Institutional investors, financial market efficiency, and financial stability

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Abstract

Emphasising the scope for further growth in institutional investment, in Europe in particular, this paper focuses on the impact of institutional investment on the efficiency and stability of financial systems. The paper stresses the scope for efficiency gains arising from an increasing role of institutional investors, reflecting – inter alia – their role in improving corporate governance. The paper also argues that institutional investors tend to enhance financial system stability although they may sporadically exacerbate market volatility or liquidity problems. This calls for a close focus of regulators and monetary policy makers on institutional behaviour, while inter alia continuing the shift envisaged in the current EU Pension Funds (IORP) Directive towards prudent person rules for investment, and focusing closely on the long term sustainability of guarantees being offered on life policies, annuities and pensions.

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1. Introduction

Institutional investors have grown strongly in the past few decades, not only due to the overall expansion of financial sectors relative to GDP, but also because of a boost in their share of total financial claims. As outlined in Davis and Steil (2001), the growth of institutional investors can be traced to various supply and demand factors that have made investing via institutions attractive to households. Supply-side factors suggest that institutions have offered their services relatively more efficiently than banks and direct holdings, thus fulfilling the functions of the financial system more effectively, while demand-side factors stem from households' enhanced needs for the types of financial functions that institutional investors are able to fulfil. On the supply side, there is, for instance, the ease of diversification, liquidity, improved corporate control, deregulation, ability to take advantage of technological developments, and enhanced competition, as well as fiscal inducements and the difficulties of social security pensions. On the demand side, one may highlight demographic aspects (notably funding of pensions and population ageing) and growing wealth.

Owing to the dominance of pay-as-you-go pensions and the lack of sustainability of current systems, scope for expansion of private pension funding and institutional investment is greater in Continental Europe than in the relatively mature markets of the United States and the United Kingdom, where pension systems already have major funded elements. Pension saving in pension funds or – as precautionary saving – in life insurance and mutual funds is likely to increase sharply over the next twenty years as individuals seek to provide for their retirements following pension reform. We also argue that European Monetary Union (EMU) enhances the scope for change in EU pension systems as well as for growth of institutional investors. The prospective development of institutional investors has major implications for the structure and performance of EU financial markets. Given this perspective, an overview of the likely implications of the growth of institutions is very timely. But it should be kept in mind that in light of the lesser development of institutions in Europe to date much of the paper has to be set out in general terms or using experience from the United States and the United Kingdom.

Our focus will be on the impact of institutional investor growth on the efficiency and stability of financial markets. Efficiency is defined broadly in terms of the ability to perform the underlying functions of financial systems. While financial systems ought to perform a variety of functions (Merton and Bodie 1995), we are particularly interested in their ability to provide

mechanisms for (i) pooling of funds from individual households to facilitate large-scale indivisible undertakings and the subdivision of shares in enterprises to facilitate diversification; (ii) transferring economic resources over time, across geographic regions, or among industries; and (iii) dealing with incentive problems when one party to a financial transaction has information the other does not and when control and enforcement of contracts is costly.

We begin in Section 2 by providing details on the current size and likely future trends in institutional investment. We then assess in Section 3 successively the extent to which forms of pooling of assets provided by insurance companies, pension funds, and mutual funds differ in ways that may be relevant to their impact on financial markets. Following this, we examine the impact of institutional investors on saving, investment, and corporate finance, i.e. transferring economic resources (Section 4) as well as on corporate governance, i.e. dealing with incentives (Section 5). Proceeding from efficiency to stability aspects, we look in Section 6 at the impact of institutional investment on market dynamics and systemic risks. In Section 7 we elaborate on this by discussing financial stability risk associated with the role of life insurance companies. This discussion takes us in Section 8 to some aspects of prudential regulation of institutional investors before we conclude in Section 9.

2. Size and determinants of institutional investment

The long-term development of financial systems and institutional investors in the EU-4 and G-7 is traced in Tables 1 to 5, using national flow-of-funds balance sheet data (see Byrne and Davis (2003) for an extended analysis of financial structures using these data). Table 1 shows that the financial superstructure – the value of total financial claims of all sectors relative to GDP – has grown sharply since 1970, more than doubling from 4 to 9 on average across the G-7. Table 2 illustrates that despite the rise in total claims and in securitisation, financial intermediation (through banks, institutional investors, and other financial institutions) has grown as a share of the total from 35 percent to 45 percent. Table 3 shows that institutional intermediation has grown relative to banking; in fact, the importance of traditional bank intermediation seems to have declined significantly, although banks remain larger than institutional investors in all countries but the United States. Table 4 shows that the size of the institutional-investor sector has increased massively since 1970. It is worth noting that the trends identified are common to Anglo-Saxon and bank-based economies, although

institutions remain less important in the latter than in the former. Table 5 shows that pension funds tend to dominate in the Anglo-Saxon countries, but insurance and mutual funds come to the fore elsewhere.

Table 1. Size indicator of financial structure (as a multiple of GDP)

	1970	1980	1990	2000	**Change 1970–2000**
United Kingdom	4.7	4.9	8.9	11.0	**6.3**
United Kingdom excl. Euromarkets	4.7	4.2	7.9	9.7	**5.0**
United States	4.1	4.1	5.9	8.4	**4.3**
Germany	2.9	3.6	4.7	7.9	**5.0**
Japan	3.8	5.1	8.5	11.9	**8.1**
Canada	4.7	5.1	5.8	6.6	**1.9**
France	4.4	4.8	6.9	11.4	**7.0**
Italy	3.4	3.9	4.3	7.1	**3.7**
G7	**4.0**	**4.4**	**6.3**	**9.0**	**5.0**

Source: Drawn from national flow-of-funds balance sheets

Table 2. Financial intermediation ratios (intermediated claims in % of total claims)

	1970	1980	1990	2000	**Change 1970–2000**
United Kingdom	32	42	47	58	**26**
United Kingdom excl. Euromarkets	32	34	40	52	**20**
United States	33	37	34	44	**11**
Germany	44	45	43	45	**1**
Japan	39	42	42	52	**13**
Canada	29	34	37	47	**18**
France	34	62	41	39	**5**
Italy	36	32	31	35	**-1**
G-7	**35**	**41**	**38**	**45**	**10**

Source: Drawn from national flow-of-funds balance sheets

Table 3. Bank and institutional intermediation ratios (bank and institutional investor claims in % of intermediated claims)

		1970	1980	1990	2000	**Change 1970–2000**
United Kingdom	Bank	58	64	55	44	**-14**
	Institutional	28	26	32	38	**10**
United States	Bank	58	58	42	21	**-37**
	Institutional	31	31	40	44	**13**
Germany	Bank	84	86	83	73	**-11**
	Institutional	10	12	17	23	**13**
Japan	Bank	45	36	38	24	**-21**
	Institutional	10	10	16	17	**7**
Canada	Bank	45	55	44	38	**-7**
	Institutional	23	19	25	35	**12**
France	Bank	94	68	82	65	**-29**
	Institutional	5	4	19	27	**22**
Italy	Bank	98	98	95	64	**-34**
	Institutional	6	5	11	31	**25**
G7	**Bank**	**69**	**66**	**63**	**47**	**-22**
	Institutional	**16**	**15**	**23**	**31**	**15**

Source: Drawn from national flow-of-funds balance sheets

Table 4. Claims of institutional investor (in % of GDP)

	1970	1980	1990	2000	**Change 1970–2000**
United Kingdom	42	37	102	193	**151**
United States	41	47	79	162	**121**
Germany	12	20	33	84	**72**
Japan	15	21	58	103	**88**
Canada	32	32	52	110	**78**
France	7	12	52	120	**113**
Italy	7	6	15	76	**69**
G7	**23**	**25**	**56**	**121**	**98**
Anglo-Saxon	**39**	**39**	**78**	**155**	**116**
Europe and Japan	**11**	**15**	**40**	**96**	**85**

Source: Drawn from national flow-of-funds balance sheets

Table 5. Assets of institutional investors, 1998

	Life Insurance		Pension Funds		Mutual Funds		Total	
	$ billion	% of GDP	$ billion	% of GDP	$ billion	% of GDP	$ billion	% of GDP
United Kingdom	1,294	93	1,163	83	284	20	2,742	197
United States	2,770	33	7,110	84	5,087	60	14,967	176
Germany	531	24	72	3	195	9	798	35
Japan	1,666	39	688	16	372	9	2,727	63
Canada	141	24	277	47	197	34	615	105
France	658	43	91	6	624	41	1,373	90
Italy	151	12	77	6	436	35	664	54
G-7	**7,212**		**9,479**		**7,195**		**23,886**	

Source: Drawn from national flow-of-funds balance sheets

Looking ahead, the main stimulus to growth of institutional investors in Europe will come from the ageing of the population in the context of generous pay-as-you-go pension schemes. The issue of population ageing needs little expansion here. Suffice to note that in the EU the

proportion of the population aged 65 and over is expected to increase sharply. With an unchanged retirement age, such a demographic shift will naturally lead to an increase in transfers under pay-as-you-go pension systems. That pension promises are extremely generous in a number of EU countries even for high earners compounds the problem.[1] Consequently, projections of public pension expenditure feature sharp and possibly unsustainable increases in such expenditure in a number of EU countries; this will encourage reforms of public pension systems, including a greater role for funded pension systems.

EMU enhances pressure for pension reforms, further stimulating the demand for institutional investment. This links to fiscal integration in EMU, notably because with an effective Stability and Growth Pact there is much less scope than would otherwise be the case for governments to run large deficits to contain tax increases when ageing becomes an acute burden on social security. This is the case even if such deficits are part of reform strategies that aim at fairly distributing the burden of transition to funded pension systems between generations.[2] To avoid sharp rises in taxation, governments should seek to deal with their public pension obligations and switch to funding of pensions at an early stage. Furthermore, owing to the "no-bailout clause" in the Maastricht Treaty,[3] financial markets – rating agencies in particular – increasingly focus on general government obligations, of which pension liabilities are the largest part. Macroeconomic and financial conditions in EMU also favour growth of institutional investors. Since monetary integration fosters sustained lower inflation, at least in some countries, it will make it easier for defined benefit pension schemes to finance inflation indexation while pension benefits from defined contribution schemes will also more readily retain their purchasing power.

Financial integration – in part driven by EMU – also increases the attractiveness of institutional investment by making a better risk-return trade-off attainable. One aspect is increases in the range of instruments, owing – for example – to broader availability of private equity as well as corporate bonds and securitised loans, the latter especially as the supply of government bonds diminishes. Another aspect is that increased liquidity and lower transactions costs resulting from market integration in EMU are increasing institutions' comparative advantage over bank intermediation. In due course, in a deeper EU securities

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1 The exceptions in this respect are Denmark, the Netherlands, Ireland and the United Kingdom, which are also the countries where funded pension systems are most developed.

2 Note that reforms that seek to distribute the costs of transition from pay-as-you-go to funding between generations may in principle involve heavy government borrowing and deficits. Pure tax financing leaves the entire burden on the current generation of workers.

3 The Treaty debars the monetary authority and other fiscal authorities from rescuing a country in fiscal crisis.

market, financial innovations may arise that are tailored to institutions' needs. These could include currently unavailable instruments such as bonds with returns linked to average earnings, which could be useful for life insurers and pension funds in matching assets to liabilities.

With the advent of EMU, regulations limiting international investment have ceased to be effective in the euro zone and increased correlation of national markets has led to sectoral investment across the euro zone.[4] Besides eliminating the effects of home bias and diversifying portfolios across the euro zone, a sectoral approach necessitates a major restructuring of portfolios as for example industrial stocks are 45 percent of the German market and 11 percent of the Spanish market.

Partly as a consequence of these factors – but also complemented by regulatory reform establishing a Single Market in asset management, life insurance, and mutual funds – EMU is leading to increased competition among asset managers that previously monopolised national markets, with those having pan-EMU expertise having a decisive advantage. Indeed, Mercer (2001) reports that the number of domestic equity mandates fell 60 percent over 1999-2001 and domestic bond mandates by 92 percent. Besides benefiting returns, competition should mean that the high fees and hidden charges typical of many EU countries should diminish. By increasing efficiency in investment, such competition favours institutional investment more generally.

Increasing financial integration owing to EMU also tends to intensify competition between banks for wholesale deposits and loans and to reduce the scope for traditional bank intermediation, the latter indicated by the rapid growth of corporate bond issuance by EU firms since 1999. Furthermore, the integrated money markets generated by EMU are facilitating the use of commercial paper for short-term borrowing by companies and investment in security repurchase agreements and commercial paper as alternatives to bank deposits. As a result of these developments, banks in Europe are facing challenges to their traditional business that are leading them to expand their asset management activities and other investment banking services to maintain profitability. This development is particularly marked in countries such as Germany, where the major commercial banks are seeking to redefine their business focus towards investment banking and aim to downplay or even eliminate their traditional—and relatively unprofitable—domestic retail and corporate

[4] But as Beckers (1999) has shown, correlation increased already even before EMU.

banking. The pressure to expand non-traditional banking activity has been reinforced by the elimination of commissions for foreign exchange transactions within the euro zone. Moreover, lower inflation in some countries due to monetary integration has reduced interest rate margins, owing to the elimination of the so-called endowment effect profit from zero-interest sight deposits in a context of positive rates of inflation.

The thrust of the points made above is that pension reforms, EMU, and the changing focus of banks are likely to spur securities market financing and institutional investment. Before looking at the implications of these developments, we first need to understand the behaviour of institutional investors.

3. Portfolio behaviour of institutional investors

In this section, we trace the essential characteristics of institutional investors, which will determine their impact on financial markets, and also consider how these characteristics differ between types of investor in a way that may influence their asset management.

3.1 Common features

Institutional investors may be defined as specialised financial institutions that manage savings collectively on behalf of small investors towards a specific objective in terms of acceptable risk, return maximisation, and maturity of claims. A key feature of institutional investors is that they provide a form of risk pooling for small investors, thus providing a better trade-off of risk and return than is generally possible via direct holdings. This entails, on the asset side, putting a premium on diversification, both by holding a spread of domestic securities (which may be both debt and equity) and by international investment. Institutions also prefer liquidity and hence use large and liquid capital markets, trading standard or “commoditised” instruments, so as to be able to adjust holdings in pursuit of objectives in response to new information.

A backup for the approach to investment is the ability to absorb and process information, which is superior to that of individual investors in the capital market. In contrast to banks, institutional investors rely on public rather than private information, which links strongly to

their desire for liquidity. Most institutions have matched assets and liabilities in terms of maturity, unlike banks, which tends to minimize the risk of runs. Moreover, in many cases, they have long-term liabilities, facilitating the holding of high-risk and high-return instruments.

The size of institutions has important implications since there may be economies of scale, which result in lower average costs for investors. For instance, the ability to transact in large volumes typically involves lower proportionate commission charges. Furthermore, investors share the costly services of expert investment managers and thereby save in advisory fees. Size also enables them to invest in large indivisible investments (although there is a tension with desire for diversification). Moreover, size may establish countervailing power, yielding lower transactions costs and custodial fees. This countervailing power may also ensure fair treatment by capital market intermediaries on the one hand and, on the other, improved control over companies in which they invest (Section 5), thus reducing the incidence of adverse incentive problems.

Salient features of institutional investors also arise from the process of asset management, which can be broken down into two stages: asset allocation between broad asset categories and security selection of individual assets within those categories. There are offsetting forces in the asset management relationship. On the one hand, it gives rise to an essentially fiduciary relationship to the ultimate investor, which often entails a degree of caution in the portfolio strategy and a desire to limit risks. On the other hand, such delegation raises principal-agent problems since fund managers may act in their own interest (e.g., in generating excessive commission income) or – particularly in Europe and Japan – in the interest of related financial institutions but not in the interest of the ultimate investor. The various means employed (particularly in Anglo-Saxon countries) to counteract such problems could result in herding behaviour of fund managers, an issue to which we return in Section 6.

3.2 Specific features

The discussion above should, of course, not be taken to imply that institutional investors are homogeneous. The main types of institutional investors are pension funds, life insurance companies, and forms of mutual funds. They differ generally in terms of the contractual relations between the owners of the assets and the asset managers, that is, the rules

determining the distribution of risk and return, as well as in the definition of their liabilities. The main differences stem from liabilities, and may have important implications for investment behaviour.

Table 6 provides data on the size of various institutional investors in EU countries in 2000.[5] In that year, pension fund assets were equivalent to around 30 percent of GDP, while insurance company assets were over 50 percent of GDP and investment funds 40 percent. The total value of institutional assets in Europe was around €11 trillion, with the United Kingdom accounting for about 30 percent of this. As Table 6 indicates, the size of pension fund sectors differs markedly between countries, with Denmark, the Netherlands and Sweden standing out in Continental Europe, and the United Kingdom and Ireland also having major pension fund sectors. Life insurance stands out in the United Kingdom, Sweden, Denmark and Luxembourg while investment funds are largest in France, if we abstract from the offshore markets of Ireland and Luxembourg.

Table 6. Assets of EU institutional investors (in % of GDP), 2000

	Pension funds	Investment funds	Insurance
Belgium	6	30	42
Denmark	24	20	78
Germany	16	12	43
Greece	4	25	1
Spain	7	30	13
France	7	55	61
Ireland	51	144	45
Italy	3	39	21
Luxembourg	1	3,867	117
Netherlands	111	25	65
Austria	12	40	24
Portugal	12	16	20
Finland	9	10	57
Sweden	57	34	90
UK	81	27	107

Sources: CEPS (2002)

Pension funds collect, pool, and invest funds contributed by sponsors and beneficiaries to provide for the future pension entitlements of beneficiaries. They are often sponsored by employers although personal pensions (generally contracts between individuals and life insurance companies) are also common. Pension funds may be internally or externally managed. Returns to members of pension plans backed by such funds may be purely

[5] It needs to be pointed out that Table 6 is not necessarily comparable with the tables shown earlier. Moreover, there may be some double counting in Table 6 since insurance companies are important managers of pension fund assets and pension funds are important investors in investment companies.

dependent on the market (defined contribution funds) or may be overlaid by a guarantee of the rate of return by the sponsor (defined benefit funds). The latter have insurance features that are absent in the former. These include guarantees with respect to the replacement ratio (pension as a proportion of income at retirement) subject to the risk of bankruptcy of the sponsor, as well as potential for risk sharing between older and younger beneficiaries. Defined contribution plans have tended to grow in recent years as employers have sought to minimize the risk of their obligations while employees desired funds that are readily transferable between employers. Employees may also prefer the ability, offered by some defined contribution arrangements, to control the disposition of their investment.

For both defined benefit and defined contribution funds, the liability tends to be set in real terms, as the objective of asset management is to attain a high replacement ratio at retirement, which is itself determined by the growth rate of average earnings. Hence, as Table 7 shows, they will hold considerable shares of real assets such as equities and real estate as well as foreign assets. Defined benefit funds may need to hedge or hold more cautious portfolios than defined contribution funds to allow for the risk of going below minimum solvency levels. At the same time, the sponsors have an incentive to maximise returns on defined benefit funds to lower their own costs while the individual members of defined contribution funds may pursue cautious strategies given the risks they face. If pension funds develop more than other types of institution in Europe in future, these features will have major importance for EU financial markets.

Table 7. Pension funds' portfolio composition (in % of total assets), 1998

	Liquidity	Loans	Domestic Bonds	Domestic Equities	Property	Foreign Assets
United Kingdom	4	0	14	52	3	18
United States	4	1	21	53	0	11
Germany	0	33	43	10	7	7
Japan	5	14	34	23	0	18
Canada	5	3	38	27	3	15
France	0	18	65	10	2	5
Italy	0	1	35	16	48	0

Sources: National flow-of-funds balance sheets, Mercer (1999).
Notes: Domestic equity and foreign asset holdings of US pension funds are estimates.

Life insurance companies, like pension funds, are long-term institutional investors with a large share of tradable assets in their portfolios. They historically provided insurance for dependents against the risk of death at a given time in the future, but they are increasingly offering long-term saving vehicles. Whereas life insurance companies' liabilities have

traditionally tended to be nominal or "money fixed", that is, offering a guaranteed return that is fixed in money terms, an increasing proportion of policies are now variable and either lack such guarantees, or may have option features, with, for example, variable returns but a guaranteed floor. There are increasingly close links with pension funds, as life insurance companies offer annuities for guaranteeing pension benefits as well as guaranteed investment contracts purchased by pension funds. They often also provide defined contribution pensions directly, may act as external asset managers for pension funds, or offer insurance to defined benefit funds on behalf of small employers[6].

The structure of assets – which varies between national markets (Table 8) – will depend on the balance between "money fixed" and "variable" liabilities. In the case of nominal liabilities, bonds tend to dominate assets, with private bonds being sought in addition to government bonds to maximise returns. In the case variable liabilities, being less risky for the firm, and with the understanding that higher returns will be sought, funds may be invested to a greater extent in equities, real estate, and foreign assets.

Table 8. Life insurers' portfolio composition (in % of total assets), 1998

	Liquidity	Loans	Domestic Bonds	Domestic Equities	Property	Foreign Assets
United Kingdom	5	1	25	48	6	13
United States	6	8	52	26	0	1
Germany	1	57	14	17	4	0
Japan	5	30	36	10	0	9
Canada	7	28	55	26	7	3
France	1	2	74	15	7	0
Italy	0	1	75	12	1	0

Sources: National flow-of-funds balance sheets, OECD

Mutual funds are simply vehicles for the pooling of assets for investment purposes. They seek to offer an enhanced risk-return profile and greater liquidity to individual investors by exploiting synergies from pooling assets of many individuals, economising in particular on transaction and management costs while offering low minimum holdings. They hence differ from the long-term institutions by offering short-term liquidity on pools of funds – albeit at rates that depend on current market prices – either via direct redemption of holdings (open-end funds) or via the ability to trade shares in the funds on exchanges (closed-end funds). Investors in mutual funds are residual claimants and bear all the risk.

[6] For a discussion of life insurers' investments see Dickinson (1998) and Davis (2002a).

Asset allocation of an individual fund is generally fixed by the prospectus, especially in the case of specialised funds that invest in a given class of assets (domestic equities, foreign bonds, etc.[7]). The asset manager is thus responsible only for security selection. Accordingly, the size and asset allocation of the mutual fund sector largely reflect the asset preferences of households directly as they choose between investing in different types of funds such as equity, bond, and money market funds.[8] Table 9 indicates the portfolio composition of mutual funds in G-7 countries.

Table 9. Open-end mutual funds' portfolio composition (in % of total assets), 1998

	Liquidity	Loans	Domestic Bonds	Domestic Equities	Property	Foreign Assets
United Kingdom	4	0	8	56	2	33
United States	17	0	30	51	0	N.A.
Germany	10	0	22	18	0	29
Japan	23	18	27	9	0	22
Canada	20	3	18	31	0	23
France	29	0	37	20	0	14
Italy	19	0	54	22	0	0

Sources: National flow-of-funds balance sheets, FEFSI

A special type of closed-end fund is a hedge fund, a private unadvertised mutual fund that is limited to wealthy investors who are willing to incur high short-term risk in exchange for high return potential. Hedge funds may engage in unlimited short-term trading, take short positions, and borrow to a greater extent than other institutions. Because of their ability to leverage and willingness to take risks, hedge funds may create sharp market movements and thereby provoke other institutions to similar action (e.g., in exerting pressure on currency pegs). At the same time, they may have more scope to act in a contrarian manner than other types of institutional investor[9].

A further key distinction between types of institutions comes from the locus of risk bearing. In a defined benefit pension fund and a life insurance contract with guaranteed returns, the risk of market volatility is taken by the sponsoring company and the life insurer, respectively. In contrast, in the case of a defined contribution pension fund, a mutual fund, and an

[7] There are also balanced funds that hold a variety of assets at their discretion; these are notably popular in Continental European countries such as France.

[8] The existence of mutual funds may itself modify such preferences relative to a situation in which direct securities holdings are the only options, for example by reducing risk aversion.

[9] An extensive discussion of the hedge fund sectors' structure, investment strategies, and effects on market dynamics can be found in Eichengreen and Mathieson (1998).

index-linked life insurance contract, the risk is borne wholly by the individual (except for a rather low guaranteed amount for the life insurance contract). In recent years, there seems to have been a tendency for institutional investors to switch from bearing risks themselves to transferring them to households, whereby the institutional investor offers less or no insurance.

In combination with the growth of mutual fund investment per se, the rise of defined contribution plans means that households are tending to have an increasing influence on asset allocation. Implications for asset allocation are unclear. In the early 1990s, the shift to defined contribution in the United States was thought to have accompanied less aggressive portfolio distributions, which could threaten overall returns in the long term. More recently, equity proportions have risen, but the reaction of the household sector to a prolonged bear market has yet to be seen. Certainly, it was the 1970s bear market that drove the earlier shift away from defined contribution arrangements in countries such as the United Kingdom and led to a collapse in holdings of equity mutual funds in the United States.

More generally, it can be argued that – as in the rest of the financial sector – there is a blurring of distinctions between types of institutional investors: mutual funds, in particular, are being used as a vehicle for retirement saving; pension saving often has a life insurance aspect; insurance companies are tending to launch their own investment funds and are widely involved in pension provision, provision of annuities and guaranteed investment contracts for pension funds, and in asset management for pension funds. Meanwhile, banks themselves are becoming active in this area, by purchasing or launching their own insurance companies to form financial conglomerates, selling their own mutual funds and personal pensions, and by setting up or purchasing fund managers. Furthermore, pension funds and, to a lesser extent, life insurers, are linking more closely to the rest of the financial system via their choices of external fund managers.

4. The impact of institutional investors on saving, investment, and corporate finance

It is often suggested that the development of institutional investors could entail an increase in saving, switch of asset holdings towards longer maturities, and could change the structure of corporate finance. This section will shed some light on each of these possible effects, which may have implications for investment and economic performance more generally.

To start with the level of saving, it may be noted at the outset that a strong effect of institutionalisation on saving appears a priori unlikely to hold. Empirically, the countries where institutions are most important – the United States and the United Kingdom – are also typified by low personal saving. By contrast, European countries with small institutional sectors have higher saving. There are also theoretical objections. The basic argument against any effect of institutionalisation on saving is that individuals choose a lifetime savings pattern separately from its distribution, so a rise in one component of wealth (such as pension funds, mutual funds, or life insurance claims) will be fully offset by falls elsewhere, either by reducing forms of discretionary saving or by borrowing. This offset will be particularly likely to occur when contractual saving and discretionary savings are close substitutes.

Nevertheless, growth of long-term institutional investors could generate increased saving via the following channels (for an overview, see Kohl and O'Brien 1998):

- Illiquidity of long-term institutional (life insurance and pension) assets may mean that other household wealth is not reduced one-to-one for an increase in wealth held in the form of claims on such long-term institutional investors; this is because households do not see such claims as a perfect substitute for liquid saving such as deposits.
- Credit constraints, whereby some households are not free to borrow, may imply that borrowing cannot offset any forced saving (such as life insurance or pension contributions).
- The interaction between the need for retirement income and retirement behaviour may increase saving if workers increase saving to provide for an earlier planned retirement.
- As social security is typically seen to reduce saving, because it implies an accumulation of implicit claims of future income, a switch towards funding of pensions via institutional investors should increase saving.

With economic theory suggesting ambiguous results as to the link between the development of institutional investment and the level saving, the issue requires empirical investigation. Much of the literature, such as Pesando (1992), which focused on US defined benefit funds, suggests that a unit rise in pension fund assets increases personal savings by around 0.35–0.5 units; when accounting for the fiscal cost of tax incentives to pension funds, the overall increase in national saving is around 0.2 units. There is also evidence that the effect on savings is less marked for defined contribution funds, in which the worker is more likely to be able to borrow against pension wealth and participation is generally optional. Nevertheless,

Poterba *et al*. (1993, 1996) suggest that 401(k) accounts in the United States have added to aggregate saving. Tax incentives are one important reason, but employer matching of contributions, payroll deduction schemes, and information seminars may have encouraged net saving by this route.These results do not extend to shorter-maturity non-pension saving instruments – even if they are tax privileged. Banks *et al.* (1994) found that tax privileged equity accounts as well as tax free deposits had no effect on personal saving in the United Kingdom but only generated portfolio substitution.

Another question is whether the overall level of countries' development could influence results. For instance, for developing countries, Corsetti and Schmidt-Hebbel (1997) find that pension reforms replacing pay-as-you-go with funding boosted saving in Chile. A World Bank study (1994) finds similar effects in Singapore. In part, these effects may be due to the prevalence of credit constraints for low-income households that would not otherwise have saved.

Approaching the issue from a different angle, other studies allow the conclusion that unfunded social security systems appear to lower private saving. For instance, Feldstein (1995) suggests that personal saving rises 0.5 for every unit decrease in US social security wealth (and vice versa). Neumann (1986) gives similar estimates for Germany, and Rossi and Visco (1995) find a figure of 0.66 for Italy. Kohl and O'Brien (1998) argue that the displacement of private saving by pay-as-you-go is more likely the more imperfect capital markets are.

On balance, empirical research suggests that growth in funded pension schemes does appear to boost personal saving, but not one-to-one. A significant offset arises via a decline in discretionary saving. But it is clear that one should not look at the development of institutional investment in isolation. For instance, institutional investment may have side effects on saving in the case of financial liberalisation and easing of credit constraints. It is plausible that there would be an institutional effect on saving before such liberalisation owing to credit constraints. This might disappear after liberalisation, however. Indeed, it is notable that the household sectors in countries with large pension fund sectors, such as the United States and the United Kingdom, have also been at the forefront of the rise in private sector debt (see Davis 1995a, 1995b). The familiar story underlying this is that rationing of household debt diminished following financial liberalization, which allowed households to adjust to their desired level of debt. But in the context of pre-existing accumulation of wealth

via institutions and high returns to institutional assets, this adjustment could be partly seen as a rebalancing of portfolios, thus entailing borrowing by households to offset earlier forced saving through institutional investors.

Even in a liberalised financial system, credit constraints will affect lower-income individuals particularly severely, as they have no assets to pledge and less secure employment. Therefore, forced institutional saving tends to boost their overall saving particularly markedly (for evidence, see Bernheim and Scholz 1992). This point is of particular relevance in countries that have or are currently introducing compulsory private pensions. An example is Australia, where – all other things being equal – a rise in personal saving is being anticipated (Edey and Simon 1996); the same could apply to EU countries that follow such a strategy.

In concluding, two observations are worth making. First, all the estimates mentioned above abstract from effects on public saving in the transition to a privately funded system. When the transition is debt-financed (i.e. higher fiscal deficits to finance existing social security obligations), the resulting decline in public saving may fully offset possible increases in private saving (see Holzmann 1997b). Even a tax-financed transition may, according to some authors, have at most a small positive effect on national saving in the long term (Cifuentes and Valdes-Prieto 1997). Second, it needs to be emphasised that population ageing itself generates changes in saving that may have a major macroeconomic impact (see – for example – Cutler *et al.* 1990b, Davis 2002d).

Turning to the implications of growth in institutions for the structure of saving, we start with a brief comparison of the portfolio composition of household assets (Table 10) with that of institutional investors (Tables 7-9). The portfolios of long-term institutions vary widely, but in most cases, institutions hold a greater proportion of capital-uncertain and long-term assets than households. For example, in 1998, the share of equity holdings in the portfolio of pension funds was 68 percent in the United Kingdom (including foreign equities) and 64 percent in the United States. In both countries they compared favourably with household sector equity holdings, which – in 2000 – were 17 and 25 percent, respectively. At the same time, the household sector tends to hold a much larger proportion of liquid assets than institutions do. These differences can be explained partly by time horizons, but institutions also have a comparative advantage in compensating for the increased risk of long-maturity assets by pooling.

Table 10. Composition of household assets (in % of gross financial assets)

		1970	1980	1990	2000	**Change 1970-2000**
United Kingdom	Deposits	34	43	31	22	**-12**
	Bonds	7	7	1	1	**-6**
	Equities	24	12	12	17	**-7**
	Institutions	23	30	48	56	**33**
United States	Deposits	28	33	23	12	**-16**
	Bonds	13	10	11	7	**-6**
	Equities	36	21	14	25	**-11**
	Institutions	22	28	39	49	**27**
Germany	Deposits	59	59	48	34	**-25**
	Bonds	8	12	16	10	**2**
	Equities	10	4	7	16	**6**
	Institutions	15	17	21	34	**19**
Japan	Deposits	55	69	60	54	**-1**
	Bonds	6	9	9	8	**2**
	Equities	12	7	9	3	**-9**
	Institutions	14	13	21	31	**17**
Canada	Deposits	31	38	36	25	**-6**
	Bonds	14	8	5	5	**-9**
	Equities	27	24	21	27	**0**
	Institutions	22	21	28	41	**19**
France	Deposits	49	59	38	25	**-24**
	Bonds	6	9	4	2	**-4**
	Equities	26	12	26	37	**11**
	Institutions	6	9	26	23	**17**
Italy	Deposits	45	58	35	25	**-20**
	Bonds	19	8	19	19	**0**
	Equities	11	10	21	26	**15**
	Institutions	8	6	8	30	**22**
G7	**Deposits**	**43**	**52**	**39**	**28**	**-15**
	Bonds	**10**	**9**	**9**	**7**	**-3**
	Equities	**21**	**13**	**16**	**22**	**1**
	Institutions	**16**	**18**	**27**	**38**	**22**

Source: Drawn from national flow-of-funds balance sheets.

The implication is that institutionalisation could increase the supply of long-term funds to capital markets and reduce bank deposits, even if saving and wealth do not increase, as long as households do not increase the liquidity of the remainder of their portfolios to fully offset growth of institutional assets. As Table 10 reveals, total deposit shares have indeed tended to decline in most countries, in particular in Germany, France and Italy. That said, some offsetting shifts were apparent in the econometric results of Davis (1988) whereas King and Dicks-Mireaux (1988) found little such offsetting effect in Canada. Moreover, radical changes in financial structure – inconsistent with full offsetting – have been widely observed to accompany growth of funding, not least in Chile (Holzmann 1997a).

On balance, empirical results are consistent with an increased demand for long-term saving as institutional investors grow, implying that institutionalisation has indeed accompanied a shift in the composition of households' overall portfolios.[10] What are the implications of this for the structure of corporate finance and the economic performance of countries in general?

The shift towards long-term assets – in Europe or elsewhere – should tend to reduce the cost and increase the availability of equity and long-term debt financing to companies. As Table 11 shows for the G-7, there has certainly been a shift from loans to securities on the liability side of firms' balance sheets. And then, an increased supply of long-term capital market instruments may lead to a compression of the yield differential between equities and bonds, which may have significant implications for corporate capital structures by making issuance of equities cheaper relative to bonds than was the case in the past. Recent trends and market comment indeed point to a considerable further compression of the equity risk premium since 1993 (Bank of England 1999) although this may partly be a cyclical rather than a structural phenomenon.

[10] Besides demographics, this may be related to rising overall income and wealth (where only a certain volume of saving is needed to cover contingencies). Interestingly, a shift to defined contribution plans in which individuals determine their own asset allocations may reduce or eliminate these shifts to longer-term assets.

Table 11. Structure of corporate liabilities (in % of total balance sheet)

		1970	1980	1990	2000	**Change 1970-2000**
United Kingdom	Bond	7	2	0	7	**0**
	Equity	49	37	53	67	**18**
	Loan	15	22	21	21	**6**
United States	Bond	14	17	18	14	**0**
	Equity	55	49	39	63	**8**
	Loan	15	13	18	10	**-5**
Germany	Bond	3	2	2	1	**-2**
	Equity	27	20	31	49	**22**
	Loan	47	52	42	37	**-10**
Japan	Bond	2	3	6	10	**8**
	Equity	16	22	29	29	**13**
	Loan	48	45	45	40	**-8**
Canada	Bond	12	8	13	18	**6**
	Equity	46	41	41	54	**8**
	Loan	15	22	22	12	**-3**
France	Bond	3	4	4	4	**1**
	Equity	41	34	56	70	**29**
	Loan	54	60	38	14	**-40**
Italy	Bond	8	4	3	1	**-7**
	Equity	32	52	48	52	**20**
	Loan	60	43	41	30	**-30**
G7	**Bond**	**7**	**5**	**7**	**8**	**1**
	Equity	**38**	**36**	**43**	**55**	**17**
	Loan	**36**	**37**	**32**	**24**	**-12**

Source: Drawn from national flow-of-funds balance sheets

Looking specifically at the importance of equity finance in the euro zone, monetary integration will leave national economies – and hence their corporate sectors – more vulnerable to asymmetric shocks. Simultaneously, increased banking competition is likely to undermine exclusive banking relationships due to competition between lenders. It follows that lenders will be less willing to rescue firms in financial distress, as they could not charge higher interest rates to finance such implicit insurance. For both these reasons, companies will be under pressure to issue equity to increase the robustness of their balance sheets.[11]

As to effects on countries' economic performance, lower cost of and enhanced availability of equity and long-term debt financing will tend to spur economic growth. In addition, an accelerated growth of capital markets should increase allocative efficiency and there may hence be an increase in productive capital formation – especially if saving also increases – and thus economic growth. An important question in this context is whether

[11] In addition, if there are heightened information asymmetries owing to a decline in relationship banking, debt maturities may decline and collateral requirements increase.

institutionalisation strengthens corporate governance and thus the efficiency of firms – a question to which we will return below. One may note that equity market development per se has also been shown to enhance overall economic development (Demirgüç-Kunt and Levine, 1996) – this may be a particular benefit in some EU countries whose equity markets are little developed to date.

Overall, a rise in long-term savings resulting from the growth in institutional investment is possibly more beneficial to the EU than more saving per se. One note of caution is that if governments force pension funds to absorb the significant issues of government bonds that may be needed in a debt-financed transition strategy, or if government debt issuance crowds out corporate issues, many of the benefits of long-term financing may not materialise. In Europe this underlines the importance of the current *Pension Funds (IORP) Directive*, which mandates a "prudent person rule" and would outlaw such quantitative restrictions on portfolios as have applied historically in countries such as Germany and France. Another is that institutional investors may be reticent in investing in equity of small firms, despite their potential for innovation, growth, and job creation. As institutions grow in Europe, this may bias the EU economy towards sectors with larger firms.

5. Institutional investors and corporate governance

The increasing importance of institutional investment has considerable potential to improve the efficiency of financial systems – and thus of economies at large – in a number of ways. It can be argued that institutional investors help to generate liquidity that stimulates capital market development. They also demand adequate public disclosure of information and a market-oriented accounting system, have superior ability to employ price information, and speed-up the adjustment of asset prices to fundamentals – within countries but also across borders. Overall, institutional investors seem to contribute significantly to the capacity of markets to mobilise and disseminate information and to allocate resources efficiently. Furthermore, there are reasons to believe that institutional investors stimulate financial innovation that offers improved scope for risk management.

While all these effects are of interest, this section will concentrate on another potentially important efficiency-enhancing effect of institutional investors, namely their role in improving corporate governance and, thus, the financial function of overcoming incentive

problems (notably the possibility that managers of firms do not act in the interest of shareholders). As Table 12 shows, the growth of institutional investors went together with a rising share of equities held by them, not only in the Anglo-Saxon countries. This suggests that institutions' potential impact on corporate governance has grown and is likely to grow further, especially as the population ages and pension systems switch towards funding.

Table 12. Institutional shares of equity holding (in % of total)

		1970	1980	1990	1998
United Kingdom	Life and pension	14	45	47	46
	Foreign	13	15	34	33
United States	Life and pension	13	24	33	34
	Foreign	4	6	8	10
Germany	Life and pension	4	7	12	14
	Foreign	15	17	14	16
Japan	Life and pension	9	8	9	12
	Foreign	9	6	4	13
Canada	Life and pension	5	6	11	14
	Foreign	8	7	4	6
France	Life and pension	2	4	2	4
	Foreign	8	13	12	18
Italy	Life and pension	2	1	2	2
	Foreign	18	5	7	15
G-7	**Life and pension**	**7**	**13**	**17**	**18**
	Foreign	**11**	**10**	**12**	**16**

Source: Drawn from national flow-of-funds balance sheets

To appreciate institutional investors' role in corporate governance, it is useful to distinguish between direct and market-based corporate control as well as between control via debt and via equity. With this in mind we can sketch four paradigms of corporate governance. To begin with, **market control via equity** is the core of Anglo-Saxon shareholder capitalism, where voting rights are enforced and minorities protected, the level of public information disclosure is high, and conflict of interest between managers and shareholders are resolved by takeovers. Institutional investors are active in assessing takeover proposals and selling poorly performing firms' shares. But there are also well-known problems: takeovers are so costly that only major performance failures are likely to be addressed; they may increase agency costs when bidding managers overpay for acquisitions; they require a liquid capital market; and as discussed below, they may give rise to "short-termism".

Market control via debt, involving leveraged buyouts and leveraged takeovers, is in effect a variant – a new paradigm that emerged in 1980s – complementing equity control. This

paradigm stresses that managers of firms may have an incentive to use retained earnings or "free cash flow" in a way that is not in the interest of shareholders. Debt issue – encouraged by banks and institutional investors alike – limits this possibility since increasing interest payments reduce the cash flow that could be invested in unprofitable projects. In addition, when managers are given equity stakes and/or stock options they have an incentive to perform well. With limited free cash flow, new investment needs external finance and, as a result, the viability of such investment is subject to the scrutiny of capital markets and banks. But debt availability is a prerequisite and higher leverage, while reducing the conflict between managers and shareholders, raises the creditor-shareholder conflict. Moreover, if monitoring is inadequate, awarding of stock-options give rise to adverse managerial incentives, as witness the case of Enron.

Direct control via equity rests on board representation and direct contacts by institutional investors at other times. Institutions may challenge excessive executive compensation, takeover defences, and appointment of the same manager as chairman of the board and chief executive officer. They also may remove under-performing managers, appoint more non-executives to the board, and issue codes of conduct for firms. The motivation of institutional investors to control firms in this way – rather than simply selling under-performing stocks – is partly due to the development of indexation strategies that oblige institutions to hold all the constituents of the underlying index. But even in the absence of this constraint, selling large stakes can be costly, notably in the presence of illiquidity. There are important preconditions for institutions' direct control via equity to be effective; for instance, collaboration among institutional shareholders must be permitted, institutional investors must have a fiduciary obligation to vote (as in the United States but not the United Kingdom – but has been mooted by the "Winter Group" on EU corporate law reform), and key information rules – such as on disclosure of executive remuneration – must be in place.

Finally, there is **direct control via debt.** While the first three control mechanisms characterise Anglo-Saxon modes of governance, direct control via debt is a key feature of Continental European relationship banking, where banks maintain corporate control via credit but also as equity holders/representatives sitting on boards. In these circumstances, there are extensive cross shareholdings among companies, low liquidity of equity markets, low public information disclosure, voting restrictions, and discrimination against minority shareholders. Institutional investors in such systems are traditionally largely passive (delegating a monitoring role to banks). An important role is played by laws that protect stakeholders, and

may limit public disclosure. Allen and Gale (2000) point to the benefit of this system in "time series risk sharing", e.g. credit insurance to firms, which is absent in the Anglo-Saxon system.

With an increasing role of institutional investment in Continental Europe, we should expect Anglo-Saxon control mechanisms to become more important. Against this background, what does the empirical research as to the experience of Anglo-Saxon countries tell us? We will not attempt to give a comprehensive answer but rather focus on two issues, namely the effect of institutional activism and the risk of short-termism.

The empirical literature suggests, on balance, that institutional activism is successful in changing management structures, but there is mixed evidence on increased returns. On the positive side, Wahal (1996) found that efforts by institutions to promote organisational change via negotiation with management (as opposed to proxy proposals) are associated with gains in share prices. Strickland et al. (1996) report that firms that were targeted for pressure by the United Shareholders Association[12] experienced positive abnormal stock returns although corporate governance proposals per se had no effect. On the negative side, Del Guercio and Hawkins (1999) found no evidence that activism had a significant effect on stock returns over the three years following the proposals. Gillan and Starks (1995) found some positive returns in the short term but no statistically significant positive returns over the long term, leading them to question the overall effectiveness of shareholder activism. Monks (1997) explains the ineffectiveness of corporate governance activity in raising returns by reference to the political nature of public pension funds. While they are well placed to raise fairness issues such as excessive managerial remuneration, the incentive structure of trustees is not such as to encourage the long-term pressure on management that is needed to obtain positive excess returns in the long term. By contrast, relationship investors – such as Warren Buffet – may be more effective in exerting beneficial institutional pressure on the governance of firms.

As noted, a possible adverse effect of Anglo-Saxon corporate governance is short-termism, which implies an excessively high discount rate on future earnings due to the threat of takeover. Miles (1993) finds some evidence of higher discount rates on cash flows further in future while Poterba and Summers (1992) see mean reversion in stock prices as evidence of short-termism. Against the short-termist hypothesis Marsh (1990) argues that it is incoherent, as prices depend on future earnings; markets favour capital gains over dividends, the

[12] Note that this is actually a coalition of small investors rather than an institutional investor per se.

announcement of capital expenditure and expenditure on research and development boosts share prices. Another observation against the hypothesis is that pension funds hold shares for long periods. Overall, short-termism may be variable over time, varying with the scope of takeovers, but – on balance – the hypothesis is not completely proven.

Turning to our own macro work on estimation of the effects of institutionalisation on the corporate sector (Davis 2002b), we argue that the often contradictory results from micro studies link to the fact that disciplinary effects of corporate governance may impact more widely than on firms targeted, which in some cases might actually obscure the specific effects sought in these studies. We tested a number of hypotheses, finding that in Anglo-Saxon countries a larger institutional share of equity stimulates the distribution of profits in dividends at the macro level; aggregate fixed investment itself is lower as institutions oppose unprofitable investments; and economy-wide productivity growth rises, implying that institutional investment improves the use of capital and labour. These are at least partly consistent with a long-term viewpoint and should apply in Europe as institutions grow.

This takes us to a few concluding observations concerning possible future developments in Continental Europe. The system of direct control via relationship banking is likely to decline in favour of Anglo-Saxon modes. Changes seem to be underway. As US institutions put pressure on direct control via debt to improve corporate governance, European firms seek access to international capital markets and cross holdings begin to unwind. There have also been hostile takeovers even in Germany (e.g. Mannesmann by Vodafone). Banks are seeking to reduce relationship links/sell equity and become investment banks, as profitability of traditional lending declines. Barriers to change remain, however. For example, there continues to be a need to reform laws and company statutes, and shareholder blocs are slow to change (including cross-holders). At the same time, EMU is likely to speed development of capital markets and hence corporate governance, owing – for instance – to companies' desire to issue equity, a burgeoning euro corporate bond market that facilitates leveraged buyouts, and to international diversification of institutions in the euro zone. The EU is seeking to introduce a level playing field on mergers and acquisitions via the Takeover Directive. Arguably, future pension reform will increase the pressure for change.

6 Institutional behaviour, market dynamics, and systemic risks

We now turn from efficiency to stability aspects and begin with a brief review of arguments that suggest, in principle, a positive role of institutional investors on capital market stability. We then discuss in more detail the suggestion that the behaviour of institutions may give rise to periodic herding, which could amplify market volatility. Finally, we assess possible systemic consequences of herding.

In principle, a financial system characterised by institutional investors and extensive capital market financing should be more stable than a bank-based one, especially if there is mispriced safety net protection in the latter and low values of banking charters. For in normal times, institutional investors, having good information[13] and low transactions costs, are likely to speed the adjustment of asset prices to fundamentals; this should entail price volatility only to the extent that fundamentals are themselves volatile. Moreover, the diversity in types and sizes of institutional investors should be stabilising to financial markets. The liquidity that institutional activity generates may dampen volatility, as is suggested by lower average share price volatility in countries with large institutional sectors (Davis and Steil 2001). In a global context, enhanced cross-border portfolio investment undertaken by institutional investors should enhance the efficiency of global capital markets by equalising returns (and hence the cost of capital) between markets.

It can, moreover, be argued that securitised financial systems have important stabilising features, such as ease of marking to market, matched assets and liabilities – notably for mutual funds and defined contribution pension funds – and distance from the safety net. There are wider opportunities to diversify and spread risk. And the multiple channels of intermediation available to the corporate sector in securitised financial systems will reduce the impact of any crises that affect either banks or securities markets (Greenspan 1999, Davis 2000).

But it is also true that a considerable volume of theoretical research focuses on the implications for financial structure and behaviour of principal-agent problems to which institutions are prone. It examines, in particular, potential effects on price volatility, suggesting that institutional investors may at times be subject to rational herding, all seeking to buy or sell assets at the same time (Devenow and Welch 1998, and Bikhchandani and Sharma 2000). In fact, although institutions are usually best seen as merely a conduit through

[13] The concept of superior information of institutions is underpinned by studies showing that initial public offerings that are largely subscribed by institutions tend to do well, while those that are largely purchased by the general public tend to do badly (Trzcinka 1998).

which investors' changing moods are transmitted to financial markets, in exceptional circumstances herding behaviour may induce capital market volatility beyond what would be generated by similar reactions in a more traditional investor base composed of individuals. In other words, the hypothesis is that institutionalisation, in the context of modern capital markets, may amplify market dynamics by virtue of institutions' size and common behaviour. Such herding may be a periodic rather than continuous phenomenon, being much more marked in periods of market stress than in the case of normal market conditions, which in turn makes it more difficult to detect by using standard statistical techniques.

To justify herding, it is useful to recall that fund management is a service involving management of an investment portfolio on behalf of a client. Unless the manager is perfectly monitored and/or a foolproof contract is drawn up, the manager may act in his or her own interest and contrary to that of the fund. Various features of competitive fund management can be seen as ways to reduce principal-agent problems. For example, pension fund managers in countries such as the United States and the United Kingdom are offered short (three-year) mandates, with frequent performance evaluation.

Principal-agent problems and the means that are used to resolve them could give rise to institutional behaviour that induces capital market volatility. One underlying mechanism is reputation – the desire of managers to show they are of good quality. In the model of Scharfstein and Stein (1990), herding occurs because the market for fund management skills takes into account both the success of investment strategies (based on skills and information) and the similarity to others' choices. The first is not used exclusively, since there are systematically unpredictable components of investment, while good asset managers are expected to receive correlated signals (they all observe the same relevant pieces of information); hence, all good managers may be equally unlucky; however, a manager who alone makes a good investment may be a lucky but poor-quality manager. It follows that mimicking others is the best way to show quality; as a result, managers avoid positions that could result in a large deviation from the benchmark and, therefore, will not seek contrarian positions that might otherwise help to stabilise markets. It is notable in this context that according to the Financial Times (1999), 75 percent of UK pension funds still use a peer group benchmark. Davis and Steil (2001) in a questionnaire for global asset managers found that relative rather than absolute return was one of the crucial aspects of asset manager competition.

Herding could also result if institutions infer information from each others' trades, about which they are relatively well informed compared to individuals. In these circumstances, herding occurs as information cascades (Shiller and Pound 1989, Bikhchandani *et al.* 1992). This may be a marked feature if some managers have a reputation for being well informed. Moreover, they may be reacting to news, which they all receive simultaneously, in a similar manner.

The risk management framework may also play a role. If defined benefit pension funds and life insurers have minimum funding limits, they are subject to heightened shortfall risk (i.e. that asset values fall below estimated liabilities) if asset values decline. This may entail herding either via direct sales of equities for bonds or by the effects of hedging in so-called dynamic hedging, contingent immunisation, or portfolio insurance strategies on market prices. It also severely limits funds' stabilisation role, that is, the degree to which they are free to act in a contrarian manner.

Further elements of the overall framework of asset allocation dominated by institutional investors may, while not strictly involving herding, still give rise to positive feedback mechanisms that increase market price momentum. The increasingly narrow style distinctions being employed by mutual fund managers as a means of communicating with investors may imply that swings in investor sentiment lead to more leverage on market prices as they switch between such narrowly defined asset classes. The increasing focus on the "best-performing fund" over a recent period, combined with managers' desire to stick to a narrowly defined style, can lead to disproportionate rewards for good performance of a style, which lead on to sharp price rises in the asset class concerned. The popularity of momentum trading, which was seen as highly profitable in the bull market of the late 1990s, illustrates this point.

A simpler mechanism may underlie sharp movements by open-end mutual funds, namely purchases and sales by households that oblige the manager to liquidate assets immediately to redeem the units or in an upturn to purchase stocks. This may be a powerful mechanism if households are risk-averse and subject to major shifts in sentiment. It may be increased by the shift to defined contribution pension funds, with assets typically held in mutual funds and their disposition often at the discretion of the individual investor. Risk-averse investors may sell funds in response to short-run moves, contrary to appropriate long-run time horizons of their (retirement) assets. However, evidence from the Investment Company Institute (1995,

1996, 1998) tends to suggest that US mutual fund shareholders have at least in the last two decades not sought to liquidate en masse when markets fell.

Herding is less likely to have a market impact when other investors are able to take offsetting contrarian positions. But not all institutions are at liberty to act in a contrarian manner. Mutual funds must adhere to the asset allocation strategy set out in their prospectus. Moreover, whereas the overall strategy of leveraged institutional investors, such as hedge funds, is precisely to adopt contrarian positions, they may at times of market stress have limited scope for manoeuvre. They may, in fact, be forced to herd, given that bank credit may be sharply withdrawn in the downturn. This was apparent in the bond market crisis of 1994 as well as in the Russian financial crisis and the insolvency of the hedge fund LTCM in 1998. Pension funds and life insurers have the greatest freedom to act as contrarians, but as noted, the tightening of solvency regulations in recent years is also constraining them in the current bear phase (Davis 2003).

Herding by institutions need not always be destabilising. It may speed the market to a new equilibrium price. Indeed, Wermers (1999) suggests that US mutual funds on average tend to speed the price adjustment process for individual stocks to which they herd (although overshooting of equilibrium levels could not be ruled out). What is needed for herding to be of concern is for institutions also to follow strategies that may be contrary to fundamentals and profit maximising—buying high and selling low. Cutler *et al.* (1990a) suggest that institutions may themselves act in this manner. This may be a consequence of biases in judgment under uncertainty by fund managers, which leads to extrapolative expectations or trend chasing rather than focus on fundamentals. Institutions may also seek indirectly to provoke positive feedback trading, since in the presence of less-informed investors such as households, it is rational for institutions (such as hedge funds) to buy in the knowledge that their own trades will trigger further feedback trading by less-informed investors, thus amplifying asset price movements.

Lest the discussion of the link between institutional behaviour and market volatility be too negative regarding competitive asset management sectors, we note that volatility could also be induced if monitoring is weak. Mutual fund managers may transact repeatedly to generate commission income in uncompetitive markets such as Switzerland, thus generating market volatility. Furthermore, asset management sectors in Germany and Japan, which are

effectively oligopolies, offered historically poor returns and high costs. Fortunately, the Single Market and EMU are helping to eliminate such oligopolies in the EU.

What could all this imply for financial sector stability? As a consequence of herding, institutional investors may sporadically give rise to financial instability from the point of view of regulators and market players, which will be accentuated as they grow. Already in existing experience of financial instability one can distinguish two particular types of financial turbulence they give rise to.

A first type involves extreme market price volatility after a shift in expectations and consequent changes in institutional investors' asset allocations. Whereas misaligned asset prices and sharp price movements during corrections that result from institutional herding may not in themselves have systemic implications, these may emerge when such movements threaten institutions that have taken leveraged positions on the current levels of asset prices. Examples are the stock market crash of 1987, the ERM crisis in 1992-3, the 1994 bond market reversal, and the Mexican crisis in 1995.

A second type of turbulence involves protracted collapse of market liquidity and issuance, again often involving one-way-selling by institutional investors as they seek to shift asset allocations simultaneously. Such crises tend to characterise debt markets rather than equity or foreign exchange. The risks are acute not only for those holding positions in the market but also for those relying on the market for debt finance or liquidity – which increasingly include banks. Examples in the past have tended typically to be rather specific and idiosyncratic markets (such as the US junk bond market and the ECU bond market), which by nature relied on a narrow investor base, market maker structure, and/or issuer base. The events following the Russian default and the rescue of LTCM were particularly serious, as liquidity failure was a threat in markets such as those for US securities repurchases, swaps, commercial paper, and corporate as well as Treasury bonds.

Three points may mitigate systemic concerns, first that insurance companies and defined benefit pension funds are not easily subject to runs on suspicion of insolvency, given they have matched long-term assets and liabilities, while mutual funds and defined contribution pension funds are not themselves subject to solvency risks given that credit risks are passed on directly to the household sector. Second, most claims on institutional investors are not insured, or the insurance is mutual, thus generating incentives for interfirm monitoring. Third,

given the ease of adopting market value accounting for securitised claims, it can be argued that debt crises are much less likely in corporate bond markets than for banks where the deterioration of credit quality is hidden from view in the balance sheet. Markets can still make mistakes, however, as witness the repeated bond-based debt crises of the late Victorian period; and US experience suggests bond markets generally find rescheduling after financial distress difficult (Gilson et al 1990).

Beyond the consequences for asset price volatility and securities market liquidity, further risks may arise for the banking sector in an institutionalised financial system. A lesser proportion of saving being channelled via banks, given lower deposit inflows and greater competitiveness of capital market financing, may give rise to banking crises of the familiar type, where banks take increased risks so as to boost their profitability in a highly competitive market situation while higher quality credits seek capital market financing. It can be argued that the banking crises in a number of countries in the early 1990s –including Japan - were linked to the heightened competition banks faced from the capital markets. In this context, note that a number of authors, including Demirgüç-Kunt and Detragiache (1998), have looked at the effect of financial liberalisation on systemic risks; they found that banking crises were more likely to occur in liberalised financial systems. Crises tended to occur a few years after liberalisation, and were linked to a decline in bank franchise value, because monopoly power is eroded (see Hellman *et al*. 2000). Securities market competition driven by an increased proportion of saving directed via institutional investment can arguably have a similar effect on franchise values and risk taking, which could become an increasing problem in the EU, given the simultaneous scope for increasing competition in the banking sector itself.

To conclude, while the institutionalisation of investment has the potential to support financial sector stability, it does – at times – seem to be linked to a rise in volatility for stocks held by institutions and/or liquidity failures, notably in debt markets. The implication is that regulators and monetary policy makers need to focus closely on institutional behaviour – an issue that we address in Section 8. But first, it is useful to highlight some financial stability issues related to a specific type of institutional investor – namely life insurance companies.

7. Financial stability and life insurance companies

Life insurance companies and prospective dangers to them as the population ages offer an interesting illustration of the new stability risks from institutional investors (Davis 2002c). They are of major relevance for the EU given the predominance of that sector in most countries (Table 6).

Increasing credit risk taking by insurance companies may aggravate the risk to insurance companies and, thus, annuities unless credit risk are properly priced and reserved for. Credit risk concerns are emerging for life insurance companies at the time of writing, exposure to which has been prompted by a desire for higher yields than are available on government bonds. In particular, defaults on corporate bonds are expected to impact on insurance companies that have sought low-rated high-yield bonds in search for sufficient return (Financial Times 2002). Background to this includes increased competition, lower inflation reducing market yields, and the current shortage of government bonds. There remain questions whether insurers' credit risk assessment is adequate, with simple reliance being placed on fallible credit ratings (IMF 2002b) or inappropriate application of actuarial approaches to volatile credit risks.

Furthermore, credit risk has been transferred from banks to insurance companies via securitised claims (such as collateralised debt obligations) and credit derivatives at an unprecedented rate (Bank of England 2001). Such a process is widely seen as driven by regulatory arbitrage, whereby insurance companies are seen as less regulated than banks and so are willing to hold credit risk at prices banks cannot afford (IMF 2002a).

Insurance companies may also become insolvent when they guarantee a rate of return on policies in excess of that achievable in the market. For example, Japanese life insurers basically offered forward rate agreement options to their clients (mainly on life policies rather than annuities), at prevailing rates such as 5.5% up to 1992 (Fukao 2002). There was no duration matching of assets and liabilities, partly because most Japanese bonds are 10-year maturity. Average duration on the asset side has been 5 years and liabilities 15 to 20 years. As Japanese long-term interest rates have now fallen to 1–2%, the firms have been unable to make returns sufficient to meet guarantees to policyholders. The life insurers also faced huge bad debts on loans. Accordingly a number have become insolvent. Regulatory failures compounded the problem; owing to asset restrictions, firms were obliged to hold mainly government bonds in their portfolios; the firms that failed had declared satisfactory solvency margins before closure, and more generally the crisis was worsened by forbearance by the supervisory authorities. A similar case arose for the UK life insurer Equitable Life (Davis

2002c). There has been comment on possible difficulties of life insurers in southern European countries such as Italy, Spain, and Portugal as well as Belgium and France.

Further perspectives on risks are provided by the consequences of population ageing for life insurers. As pointed out by the Financial Services Authority (FSA 2002), the UK financial regulator, one of the key risks for annuities for insurance companies is that owing to market-share competition or simple errors, they underestimate the average age to which people live. This could in turn lead to insolvency of an insurance company heavily reliant on annuities. Indeed, Blake (1999) suggests that UK insurance companies have already underestimated life expectancy of their annuitants by two years or more, which could lead to major losses. US firms made similar losses in the 1930s due to lower-than-expected nominal interest rates during the deflation of the Great Depression and an underestimation of longevity. Well-capitalised life insurers could charge such losses to shareholders. But there are grounds for caution when capital is low and liabilities are underestimated. There are clearly great difficulties in forecasting mortality, especially given the possibility of cures for cancer and heart disease in coming years.

As discussed in Davis (2002d), the prognosis among forecasters is for a major build-up of aggregate retirement funds in OECD countries owing to saving by workers in the large baby-boom-prime-saving cohort up to around 2010, followed by dissaving, including a switch from pension funds to annuities.

As regards the build-up phase, Davis (ibid) points out that even if funds are invested in life insurance companies, avoidance of systemic risk is not guaranteed. Owing to the nature of their liabilities, as well as regulations, life insurers tend to invest heavily in domestic bonds. A shortage of government bonds that may continue for some time ahead – as well as competition in asset management that prompts life insurers to aim at higher returns – is already prompting more investment in higher risk assets such as high-yield bonds and low-rated securitised loans. Besides their general effect on credit expansion, which could generate fragility in the non-financial sectors, such funds may feed a property boom, leaving the insurers as well as banks vulnerable to a downturn in the property cycle, as was the case in the Jamaican insurance crisis of 1996 (IMF 2001).

Similar issues may arise when insurance companies focus increasingly on debt claims as members approach retirement

When baby boomers retire and dissave, aggregate saving is liable to decline. This will tend to put downward pressure on asset prices, implicitly affecting the real interest rate or the risk premium. For example, Schieber and Shoven (1994) note that given the correlation of ageing in OECD countries and the likely decumulation of defined benefit pension fund assets, there could be widespread falls in asset prices, linked to high real interest rates (see also Erb *et al.* (1997)). But not all researchers agree that a meltdown is likely, see Poterba (1998). Changes in issuance, for example, might smooth equity returns. Nevertheless, the possibility means prudence is warranted.

In sum, this and the previous section clearly indicate that the growth in institutional investors is not neutral to the stability of the financial sector. This raises the question of how and – probably more important – how well institutional investors are regulated.

8. The prudential regulation of institutional investors

There are considerable differences in the regulation of the behaviour of the various types of institutional investors. The tightness of regulation in turn tends to reflect the differences in fiduciary obligations and in the contractual obligations and their implications for risk bearing. In particular, regulation reflects differences in the degree to which insurance features are bundled with asset management. Mutual funds are rather lightly regulated. The main regulations of mutual funds link to information disclosure to holders (as well as various other investor protection provisions). Reflecting the nature of obligations, life insurers and defined benefit pension funds are generally subject to forms of solvency or minimum funding regulations and may also have restrictions on the disposition of assets. Defined contribution pension fund regulation is typically intermediate in terms of tightness. There is no particular focus on financial stability more generally. As noted, an important reason for this is that unlike banks, institutional investors are not in general subject to panic runs because they have assets and liabilities of similar maturity.

Some have argued that a wider range of institutions may need to be covered by lender-of-last-resort assistance in the context of an institutionalised financial system. Federal Reserve policy during the 1987 stock market crash aimed to avoid systemic risk arising from failure of investment banks, which was ensured by a general easing of liquidity and moral suasion on commercial banks to lend. The private sector rescue of the hedge fund LTCM was

undertaken with the good offices of the Federal Reserve Bank of New York because of fears of both the authorities and major financial institutions that serious disruption could follow an unwinding of LTCM's portfolios. It cannot be ruled out that non-banks may need direct public sector rescues in the future. For example, as discussed in Edwards (1995), the stability of money market mutual funds could be threatened in some circumstances. A fund that breaks par value could plausibly lead to a run on such funds, which could lead to a more general liquidity crisis in the money markets. There is an issue whether individuals realise that such funds are not subject to deposit insurance and whether demands for policy assistance could become loud if a crisis supervened.

Liquidity failure of securities markets (money, bond, and derivatives markets), which may be generated by institutional behaviour, may also raise prudential concerns. Notably, funding difficulties of banks and other intermediaries are a potential source of instability. Furthermore, markets are seen as a repository for liquidity. Derivatives markets are often vital for the smooth functioning of asset and liability management strategies, so failure of such markets may threaten wider defaults on the part of intermediaries. If they consider that systemic risks are likely to arise from market liquidity failure in debt securities markets, central banks may intervene, either by offering liquidity assistance to market participants or even by maintaining market liquidity using their own assets. Clearly, moral hazard may arise for securities markets in the same way as for banks, with imprudent underwriting and market-making practices being followed on the assumption that liquidity will be maintained; non-financial companies would also be more willing to increase leverage via securities markets.

The incidence of securities market liquidity crises may be reduced by policy action that increases the robustness of markets. For example, issuance of standardised benchmark securities by governments and avoidance of interest rate instability as a by-product of monetary policy[14] are strategies that can be helpful to ensuring market liquidity. Robustness of intermediaries requires adequate capital, encouraging clearing and settlement, adequate management and control procedures, and inducing firms to monitor each other. An obvious additional point is that both intermediaries and end-users of securities markets must diversify their sources of funds and of liquidity to protect themselves against problems in individual markets. Crisis scenarios could play an important role in such calculations. Integration of

[14] Volatile and unpredictable interest rate movements may undermine the profitability of market making, by increasing position risk as well as driving away liquidity traders.

capital markets as is taking place due to EMU is likely to make markets more robust; indeed, historically, liquidity crises were in narrow markets dominated by few market makers.

As cited by Bingham (1992), a traditional view is that robustness of debt securities markets may also require some limits to competition between market makers, possibly via designation, recognition, and licensing rules. In this view, economic rents associated with market maker status may be needed to ensure that they devote sufficient capital to prevent frequent liquidity collapses. Alternatives to entry limits are low levels of disclosure of trades and the ability to post indicative prices. One reason why this approach has not typically been adopted (and indeed remaining cartels have been liberalised) is that such markets might be subject in the short term to oligopolistic abuses, with high fees, wide bid-offer spreads, and risks of price manipulation. In the longer term, trading in such markets would be disintermediated. More generally, the number of market maker markets, in the sense of having an obligation to make markets, is declining. The more common type of market nowadays is the dealer market with no obligation to make markets. In such markets, high levels of capitalisation might protect the dealer from bankruptcy but could not guarantee that market liquidity would always be maintained since the dealer has no obligation to do so.

In respect of trading per se we see no strong reasons to change the prudential regulation of institutional investors to reduce market volatility, e.g. by requiring longer mandates or holding periods of shares. Herding is in our view largely an issue that markets and regulators must learn to live with, also in the light of benefits to market efficiency. Rather, the need is for an ongoing shift to prudent-person rules as proposed in the IORP Directive and their vigilant enforcement to ensure that institutions may optimise their risk-return profile in the light of liabilities. Indeed, a close focus on the viability of guarantees being sold in the light of historical returns in asset markets would also be warranted, in the light of experience of life insurance sectors such as those of Japan. Meanwhile, the move to defined contribution funds could reduce some aspects of herding, notably those related to solvency. More controversially, there could be a need to apply solvency regulations on pension funds over a number of years, rather than months, to prevent “fire sales” of real assets during price falls and allow institutions to act in a contrarian manner – the trade-off could be moral hazard if such regulatory forbearance were accompanied by implicit state guarantees. It is also useful for reporting by institutions such as hedge funds to be sufficiently detailed and timely to highlight concentrations of holdings in certain markets leading to overhangs and risks to

stability. But obtaining such a result is likely to be difficult given the need for international agreements on regulation, including by offshore centres.

9. Conclusions

The growth of institutional investors is a key financial innovation of recent years. It is entailing a shift away from traditional bank intermediation, necessitating a re-evaluation of financial market structure and behaviour. The impact is likely to be of particular importance in Continental Europe, given that institutionalisation will be spurred in the future by the interaction of EMU, autonomous financial market developments and population ageing in the context of unsustainable social security pension systems. All of these tend to shift the focus of the financial system towards an Anglo-Saxon paradigm. This will necessitate considerable adaptation by regulators and market participants alike. We have traced impacts on financial structure, saving, investment, corporate governance and on financial stability. Generally, we suggest that an institutionalised financial sector is a more efficient one in a broad sense, but there are also risks to stability from asset manager incentives, including aspects of risk management. Current risks for life insurance companies illustrate the evolving difficulties of institutional investors as competition increases and financial structures evolve, while the situation in Japan shows the dangers of inadequate regulation. Yet, vigilant implementation of appropriate prudential regulation should suffice to prevent serious instability in a financial system that is increasingly shaped by institutional investors.

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