2006, p 75).

[19] In the U.S., for example, borrowing by domestic financial institutions as a percentage of GDP was 3.7 percent in 1955. It rose to 29.8 percent of GDP in 1985, to 57.2 percent in 1995 and to 100.1 percent at year-end 2005. By contrast, domestic nonfinancial borrowing – public and private – increased from 132.6 percent of GDP in 1955 to 211.4 percent at year-end 2005 (Federal Reserve, *Flow of Funds).* These data in themselves provide evidence of how this major shift in institutional dominance has altered the structure of the U.S. financial system.

[20] These concerns were illustrated by events in 1998 associated with Russia's default on its government bonds and the collapse of the hedge fund, Long Term Capital Management. The flight to quality that followed exerted sharp, downward pressure on interest rates for U.S. Treasury securities and forced the unwinding of yen/dollar carry trades as returns on dollar holdings fell relative to the cost of yen borrowing. The sale of dollar assets and the conversion of dollars into yen to repay borrowings drove up the value of the yen by 7 percent on October 10 and an additional 10 percent by the end of the year. A more troubling outcome was that the global over-the-counter derivatives markets seized up, eliminating the availability of coverage for some investors at a time when it was most needed. The Federal Reserve's intervention to prevent sales of assets was, in the view of many, critical in preventing what might have been a free-fall in asset prices and greater losses for both financial and nonfinancial investors.

structured products such as collateralized debt obligations (CDOs) – instruments that were designed to disperse risk. For example, the BIS triennial survey in June 2004 revealed that 42 percent of the notional value of credit default swaps represented contracts between reporting dealers (BIS 2005a). Given that a handful of banks in the U.S. and other large advanced economies dominate these markets, the fact that this limited number of dealers account for *both* sides of a substantial percentage of these contracts means that liquidity in derivatives and their underlying markets would drastically shrink if any one of these institutions was compelled to unwind its positions.

The BIS believes that credit derivatives have introduced beneficial changes in global markets by expanding the investor base, providing more opportunities for diversification and increasing the depth of trading (*i.e.*, market liquidity). However, it acknowledges that some market participants don't fully understand the complexity of these instruments and their hidden risks. Moreover, the fact that market participants tend to use similar quantitative modes to assess value can lead to herding behavior that drains liquidity. The BIS also notes that the growing use of credit derivatives heightens the impact of market shifts on the balance sheets of highly leveraged institutions such as hedge funds and, because of market integration and an expanded investor base, intensifies the systemic role of these entities (BIS 2005a).

In short, the increased domination of institutional investors in advanced markets has encouraged banks to compete by exploiting their presumed ability to draw on central bank funding to expand their role as insurers of financial assets, to develop new nonbank entities to engage in asset management and to enhance profitability by trading for their own accounts. New sources of financing used for these activities, including structured products and repurchase agreements, have widened the base for leverage within the financial system and resulted in markets in which the scale of borrowing by financial institutions rivals that of their nonfinancial customers. In addition to the growth in the assets of institutional investors, increased interactions among financial sectors have also made the current, bank-centered regulatory framework obsolete. As the IMF observed, "it is now virtually impossible to conduct multilateral surveillance in financial markets at large and not to understand the intricacies of nonbanks' investment decisions and their motivation" (IMF 2005b, p. 6).

Part III: The Erosion of Monetary Control and the Shrinking Scope for Countercyclical Policy

Policymakers have long recognized the impact of these institutional changes on the conduct of monetary policy. In 1993, for example, Alan Greenspan, then chairman of the Federal Reserve Board, noted that "the fairly direct effect that open market operations once had on the credit flows provided for businesses and home construction is largely dissipated" due to the diminished role of banks, the increase in savings channeled through institutional investors and the growth of securitization. Though he asserted that "the Federal Reserve can still affect short-term interest rates, and thus have an impact on the

cost of borrowing from banks, from other intermediaries, and directly in the capital markets", he acknowledged that "this effect may be more indirect, take longer, and require larger movements in rates for a given effect on output" (Greenspan 1993).

What Greenspan failed to acknowledge is that larger movements in interest rates translate into greater volatility in money, asset and foreign exchange markets and heighten risk by creating uncertainty about the availability and cost of funds. Thus, one consequence of the erosion of monetary control has been an increased demand for derivative products that offer financial insurance. Another is that the larger expansions and contractions of liquidity needed to move rates contribute to the buildup in debt in an upturn and intensify borrowers' and lenders' vulnerability as the economy slows.

But Greenspan's 1993 and subsequent statements ignore another important contribution to the loss of monetary control. At the same time that innovation and restructuring were transforming the financial sector, pressure to deregulate led lawmakers and regulators to dismantle the quantity controls that once constituted a key feature of financial systems in both advanced and developing countries.[21] Historically, these "macroprudential" policy tools have contributed to financial stability by restraining the amount of credit extended by the banking system as a whole and promoting the soundness of individual institutions. But limiting the amount of credit banks can extend to customers restricts their opportunities for profit. During the 1970s and 1980s, offshore banking activity grew explosively as depository institutions sought the higher returns available in the unregulated Eurocurrency markets. Over time, cumulative shifts of domestic investment and borrowing to the external markets gave central banks powerful incentives to relax or remove quantity controls at home in efforts to repatriate banking activity. A primary casualty of these central bank responses was the relaxation or removal of reserve requirements by those monetary authorities that used this form of quantity control.

In the U.S., for example, open market operations change the volume of bank reserves and the impact of those changes on banks' assets and liabilities constitute the transmission belt for the implementation of monetary policy. The erosion of the effectiveness of that channel accelerated in 1992 when reserve requirements on time deposits were eliminated and those on demand deposits were reduced.[22] And, beginning in the 1990s, banks increased their use of borrowed funds under repurchase agreements and offered sweep accounts that shift demand balances into money market accounts – strategies that significantly reduced the share of their liabilities subject to reserve requirements.

While the erosion in the Federal Reserve's leverage is also due to the decline in banks' share of U.S. financial assets, coverage by reserve balances dropped from 11 percent of the total deposits of all depository institutions in the 1950s to less than 0.4

[21] Quantity controls include interest rate ceilings on deposits, liquidity and reserve requirements, direct limits on credit expansion and international capital controls.

[22] The purpose was to reduce the cost advantages of the Eurodollar market (where all deposits are time deposits) and of foreign banks lending to U.S. residents from their home offices.

percent in 2003 – an amount that underscores the dramatic narrowing of the bank channel itself as a tool for policy implementation (Federal Reserve, *Flow of Funds).*[23] Using open market operations to create or extinguish liquidity, the Federal Reserve can still change the level of interest rates and thus influence the *demand* for credit. But relying on changing demand without a symmetrical ability to change the credit supply means that, as Greenspan noted, the central bank's influence is indirect and it must inject or withdraw larger amounts of liquidity to achieve a given effect on interest rates and economic output.

Loss of Influence on the Credit Supply

Problems in U.S. markets generated by the Federal Reserve's eroding influence over the supply of credit became glaringly apparent in the 1980s and 1990s. The two major problems - the rapid pace of credit expansion and the inability to sterilize or offset capital flows – are, in fact, linked. In the seven-year period from 1983 to 1990, the debt of all U.S.domestic nonfinancial sectors doubled from $5 trillion to $10 trillion, fueled by large inflows of private foreign capital. During the recession at the beginning of the 1990s, capital outflows by U.S. investors in search of higher yields impeded the Federal Reserve's ability to stimulate the economy with low interest rates since the continuation of lower rates encouraged more U.S. foreign portfolio investment abroad (primarily in Mexico) and failed to attract offsetting foreign private inflows. With rising U.S. interest rates in 1994, foreign private and official capital inflows resumed and provided between 10 and 30 percent of total lending in U.S. credit markets in every subsequent year (Federal Reserve, *Flow of Funds).*[24]

The effects of procyclical capital flows have not been limited to the U.S. and, as in the U.S., those effects have been intensified by changes in financial structure. Institutional investors now play a larger role in cross border flows and tend to purchase financial assets in secondary markets rather than invest them in bank deposits, further weakening central banks' ability to sterilize inflows with existing bank-centered monetary tools. As a result, credit has expanded dramatically in all countries that have received substantial inflows of foreign portfolio investment. Foreign portfolio investment is the primary channel for inflows into the U. S. and the scale of inflows has

[23] While presiding over the demise of quantity controls, central bank members of the BIS recognized the need to replace them with a prudential requirement acceptable to proponents of liberalization. Their choice – the Basle Accord, adopted in 1988 – set capital adequacy standards for all multinational banks located in the G-10 countries. It ensured that market forces – the providers (or withholders) of capital – would determine the amount of loans banks could make. Adoption of the Basle capital standards – together with banks' growing reliance on purchased funds – reinforced the procyclical bias that the BIS more recently noted is inherently present in a market-based system.

[24] In the U.S., for example, the stock of foreign holdings of credit market instruments – primarily U.S. government and agency securities and corporate bonds – rose dramatically (from $428.2 billion in 1985 to $1,592.5 billion in 1995 and $5,604.6 billion at year-end 2005) as did foreign holdings of U.S. equities (from $136.8 billion in 1985 to $549.5 billion in 1995 and $2,302.6 billion at year-end 2005) (Federal Reserve, *Flow of Funds).*

created a debt bubble that, as many analysts – including the BIS (2003) and IMF (2003) – agree, threatens the future of U.S. economic growth.[25]

Moreover, BIS economists argue that unchecked growth in credit fueled asset booms in many countries in the 1990s (Borio and Lowe 2002)[26] and, in its 2005 *Annual Report*, the BIS urged central banks to "use monetary and credit data as a basis for resisting financial excesses in general, rather than inflationary pressures in particular" (p. 148). As this admonition suggests, the BIS believes central banks can no longer ignore the explosion in global debt. It proposes the reintroduction of quantitative measures as countercyclical strategies in implementing both regulatory and monetary policies and that central banks set prudential norms relating to the growth in credit or asset prices. [27]

Part IV: Accommodating Structural and Institutional Change: Policy Choices and Recommendations

The proposed BIS macroprudential stabilization framework is a welcome and sensible response to the pervasive instability in financial markets caused by credit booms and the asset bubbles they engender. It is an ambitious agenda that would give monetary authorities important tools to address unchecked credit growth and it presents a significant challenge to the deregulatory and inflation-targeting practices of the last two decades.

But the fact that these measures would apply only to banks and not to other financial sectors weakens their ability to reestablish meaningful control over credit expansion. Moreover, they do not address the issue of the eroding effectiveness of explicit monetary tools such as reserve requirements and direct limits on bank credit expansion. Thus they ignore the sclerotic condition of the channel for monetary policy implementation. Another, critical omission is that they address the issue of financial leverage indirectly, through collateral requirements. The measures proposed deal mainly with credit standards governing loans to non-financial borrowers, not banks' financial counterparts. Because the most rapid growth in the financial sector is occurring outside the banking industry, primarily among institutional investors, and because excessive financial leveraging has become a problem that contributes to the erosion of monetary control while enhancing systemic risk, a new policy framework must take account of these developments in order to be effective.

One place to begin is by authorizing central banks to impose reserve requirements on all leveraged transactions between financial institutions, regardless of the type of

[25] As noted above, the debt of U.S. domestic nonfinancial sectors rose from 168.9 percent of GDP to 184.6 percent in 1995 and 211.4 percent at year-end 2005, a 42.5 percent increase over the two decades. For an expanded discussion of this issue, see D'Arista and Griffith-Jones, 2006.

[26] This BIS working paper argued that central banks have erred in targeting inflation; that low and stable inflation actually increases the likelihood that excess demand pressures show up first in credit aggregates and asset prices, rather than in goods and services prices.

[27] The quantitative measures proposed by the BIS include liquidity requirements, loan-to-value ratios, collateral requirements, margin requirements and tighter repayment periods.

institution that undertakes them.[28] Creating these requirements would enlarge the pool of risk-free deposits held in central bank accounts that financial institutions could buy or sell to smooth liquidity imbalances at both the institutional and systemic level. Moreover, the power to create and extinguish such reserves would significantly improve central banks' ability to moderate financial excesses and strengthen countercyclical initiatives. In addition, this new link between the central bank and all financial institutions would begin the process of constructing the necessary platform for conducting the multilateral surveillance that the IMF advocates. The more important objective, however, is to reestablish effective countercyclical techniques for both regulatory and monetary policies, and to do that, the channel for transmitting monetary initiatives must be widened to include all financial sectors, not just banks.

Rebuilding Effective Countercyclical Strategies for Implementing Monetary Policy

Although the once-powerful role of reserve requirements has atrophied, they remain a promising tool for reviving effective monetary control. But a reserve management system that could adapt to current and future institutional changes requires several key operational features: it must extend monetary control to all sectors of the financial system (including pension and retirement funds); apply reserve requirements to financial firms' assets, expand central banks' eligible holdings by using repurchase agreements with the financial sector as the primary tool of open market operations, and use these transactions to create and extinguish reserves.

Under an asset-based reserve system, the central bank would be authorized to engage in repurchase agreements to buy or sell any asset held by financial institutions – bank loans, mortgages, stocks, bonds and other securities, etc.[29] The central bank's repurchase agreement would be held on the liability side of its balance sheet and would be matched on its asset side by the reserves it creates in payment for the assets it buys. The balance sheets of financial institutions would show a reverse placement: they would hold non-interest-bearing reserves on the liability side of their balance sheets and non-interest-bearing repurchase agreements with the central bank as assets.[30]

The distribution of reserves in the form of non-interest-bearing liabilities will spur the financial sector to acquire earning assets even in a downturn. Additions of these cost-free liabilities might also encourage cancellations of non-performing loans and debt securities by providing incentives for the financial sector to replace them with earning assets. This would channel liquidity directly to households and businesses, helping avoid the stagnation that develops when financial institutions are unwilling to make new loans

[28] One precedent for imposing reserve requirements across all financial sectors is Sweden's post-WWII system for allocating credit to housing (U.S. House of Representatives 1972).

[29] For a more comprehensive discussion of balance sheet structures and the conduct of policy initiatives under an asset-based reserve system, see D'Arista 2002.

[30] Under current reserve requirement systems, banks' reserves are held on the asset side of their balance sheets and enable them to create deposits by lending. Other financial sectors do not create liabilities by lending. Thus the reverse placement is more appropriate for a monetary system that includes all sectors in its transmission mechanism.

and investments and cannot cancel debts for troubled borrowers without jeopardizing their own survival.

When a central bank wishes to tighten monetary conditions, its ability to extinguish reserves held on the liability side of financial institutions' balance sheets forces them to sell assets and adjust total asset holdings to the amounts that meet the requirements for coverage by a lower level of reserve liabilities. And reserve requirements that are assessed against assets cannot be evaded at the systemic level since the central bank would control the volume of total reserves in the system. Institutions could borrow or lend reserves to other institutions but could not substitute other forms of borrowing for reserves. Thus the central bank would have effective control over changes in the supply of credit

At the end of the day, the main purpose of reinstating control over the supply of credit is to improve macroeconomic performance. Restoring the central bank's ability to moderate excessive changes in lending and investment would ensure a greater balance in the distribution of financial resources across the business cycle. Creating an asset-based reserve system would also provide a more direct and effective channel for influencing asset prices and could replace or supplement controls on capital flows to mitigate their expansionary or contractionary impacts.

Finally, a new reserve system is needed to enlarge the scope and effectiveness of crisis management. Requiring the financial sector to hold reserves against assets would accomplish that objective by directly linking all institutions and assets to the central bank's powers of liquidity creation. Should runs develop, all financial institutions would be able to avoid selling assets (and thus driving down prices) by engaging in repurchase agreements with the central bank and acquiring *liabilities* (reserves) to offset customers' withdrawals. Making the liquidity cushion directly available to the system as a whole would enhance stability and better accommodate the need to safeguard the expanding volume of household savings now held in or managed by institutional investors.

Moderating the Volatility in International Capital Flows

While an asset-based reserve system will enhance the ability of central banks to sterilize capital inflows and compensate for outflows, there is need for additional attention to the ways in which these flows affect emerging market economies. As discussed, the growth in the size and capitalization of markets in many of these countries has not even kept pace with growth in the domestic institutional investor sector. Thus, inflows of foreign portfolio investment tend to exacerbate volatility in secondary markets rather than provide long-term financing for economic expansion, while outflows often trigger or intensify currency crises. Moreover, many developing countries that need long-term financing for infrastructure and other basic components of development strategies do not have markets that can absorb foreign portfolio investment flows not the credit standing to attract them. As the World Bank's previous efforts to expand and support capital markets in these countries suggests, continued public support will be needed as

emerging markets meet the needs and challenges of expanding institutional investment sectors within their own financial systems.

Meanwhile, what is needed is a new channel for foreign portfolio investment to provide flows that are stable, in amounts appropriate to the size of a country's economy and directed toward the goals of development rather than solely toward the short-term profits of investors. Such a channel could be constructed by creating one or more closed-end funds for emerging market investment under the Bretton Woods umbrella.[31] These funds would issue their own liabilities to private and official investors and use the proceeds to buy stocks and bonds of private enterprises and public agencies in a wide spectrum of developing countries. While marketed primarily to institutional investors in advanced economies, these liabilities would also qualify as international reserves, guaranteed by a multinational agency and its member countries. Their purchase by the central banks of developing countries would redirect external savings back into the economies of the countries that own them rather than into the financial markets of strong currency countries and help unwind the imbalances in the global economy that have been exacerbated by the procyclicality and volatility of capital flows.

The inauguration of international closed-in funds would reduce the need for capital controls if countries chose to accept foreign portfolio investment only through this channel. Equally important, they would support the development of securities markets denominated in local currencies in poor and middle-income countries and thus accommodate the growth of institutional investors in these countries. As many analysts have advocated (Davis 2001), this would assist pension funds in both advanced and emerging economies in diversifying their portfolios internationally but would be of particular benefit to those in developing countries both within their own markets and externally. Their purchases of shares in these multinational closed-end funds would encourage investment flows among developing countries by reducing the hazards of country risk and lowering information and transactions costs. In these and other ways, the creation of these funds would make a significant contribution to stabilizing capital flows and help to ensure that the inevitable further expansion of institutional investors sectors in advanced and emerging economies will assist in promoting economic growth and development.

[31] Unlike open-end mutual funds that must buy back an unlimited number of shares in response to investors' demand, closed-end investment pools issue a finite number of shares that trade on stock exchanges or in over-the-counter markets and are only redeemed at the initiative of the fund itself. This structure would allow the prices of shares to fluctuate without triggering destabilizing purchases and sales of the underlying investments. The structure could be made more suitable for long-term investors such as pension funds by requiring that 10 to 20 percent of the value of shares sold to investors be used to purchase and hold government securities of major industrial countries in amounts roughly proportional to the holdings of the funds' shares by residents of those countries. This would give investors a partial guaranteed return, denominated in their own currencies, and capital backing in addition to the guarantee of the multilateral agency and its member countries. Moreover, the introduction of these securities would benefit both private and official investors by adding more low-risk instruments with long maturities to the menu of assets in international financial markets.

Rationalizing Financial Guaranties

The proliferation of products such as derivatives that provide financial insurance for institutions suggests that the financial sector itself believes that changes in financial structure require new methods of protection. Although deposit insurance schemes are still in place in many countries, the shift in personal savings from banks to pension and retirement funds has eroded the protection they once gave households. As the IMF noted, households have become the shock absorbers in financial markets. Clearly, a new means for protecting households must be considered since losses in the value of funded pension plans have – and will continue to have – important implications for changes in aggregate demand and economic growth.

One way to provide more effective coverage for personal savings would be to replace existing financial guaranty programs with a system that protects individuals rather than institutions. Personal accounts in one or more financial institutions would be covered up to a certain amount and premiums would be paid to the government insurance agency out of the earnings on their covered assets.[32] Premiums would be invested in government securities and the system would be compulsory to ensure that all savers are covered, that reserves are adequate, and that liability for losses is fairly distributed.

This basic framework could be elaborated or modified in a number of respects. For example, it could better reflect the needs of savers by increasing the amount of coverage for accounts held in more than one name or for heads of households on the basis of the number of dependents. Small savers could be given additional advantages such as a waiver of premium payments on aggregate accounts under a given amount or a sliding scale for premiums based on gross income. To emphasize the protection of pension and retirement funds, the ceiling for coverage of assets held in such plans could be raised for individuals as they approach retirement age.

While some might object that moral hazard is inherent in any financial guaranty scheme (Davis 2001), the proposal to insure individual savers is one that confronts the moral hazard involved in insuring institutions because it can accommodate failure. For example, if an institution does not take the necessary steps to improve the quality of assets or address other problems and appears unlikely to do so, it will no longer be permitted to advertise that the individual accounts it holds are insured and will be required to notify customers that accounts held there will not be insured after a certain date. While this will certainly create runs on individual institutions and result in failures, savings will move to other institutions before losses occur. Thus a generalized loss of confidence in the financial system will be avoided by an explicit assurance that institutions that are permitted to accept insured accounts are considered sound.

[32] Under the above proposal, individuals would pay a premium amounting to 10 percent of annual earnings on assets (about 50 cents for every $5 dollars of earnings) until the fund reached the desired level. Thereafter, a premium of one percent of earnings would probably be more than adequate in a system covering all savers.

Conclusion

Soundness was - and is - one of the primary concerns backing the various legislative initiatives that require funding for pension plans. But focusing on the objective of protecting beneficiaries through funding requirements alone has allowed new channels for saving to emerge over the past three decades without attention to the ways in which they have transformed financial structure and the bank-centered monetary and regulatory frameworks that have traditionally governed national financial systems.

As discussed, institutional investors are outside the scope of countercyclical monetary policies and have contributed to undermining the effectiveness of central bank initiatives. As a result, their growing dominance has exacerbated the procyclicality of the financial system and they have become a primary channel for transmitting that procyclicality to the real economy - to corporations that sponsor defined benefit plans and directly to households through the wealth effect. Moreover, their roles in augmenting the volatility of capital flows and increasing the potential for systemic risk raise questions about the ongoing stability of the global system and the links it has forged between institutions and markets world-wide.

This paper has argued that a new macroprudential framework is needed to accommodate the profound changes that have taken place in institutional functions and in systemic structure. It notes that the BIS has already made proposals that can frame the discussion of ways to approach the problem. But there is need for urgency. As one of the most senior BIS spokesmen has said: "One hopes that it will not require a disorderly unwinding of current excesses to prove convincingly that we have indeed been on a dangerous path" (White 2006, p.16).

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Table 1 : Assets Under Management by Institutional Investors in OECD Countries

	1990	1995	2000	2001	2002	2003	2004
		in	**trillions**	**of US**	**Dollars**		
Institutional Investors	**13.8**	**23.5**	**39.0**	**39.4**	**36.2**	**46.8**	**----**
Insurance companies	4.9	9.1	10.1	11.5	10.2	13.5	14.5
Pension funds	3.8	6.7	13.5	12.7	11.4	15.0	15.3
Investment companies	2.6	5.5	11.9	11.7	11.3	14.0	16.2
Hedge funds	0.03	0.10	0.41	0.56	0.59	0.80	0.93
Others	2.4	2.2	3.1	3.0	2.7	3.4	----
		as	**percent**	**of GDP**			
Institutional Investors	**77.6**	**97.8**	**152.1**	**155.3**	**136.4**	**157.2**	**----**
Insurance companies	27.8	37.8	39.4	45.3	38.4	45.4	44.0
Pension funds	21.2	27.8	52.6	50.1	42.9	50.4	46.4
Investment companies	14.8	22.7	46.3	45.9	42.7	47.2	49.0
Hedge funds	0.1	0.4	1.6	2.2	2.2	2.7	2.8
Others	13.6	9.1	12.4	11.7	10.1	11.5	----

Note: The data may reflect some double-counting of assets owned by defined contribution pension funds and managed by investment companies. Investment companies include closed-end and managed investment companies, mutual funds and unit investment trusts. Other institutional investors include real estate investment trusts (REITs) and private equity and venture capital funds. GDP is total for OECD countries.
Source: International Monetary Fund, *Global Financial Stability Report,* September 2005, p. 67.

Table 2: Assets of Institutional Investors of Major Industrial Countries

(in billions of U.S. dollars)

	1990	1995	2000	2001	2002	2003	2004
United States							
Insurance cos.	**1,884.9**	**2,803.9**	**3,997.7**	**4,084.5**	**4,264.8**	**4,832.9**	**5,310.0**
Pension funds	**2,427.3**	**4,196.9**	**6,479.3**	**5,881.4**	**5,036.6**	**5,994.2**	**6,545.3**
Investment cos.	**1,154.6**	**2,731.5**	**6,454.9**	**6,598.7**	**6,115.0**	**7,025.6**	**7,787.8**
Japan							
Insurance cos.	**1,503.5**	**2,625.6**	**2,474.6**	**2,293.5**	**2,530.4**	**2,968.7**	**2,972.8**
Pension funds	**371.4**	**705.6**	**748.7**	**696.6**	**705.9**	**928.2**	**872.1**
Investment cos.	**331.7**	**411.7**	**462.6**	**362.3**	**366.7**	**493.4**	**565.5**
United Kingdom							
Insurance cos.	**472.3**	**838.0**	**1,475.7**	**1,420.1**	**1,492.5**	**1,736.2**	-----
Pension funds	**532.5**	**756.4**	**1,096.0**	**989.8**	**936.7**	**1,190.9**	**1,464.0**
Investment cos.	**124.4**	**238.0**	**441.0**	**393.2**	**384.3**	**547.3**	**492.7**
Germany							
Insurance cos.	**400.2**	**566.8**	**739.1**	**741.4**	**783.3**	**1,009.4**	-----
Pension funds	**150.9**	**314.5**	**326.6**	**324.9**	**341.4**	**462.4**	-----
Investment cos.	**188.9**	**369.5**	**773.9**	**711.4**	**799.1**	**1,062.9**	**1,184.1**
France							
Insurance cos. and pension funds	-----	**642.2**	**939.6**	**894.0**	**1,053.9**	**1,356.6**	-----
Investment cos.	-----	**703.5**	**1,128.2**	**1,106.1**	**1,285.8**	**1,769.1**	-----
Italy							
Insurance cos.	-----	**107.4**	**201.4**	**219.2**	**297.4**	**417.1**	**509.5**
Pension funds	-----	**39.0**	**48.8**	**35.0**	**50.9**	**48.7**	**54.4**
Investment cos.	-----	**262.1**	**737.3**	**685.9**	**740.8**	**960.4**	**980.5**
Netherlands							
Insurance cos.	**83.4**	**148.8**	**219.9**	**224.8**	**282.6**	**354.0**	**421.0**
Pension funds	**207.9**	**308.3**	**391.7**	**376.8**	**433.8**	**590.7**	**703.8**
Investment cos.	**32.1**	**53.8**	**87.0**	**72.8**	**71.5**	**95.0**	**105.1**

Note: 1990 data for Germany refer to 1991. For some countries, the data may reflect some double-counting of assets owned by defined contribution pension funds and managed by investment companies. Investment companies include closed-end and managed investment companies, mutual funds and unit investment trusts.

SOURCE: International Monetary Fund*, Global Financial Stability Report,* September 2005, p. 68.

Table 3: Pension Funds in Selected Emerging Market Countries
Assets under Management
(in millions of US Dollars)

	1992	1997	2002
Latin America	**10,064**	**117,606**	**136,242**
Brazil	---	77,800	44,300
Chile	10,064	27,198	35,515
Mexico	---	615	31,748
Europe	**---**	**---**	**11,,662**
Czech Republic	**---**	623	**---**
Hungary	**---**	**---**	3,435
Poland	**---**	**---**	6,674
Asia	**65,348**	**108,342**	**110,847**
Malaysia	23,822	45,991	54,419
Singapore	31,631	53,648	56,429
Korea	9,895	8,703	**---**
Total	**75,412**	**225,948**	**258,751**

(as percent of GDP)

	1992	1997	2002
Latin America	**0.9**	**6.5**	**9.2**
Brazil	---	9.7	9.1
Chile	22.6	32.8	53.5
Mexico	---	2.6	5.0
Europe	**---**	**---**	**3.8**
Czech Republic	**---**	1.3	**---**
Hungary	**---**	**---**	4.5
Poland	**---**	**---**	3.5
Asia	**11.2**	**14.9**	**21.5**
Malaysia	40.3	45.9	57.3
Singapore	63.4	56.2	64.9
Korea	3.2	3.3	**---**
Total	**6.3**	**12.4**	**20.3**

Total Latin America also includes Argentina, Bolivia, Columbia, Costa Rica, El Salvador, Peru and Uruguay. Total Europe also includes Bulgaria, and Kazakhistan. Total Asia also includes Hong Kong SAR.

SOURCE: Chan-Lau, IMF Working Paper 04/181, September 2004

Table 4: Assets Under Management of Mutual Funds

	1998	2000	2002	2004
		in billions of U.S. dollars		
United States	**5,525.2**	**6,964.7**	**6,390.4**	**8,106.9**
Japan	**376.5**	**432.0**	**303.2**	**399.5**
Europe	**2,740.7**	**3,290.3**	**3,440.0**	**5,572.0**
Emerging market countries				
Asia	**305.3**	**384.9**	**431.6**	**703.3**
Latin America	**140.7**	**180.4**	**138.6**	**273.7**
Europe	**2.6**	**5.7**	**19.2**	**88.8**
		in percent of GDP		
United States	**63.2**	**70.9**	**60.9**	**69.1**
Japan	**9.5**	**9.1**	**7.6**	**8.6**
Europe	**30.5**	**39.5**	**37.6**	**43.8**
Emerging market countries				
Asia	**13.2**	**13.7**	**13.8**	**18.0**
Latin America	**8.6**	**11.2**	**9.6**	**16.0**
Europe	**0.4**	**1.0**	**2.1**	**6.1**

Note: Asia includes China, Hong Kong SAR, India, Korea, Malaysia, Philippines, Taiwan Province of China, Thailand and Pakistan. Latin America includes Argentina, Brazil, Chile, Costa Rica, Mexico, Peru and Venezuela. Emerging Europe includes the Czech Republic, Hungary, Latvia, Poland, Romania, Russia, the Slovak Republic and Turkey.

SOURCE: Investment Company Institute and International Monetary Fund, *Global Financial Stability Report,* September 2005, p. 78.

Table 5: Asset allocation of Selected OECD Institutional Investors
(in percent)

	1997	2003
Insurance companies		
Domestic equity	**21**	**20**
Domestic bonds	**50**	**49**
Foreign equity	**3**	**5**
Foreign bonds	**5**	**9**
Other	**21**	**17**
Pension funds		
Domestic equity	**44**	**37**
Domestic bonds	**33**	**27**
Foreign equity	**11**	**11**
Foreign bonds	**3**	**6**
Other	**9**	**19**
Investment companies		
Domestic equity	**39**	**37**
Domestic bonds	**38**	**38**
Foreign equity	**9**	**10**
Foreign bonds	**3**	**5**
Other	**11**	**10**

Note: shares computed as market-weighted shares of Germany, France, Japan, the United Kingdom and the United States. "Other" includes cash, real estate, commercial loans and credits, financial derivatives, short-term investments, investments in hedge funds, private equity, commodities and miscellaneous assets.

SOURCE: International Monetary Fund, *Global Financial Stability Report,* September 2005, p. 69.

Table 6: Shares of Total Financial Assets Held by U.S. Financial Sectors (in billions of dollars and percent)

	1955	1965	1975	1985	1995	2005
Total for all financial sectors	**$450.3**	**$986.3**	**$2,436.4**	**$8,531.6**	**$20,434.6**	**$47,144.1**
Depository institutions	**259.9**	**539.5**	**1,374.6**	**3,787.3**	**5,812.3**	**11,690.7**
Insurance companies	**96.2**	**163.6**	**287.7**	**825.2**	**1,867.0**	**3,240.0**
Pension funds	**51.7**	**160.9**	**459.9**	**2,032.2**	**5,204.5**	**8,995.5**
Mutual funds	**11.3**	**42.8**	**55.7**	**496.6**	**2,730.5**	**8,322.8**
Nonbank lenders	**19.6**	**48.9**	**106.5**	**363.1**	**705.3**	**1,366.7**
GSEs & federally related mortgage pools	**5.6**	**19.8**	**121.9**	**691.9**	**2,468.1**	**6,482.6**
Issuers of asset-backed securities	**0.0**	**0.0**	**0.0**	**37.2**	**662.1**	**3,059.1**
Security brokers & dealers	**5.9**	**10.3**	**21.5**	**156.0**	**568.1**	**2,144.1**
Others	**0.1**	**0.5**	**8.6**	**142.1**	**416.7**	**1,842.6**
Percentage of Total Financial Sector Assets	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Depository institutions	**57.8**	**54.7**	**56.4**	**44.4**	**28.4**	**24.8**
Insurance companies	**21.4**	**16.6**	**11.8**	**9.7**	**9.1**	**6.9**
Pension funds	**11.5**	**16.3**	**18.9**	**23.8**	**25.5**	**19.1**
Mutual funds	**2.5**	**4.3**	**2,3**	**5.8**	**13.4**	**17.7**
Nonbank lenders	**4.4**	**5.0**	**4.4**	**4.3**	**3.5**	**2.9**
GSEs & federally related mortgage pools	**1.2**	**2.0**	**5.0**	**8.1**	**12.1**	**13.8**
Issuers of asset-backed securities	**----**	**----**	**----**	**0.4**	**3.2**	**6.5**
Security brokers & dealers	**1.3**	**1.0**	**0.8**	**1.8**	**2.8**	**4.5**
Others	**----**	**----**	**0.4**	**1.7**	**2.0**	**3.9**

Note: Percentages may not sum due to rounding.
Pension funds include insured pension assets but exclude individual retirement accounts (IRAs). Nonbank lenders include finance companies and mortgage companies.
"Others" includes real estate investment trusts and funding corporations.
SOURCE: Federal Reserve System, *Flow of Funds Accounts of the United States.*

Table 7: Selected Assets Held by U.S. Households and Non-Profit Organizations
(in billions of dollars and percent)

	1975	1985	1995	2005
		Amount	(billions	of dollars)
Tangible Assets	**2.186.8**	**6,531.1**	**11,247.9**	**25,558.2**
Financial Assets	**3,668.1**	**9,961.8**	**21.483.0**	**38,464.9**
Deposits	908.2	2,505.9	3,336.5	5,887.6
Credit market instruments	318.0	981.2	2,285.0	2,733.4
Corporate equities	584.6	1.229.5	4,347.5	6,088.9
Mutual fund shares	38.7	213.8	1,343.7	4,207.5
Pension fund reserves	467.0	2,088.1	5,695.2	10.646.7
Other	1,351.5	2,943.2	4,475.2	8,900.7
Total	**5,854.9**	**16,492.9**	**32,730.8**	**64,023.1**
		Percentage	**of Household**	**Assets**
Tangible Assets	**37.3**	**39.6**	**34.4**	**39.9**
Financial Assets	**62.7**	**60.4**	**65.6**	**60.1**
Deposits	15.5	15.2	10.2	9.2
Credit market instruments	5.4	5.9	7.0	4.3
Corporate equities	10.0	7.5	13.3	9.5
Mutual fund shares	0.7	1.3	4.1	6.6
Pension fund reserves	8.0	12.7	17.4	16.6
Other	23.1	17.8	13.7	13.9

Note: "Other" includes equity in non-corporate businesses, security credit, life insurance reserves and miscellaneous assets. Columns may not sum due to rounding.
SOURCE: Federal Reserve System, *Flow of Funds Accounts of the United States.*

Table 8: Assets Held by U.S. Private and Public Pension Funds and in Individual Retirement Accounts
(in billions of dollars)

	1995	1997	1999	2001	2003	2005
Private Pension Funds	**2,896.4**	**3,710.4**	**4,591.4**	**4,043.1**	**4,114.4**	**4,785.2**
Defined benefit	**1,466.1**	**1,763.5**	**2,074.6**	**1,810.2**	**1,744.3**	**1,916.5**
Defined contribution	**1,430.3**	**1,946.9**	**2,516.8**	**2,232.9**	**2,370.1**	**2,868.7**
State & Local Gov't Employee Retirement Funds	**1,303.3**	**1,817.1**	**2,325.8**	**2,206.6**	**2,344.0**	**2,691.5**
Federal Government Retirement Funds	**541.1**	**659.1**	**774.0**	**859.7**	**958.5**	**1,074.5**
Individual Retirement Accounts (IRAs)	**1,288.0**	**1,728.0**	**2,651.0**	**2,619.0**	**2,991.0**	**3,667.0**
Total	**6,028.8**	**7,914.6**	**10,342.2**	**9,728.4**	**10,407.9**	**12,218.2**

Note: Private defined contribution plans include 401(k) type plans.
IRAs include Keogh accounts and assets of the household sector not included in pension fund reserves except for those at life insurance companies.
SOURCE: Federal Reserve System, *Flow of Funds Accounts of the United States.*