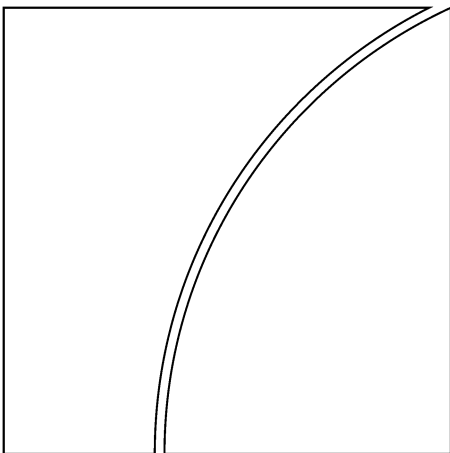


Committee on the Global Financial System



Incentive structures in institutional asset management and their implications for financial markets

Report submitted by a Working Group established by the
Committee on the Global Financial System

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Preface

The Committee on the Global Financial System (CGFS), known until 1999 as the Euro-Currency Standing Committee, serves as a discussion forum for the central bank community on financial stability questions. Central banks, being placed at the centre of the financial system, have a long tradition of analysing financial market developments. This applies to both the operational, ie monetary policy-related, and the financial stability perspectives. Furthermore, given their responsibilities in the latter area, central banks are, in practice, charged with encouraging, and actively contributing to, the development and maintenance of a robust financial market infrastructure.

On that basis, the CGFS has, in the past, frequently been asked to examine the potential implications of innovations in financial instruments and global financial market practices. As part of the Committee's ongoing work in this area, the CGFS decided, in September 2001, to set up a Working Group to examine the incentive structures of institutional asset managers and to identify possible implications for financial markets of the main developments in that industry. The institutional asset management industry has grown substantially since the mid-1990s, matching the rise in stock market valuations up to early 2000. Going forward, since its growth is driven by underlying demographic shifts and pension reform, this trend is likely to continue, well beyond the present cyclical downturn. Given its growth and, hence, the increasing importance of the industry in a number of financial markets, structural developments can be expected to potentially affect market outcomes, an issue of great interest to the Committee and the central bank community.

The Working Group on Incentive Structures in Institutional Asset Management was chaired by Michel Cardona of the Bank of France. A list of the members of the Working Group is annexed to this report. The Group joins with the Committee in expressing appreciation for the cooperation of the industry representatives that agreed to participate in the Working Group's interview process. The Committee believes that this new Working Group report is yet another example of the cooperative effort between central banks and market participants that tends to characterise CGFS-initiated projects.

The CGFS continues to be interested in this topic and, as part of its regular monitoring exercise, intends to review developments in the institutional asset management industry in the future.

Yutaka Yamaguchi
Chairman, Committee on the Global Financial System
Deputy Governor, Bank of Japan

Executive summary

The institutional asset management industry has become an important feature of modern financial markets, with the scale of this business's importance readily apparent from the size of assets under management by different types of institutional asset managers. With asset management involving a delegation process, shaping appropriate incentive structures is essential for aligning the incentives of owners of funds with those of the institutional managers of these funds. Furthermore, because the industry is still regarded as an evolving business, its strong recent growth is expected to continue well into the foreseeable future. As a result, structural changes in the industry, to the extent that they affect asset managers' incentives, are likely to have their effect on their decision-making and, possibly, market outcomes. Ongoing industry trends have therefore an obvious potential to change institutional investor behaviour in ways that can be important for global financial markets.

Central banks have, for various reasons, a long tradition of analysing financial market developments and, given their responsibilities with regard to financial stability, are essentially charged with promoting the development and maintenance of robust financial systems. Based on this set of responsibilities and against the background of the industry's increasing importance, the Committee on the Global Financial System (CGFS), which monitors the stability of global financial markets for the G-10 governors, initiated a Working Group on Incentive Structures in Institutional Asset Management.

The Group was asked to gather information about the evolving structure of the asset management industry and possible implications of ongoing industry trends for the financial markets. This report documents the Group's findings, based on the available research and two rounds of interviews with more than 100 industry practitioners from 14 countries.

Ongoing industry trends

The report, after setting out the asset management industry's structure and some additional background, reviews ongoing developments in the industry. Based on this review, the Working Group identifies the following three broad trends:

- **Broadening array of asset classes:** The rise in professionally managed assets, both in absolute terms and as a share of overall financial wealth, was complemented by rising interest in non-core markets and, recently, some growth in funds placed with unregulated asset managers.
- **Growth of passive asset management:** The development of capitalisation-based benchmark indices and the recognition of the effectiveness of core markets have led to an increasing popularity of passively managed portfolios. This trend was, until recently, further supported by rising stock market valuations, as it presented a cost-effective way of assuming equity exposure in a bull market. In addition, the dividing line between active and passive mandates has tended to become increasingly blurred, leading to sizeable amounts of near-passively managed funds.
- **Consolidation and specialisation:** Due to the scale economies involved in managing financial assets, particularly for closely indexed funds, consolidation in the industry has been encouraged. At the same time, due to the industry's branching out into research-intensive, non-core asset classes, specialisation has been more pronounced among active asset managers.

In addition to these broad tendencies in the development of the asset management industry, the report discusses a number of specific developments in the incentive structures in place for institutional asset managers. These changes, which can in part be seen as reflections of the more general trends highlighted above, can be summarised as follows:

- **More stringent investment mandates:** As strategic asset allocation has increasingly been delegated back to fund owners, investment mandates have become more specific. Overall, this seems to have led to a tiering and narrowing of investment mandates, enhanced by an increasing emphasis on relative performance measurement, narrowing tracking errors and more pervasive use of other investment constraints, such as limits on investing in specific securities or diversification rules.

- **Performance reviews vs investment styles and processes:** While regular performance reviews can lead to pressure on asset managers to shorten investment horizons, ultimate investors have begun to increasingly focus on stable investment processes and investment style consistency. As a result, historical performance, although part of the evaluation process, is, at least in the wholesale business, no longer regarded as the sole driving factor in manager evaluations.
- **Importance of performance-related compensation schemes:** The industry (excluding hedge funds and other alternative investment vehicles) favours schemes in which management fees are a fixed percentage of assets under management, with fee levels differing across management styles and asset classes. Although not directly performance-based, such schemes reward the relative performance of asset managers (with standard market indices used as benchmarks) indirectly, with the nexus between performance and fund inflows acting as an implicit incentive structure.

Core findings

The Working Group identified a number of interesting potential implications for financial markets. As many of the ongoing developments relate to the incentive structures in place, ie to structural features that are meant to align the incentives of ultimate investors and their delegated asset managers, all of these changes are bound to have a bearing on asset manager behaviour.

The main implications for financial markets fall into three broad areas, parts of which have already received considerable interest by academics and market practitioners. Drawing on these sources, the Group tried to come up with an assessment as to how changing structural features in the asset management industry would, or would likely, affect financial markets. The absence of fully convincing empirical evidence, however, barred any definitive judgment on these issues. Nevertheless, the Group wanted to highlight potential implications in the following areas:

- **Market efficiency and volatility:** These implications relate to institutional investors' incentives and their ability to engage in strategies that seek to profit from making informed judgments about long-term asset price relationships. Some of the ongoing developments suggest that such incentives might be reduced; for example, through the general tendency towards the narrowing of investment mandates, the adoption of a limited number of market benchmarks in evaluating performance, and the reduction of permissible tracking errors. At the same time, other developments suggest counterbalancing effects, for example via increased asset class choices, the shift of strategic asset allocation back to owners of funds, or the rising proportion of assets managed by alternative investment vehicles. As these effects are at least partially offsetting and given the lack of empirical evidence, there is, on balance, no clear-cut support for the hypotheses that aggregate market efficiency and volatility are unduly affected or that institutional investors systematically contribute to large-scale asset price misalignments. However, short-lived effects along these lines are conceivable under specific circumstances; in addition, constraints on the behaviour of institutional investors may have idiosyncratic effects at the level of individual securities, as documented by recent empirical studies. Academic research, therefore, seems to hold the promise of improving the understanding of these various phenomena.
- **Market liquidity:** A similar reasoning applies to any effects on market liquidity. While, in theory, trends in institutional asset management could constrain the behaviour of institutional investors in ways that might consistently limit their ability to provide market liquidity, the group was not able to document such an effect. On the contrary, institutional asset management may have fostered issuance activity and securitisation in various non-core markets, with potential consequences for the relative trading liquidity of the respective assets. In addition, assets included in prominent market indices are likely to find their liquidity enhanced, as institutional funds whose performance is benchmarked against these indices include those assets in their trading activities.
- **Risk management:** Several developments in the industry, such as the increasing emphasis on ultimate investor decision-making and risk-taking, are likely to increase the structural demand for risk transfer instruments and guaranteed products, such as retail investments with a capital guarantee on the invested funds. This, in turn, calls for an improvement of asset managers' internal and external communications and the way risk management is

implemented by the industry. In particular, providers of such products would need to accurately assess the costs involved and ensure correct pricing as well as put aside appropriate resources to reserve against possible losses.

Policy-related implications

Based on the above, the following policy-related implications of the Group's findings can be highlighted. First, it appears that parts of the institutional asset management industry have moved towards offering investors increasingly standardised investment products and approaches. A direct implication of this observation is the need to ensure that, going forward, ongoing industry trends do not result in developments that could ultimately affect the functioning of financial markets. Therefore, providing ultimate investors with as large a choice of potential investment vehicles and strategies as possible seems to be key in diversifying the behaviour of asset managers. This, in turn, calls for promoting an environment in which ultimate investors can make informed decisions about investment strategies and about how these strategies could best be implemented by asset managers.

Second, a set of more specific recommendations arises, which fall into four broad and somewhat overlapping categories:

- **Encouraging improved risk management and disclosure:** Many of the trends highlighted above suggest that risk management demands on both the asset manager and household levels are bound to increase. Improvements in this area are therefore likely to be beneficial. In addition, benefits can be expected from enhancing the transparency of alternative investment vehicles, particularly when offered to retail clients. Similarly, the more risk is being transferred back to the final investor, the more important the need for asset managers to provide investors with detailed and accurate information on the characteristics of the products they are offered.
- **Awareness of conflicts of interest:** Potential conflicts of interest are an inherent feature of financial delegation processes. While transparency, disclosure and a competitive environment can go a long way in terms of restraining or avoiding conflicts of interest, certain features of the institutional asset management industry could potentially bias the decisions of ultimate investors. Against this background, the incentive structures of investment consultants, index providers, rating agencies and fund managers' sales networks are likely to gain more attention going forward.
- **Avoidance of explicit and implicit barriers to market entry:** To support market efficiency and liquidity, care should be taken to maintain an environment that encourages market entry by pooled investment vehicles in general and by specialised investment pools seeking to exploit arbitrage opportunities in particular. A similar reasoning applies to other parts of the institutional investment industry, particularly if characterised by a high degree of concentration and potential conflicts of interest.
- **Awareness of regulatory trade-offs:** Regulatory actions and accounting rules can affect the efficiency and dynamics of financial markets. In addition, regulation can hamper market development by imposing constraints on the activities of institutional asset managers. Regulation, therefore, tends to involve a trade-off between the underlying rationale for regulating financial markets, eg investor protection, and the costs imposed on other market participants. Moves towards further regulation should therefore be carefully evaluated against the background of these trade-offs, while current regulation might be reviewed in the light of these effects.

1. Introduction

In September 2001, the Committee on the Global Financial System (CGFS) established a Working Group to learn more about the institutional asset management industry, with a view to enhancing the Committee's understanding of how various types of incentive structures affect asset managers' behaviour.¹ Specifically, the CGFS Working Group on Incentive Structures in Institutional Asset Management was asked to:

- **describe** the developments in institutional asset management and the structural forces behind these developments, based on the relevant literature, on the available data and on interviews with market participants;
- **identify** market practices relating to the monitoring, performance assessment and compensation of asset managers, and to **consider** how these practices might affect investment behaviour;
- **assess** potential implications of changes in institutional asset management for financial markets, with a particular emphasis on asset price dynamics and market liquidity;
- **suggest** productive directions for future research.

To provide a foundation for its efforts, the Group started its work by surveying the relevant literature and conducting a small number of interviews with London-based investment consultants. The literature review informed the Working Group's discussions and unearthed important issues, such as the specifics of contract design for institutional asset managers and possible linkages between contractual relationships and asset managers' behaviour.

These issues were further explored in two rounds of interviews with more than 100 industry practitioners from 14 countries. To facilitate these interviews, the Working Group employed common interview guidelines.² This report summarises the Working Group's analysis, based on these inputs and the Group's interim report.

2. Industry structure

Institutional asset managers are professionals who construct and maintain investment portfolios on behalf of clients, ie individual investors, companies, banks or pension funds. Assets under management include fixed income securities, equities and commercial real estate. The worldwide growth of the institutional asset management industry has been accompanied by a fundamental restructuring of the industry. This section examines sources of overall growth in the industry as well as structural changes, employing pre-existing literature³ and interviews with market participants conducted by members of the Working Group.

¹ The CGFS approved the Working Group's mandate at its 11 November 2001 meeting. The mandate is reproduced as Annex 1 of this report. Institutional asset managers and their behaviour have attracted growing policy interest over the last couple of years. One of the more recent examples of this heightened interest is the so-called Myners (2001) report, which was commissioned by the UK Treasury in 2000 (www.hm-treasury.gov.uk/mediastore/otherfiles/31.pdf). In addition, the OECD has, over the years, produced comprehensive overviews on institutional investors in the OECD countries.

² The interview guidelines and the literature survey are reproduced as Annexes 2 and 3 of this report.

³ Bis (1998), OECD (1998) and Walter (1998).

2.1 The structure of the industry

2.1.1 Institutional investors

Institutional investors have been categorised as *collective investment vehicles*, *pension funds* or *insurance companies*. Increasingly, however, the distinctions underlying these categories no longer fully capture the most significant differences among industry players. Many insurance companies, for example, have launched their own investment funds and have become involved in pensions provision. Defined benefit pension funds have a life insurance component to them, while banks are acquiring and launching money management and insurance companies. Thus, our use in this report of traditional breakdowns of institutional asset management is meant to capture the functional characteristics, as opposed to the institutional definitions, of industry players.

Collective investment vehicles

The fact that the overall costs of diversification tend to be large generates an incentive for individual investors and firms to place their money in pooled investment vehicles, which include mutual funds, hedge funds and private investment partnerships. These vehicles aim at achieving an attractive risk/return profile by pooling the assets of many investors. This lowers average costs through better diversification (eg due to indivisibilities of share size), more efficient information collection and processing, the spreading of fixed operational costs over a larger asset base (particularly true for “generic” fund management, such as index funds), and the use of size as a tool in the market environment to obtain better trading terms (eg lower bid-ask spreads and commissions).

Investors in collective investment vehicles are individuals (in the retail part of the business) or firms and charitable foundations (in the wholesale business). These investors are entitled to the net returns on the investment portfolio and bear all associated risks. In a number of countries, mutual funds have become the primary tool for individual investors’ investment in marketable securities.

The term mutual fund comprises both open-end and closed-end funds, the majority of which are actively managed. Open-end mutual funds include index funds, with portfolios constructed to replicate the performance of a particular market index, while closed-end funds may include hedge funds and similar vehicles whose shares are not publicly offered at all.⁴

Pension funds

Funded occupational or individual pension schemes are the private sector counterparts of funded and non-funded, so-called pay-as-you-go, public social security schemes. Occupational pension funds, typically sponsored by large employers or trade unions, collect and invest contributions from the beneficiaries and sponsors for the purpose of providing for the beneficiaries’ retirement entitlements. The management of the investments may either be performed by the fund itself (“in-house”), or may be delegated to independent external asset managers. The Working Group’s interviews with pension fund managers suggest that the use of outside managers is becoming standard in most countries.

The two main types of pension funds, defined benefit (DB) and defined contribution (DC) schemes, differ significantly in the distribution of investment risk between the sponsor and the beneficiary. In DB schemes, entitlements are typically calculated on the basis of the employee’s salary profile and formally represent liabilities of the sponsor, who is responsible for making contractual pension payments - notwithstanding the investment performance. Hence, the beneficiary’s risk tends to be limited to default by the sponsor.⁵

⁴ Open-end (mutual) funds stand ready to sell new shares to the public and to redeem outstanding shares on demand at prices set by reference to the net asset value of the fund, while closed-end funds have a fixed number of issued shares that are traded in the open market. So-called *funds-of-funds* represent portfolios of investments in other pooled investment vehicles, which can include hedge fund shares and other so-called alternative management techniques. Finally, some mutual funds, called *exchange-traded funds (ETFs)*, are now listed for trading on official exchanges.

⁵ Some countries have initiated government-guaranteed safety nets to insulate DB pension fund beneficiaries from this exposure to sponsor default.

Table 1
Financial assets of institutional investors

Country	1992					2000				
	Total assets	Investment companies	Pension funds	Insurance companies	Other	Total assets	Investment companies	Pension funds	Insurance companies	Other
	(% of GDP)	(investor financial assets in % of total financial assets)				(% of GDP)	(investor financial assets in % of total financial assets)			
AU	60.2	11.1	35.4	49.7	3.7	122.2	16.2	50.5	30.3	3.0
BE	46.0	34.1	5.5	57.5	2.9	106.7	50.7	5.5	40.9	2.9
CA	66.3	14.3	47.2	38.5	0.0	110.1	32.5	40.3	27.3	0.0
FR	60.6	58.9	0.0	41.1	0.0	133.8	46.5	0.0	53.5	0.0
DE	33.8	26.0	8.5	65.5	0.0	80.8	47.5	4.1	48.4	0.0
HK	na	na	na	na	na	115.3	13.4	19.5	64.8	2.3
IT ¹	18.5	18.3	17.0	32.7	32.0	98.2	39.7	4.6	21.1	34.6
JP ²	103.7	8.8	41.8	49.3	0.0	141.1	8.0	43.9	48.1	0.0
LU ³	1,564.5	100.0	0.0	0.0	0.0	4,319.8	99.0	0.0	1.0	0.0
NL	132.8	8.5	57.3	32.5	1.7	211.4	12.8	54.5	31.9	0.8
ES	24.6	43.9	18.0	38.1	0.0	64.4	51.3	13.5	35.2	0.0
SE ⁴	75.7	17.8	2.1	43.2	36.9	170.2	30.1	1.8	46.9	21.2
CH ⁵	146.0	7.1	51.3	41.5	0.0	249.9	14.8	48.4	36.8	0.0
GB ⁴	115.2	11.4	45.8	42.8	0.0	226.5	13.8	37.6	48.6	0.0
US	133.3	20.2	37.5	27.2	15.1	197.7	33.0	35.4	20.6	11.1

¹ The category "Other" includes individual portfolio management services. ² Data from Japanese flow of funds table. ³ Pension fund data included in insurance companies. ⁴ Most recent data for 1999. ⁵ Preliminary data for 2000. na: not available.

Source: OECD Institutional Investors Statistical Yearbook; national data; own calculations.

Figure 1

**Stylised presentation of players in the institutional investment industry
and their activities⁶**

Type of institution/investor	Type of activity/responsibility				
	Beneficial owner of funds	Funds managed by		Monitoring and performance evaluation	Residual bearer of risk
		Own funds	Third-party funds		
Mutual funds (retail business)	household		in-house asset manager	investors, rating agencies	household
Asset managers (wholesale business)	institutional investors		in-house asset manager	investors, consultants	institutional investors
Pension funds (defined benefit)	plan sponsor	in-house or external asset manager		trustees, consultants	plan sponsor, beneficiary
Pension funds (defined contribution)	beneficiary	in-house or external asset manager		trustees, consultants	beneficiary
Insurance companies	insurance company	in-house or external asset manager	in-house asset manager	insurance company, consultants	insurance company, policyholder
Trusts/endowments	trust/endowment	in-house or external asset manager		trustees, consultants	trust/endowment
Private investor/ household	household	household		household, rating agencies	household

In contrast, under DC schemes, the beneficiary is typically provided with a menu of alternative investment choices (including mutual funds) among which to allocate regular contributions. The investment risk is borne entirely by the beneficiaries, with payouts determined by the cumulative performance of the investments.

Due to these differences, DB pension liabilities tend to most closely resemble those of life insurers, abstracting from asset return-based components, in that they are guaranteed by the sponsor. Due to the long-term nature of DB liabilities, which are effectively like inflation-indexed long-term bonds, there is a potential for large volatility in fund surpluses and deficits. This, in turn, leads to a lot of attention being placed on asset-liability management by DB pension funds, with DB liabilities being difficult to match on the asset side. As temporary swings in surpluses are unavoidable, investment horizons will have to be relatively long. The management of DC schemes, on the other hand, resembles more closely that of a mutual fund. Given the wider product mix offered and as DC funds do not have fixed

⁶ Figure 1 gives a stylised presentation of the industry structure in institutional asset management. Insurance companies, for example, tend to own the funds they are managing. While assets are typically managed in-house, management is in some cases outsourced to outside asset managers. In addition, some insurers manage outside, third-party funds on behalf of clients. Performance evaluation tends to be done internally or by use of external consultants, while the residual bearer of risk is usually the insurance company itself and, by extension, the policyholder or client.

⁷ A number of countries, in particular the United Kingdom and the United States, are experiencing a shift away from defined benefit schemes. The pace of this transition, however, can differ significantly across countries, due to country-specifics such as employer-employee relationships - as experienced in Japan.

liabilities, investment horizons can be in the short-, medium- or long-term range and will tend to differ across firms and products.

Insurance companies

Life insurance companies, which represent the largest segment of the insurance industry, offer products such as annuities and guaranteed investment contracts tailored to the needs of individual and collective pension plans. The payoff of a life insurance product is determined by the return on the insurer's asset portfolio and insurance elements. Life insurance products are, therefore, an indirect channel for providing ultimate beneficiaries with asset management services.

However, insurance companies tend to differ from other institutional investors in terms of their liability structure. Life insurers' liabilities are primarily actuarial in character, with fixed income-like payout structures. This may explain the large portion of fixed income products in insurance portfolios observed in many countries, though equity allocations tended to increase in the course of the 1990s. Insurance company assets are often managed in-house, rather than being handed over to outside asset managers. This organisational preference has led insurers to purchase external asset management firms as a means of bringing investment expertise in-house. As a result, in some cases, insurance companies may offer portfolio management and administrative services to pension funds. In addition, there has been a recent trend among insurers to invest in or acquire specialised investment vehicles and to purchase specific asset management service providers.

2.1.2 Other industry players

Investment consultants

The importance of investment consultants, who primarily advise institutional asset holders on the choice of outside investment managers, has tended to rise over recent years. Traditionally, investment consultants have been of greatest value to smaller pension funds, since large pension funds have been less inclined to hire outside asset managers. But recently, as asset management has increasingly been outsourced, pension fund trustees have lost some of their in-house support and tended to increasingly rely on investment consultants as a result. Their influence also varies markedly across countries, and appears to be most central in those countries with larger funded pension schemes, such as the United Kingdom and the United States, as well as those in which tendering processes are required in the selection of external fund managers, such as France.

In the United Kingdom, consultants tend to advise their clients, ie pension fund trustees, not only on the specific risk managers to be selected, but also on issues like strategic portfolio allocation and ongoing performance monitoring. The Working Group's interviewees partially attributed the reliance on consultants to the fact that UK trustees tend to be non-professionals without specific expertise, an issue that was also highlighted in the Myners report.⁸ In addition, that report also commented on the fact that the UK investment consulting industry is highly concentrated.⁹ This might have contributed to

⁸ The Myners report investigated the institutional investment industry in the United Kingdom. It identified a number of problems with the incentives facing fund managers: (1) Corporate governance is insufficient. Pension fund trustees are responsible for determining how assets are invested but often lack financial expertise. So they usually rely on the advice of external consultants. This may have led to inertia in decision-making; (2) The incentive structures used have encouraged copy-cat behaviour. Peer-group benchmarks have encouraged fund managers to copy each other in their asset selection. This reduced the likelihood of fund managers achieving returns noticeably different from those of their peers. Asset index benchmarks, on the other hand, have imposed tight limits over the extent to which investments can diverge from the index. So "active" asset management has, in practice, replicated the performance of passive management; (3) Frequent trustee appraisals have encouraged an emphasis on short-term investment performance and have, as a result, affected strategic choices. Although trustees and advisers insist that short-term performance is not their main concern, fund managers appear to believe that it is.

⁹ The importance and relative concentration of consultants in many countries can, at least partially, be explained by the need to establish a credible mechanism for monitoring fund managers. If there is uncertainty with regard to fund managers' skills, a credible monitoring mechanism can add value in allowing good fund management to be rewarded. The credibility of monitoring, in turn, is enhanced when the number of funds monitored by a given monitor increases, as laying off a subset of fund managers can provide information about the remaining managers. This may be seen as an advantage for large asset management firms, but can also provide a rationale for the use of specialised investment consultants in selecting fund managers. See Gervais et al (2001).

a lack of diversity in investment advice, a phenomenon that seems to apply also to other countries. Consultants tend to advise trustees on all aspects of the investment process and, in doing so, implicitly certify prudent behaviour on the part of trustees.¹⁰

Rating agencies, investment advisers and sales agents

Fund rating agencies specialise in providing market participants with information for investment decision-making in the form of formal scores of the rated company's "quality". In terms of generating these scores, fund raters tend to distinguish themselves through the use of either the quantitative ranking- or the qualitative ratings-based approach. While fund rankings try to help investors to evaluate pooled investment vehicles based purely on measures of historical performance, fund ratings seek to evaluate investment funds against the background of the investment fund's investment philosophy, its policies and procedures, as well as the track record of its fund managers. With their services targeted mostly at the retail market, both types of fund raters distinguish themselves from the investment consultants which, in turn, concentrate on the wholesale side of the business.

Recently, investment fund classifications have become a focal topic among fund rating agencies and fund managers. One of the main concerns of fund managers is that the span of many existing fund categories may be too large, framing a possibly ill-defined competitive universe between what might essentially be very different products. In addition, the existing scoring systems have been criticised for being dominated by recent historical performance and for skewing investors' decisions towards the best-performing funds, with up to 80% of new cash being invested in the most highly rated funds. Similarly, sales networks and investment advisers, given that their own incentive structures might be subject to conflicts of interest, have been criticised for potentially skewing their clients' investment choices, for example, towards products generating the biggest sales fees.

Index providers

Index providers create and maintain market indices, which measure the price performance of a hypothetical investment. Over time, the role of these index providers has become increasingly visible in the asset management industry. As market indices have become the benchmarks to which the performance of asset managers is compared, they have come to strongly influence the structure of asset managers' incentives.

Conceptually, financial market indices are easy to understand and interpret. The practical calculation and publication of financial market indices, however, is a resource-intensive task. The incentive structures of index providers are influenced not only by competition among existing suppliers of index products, but also by potential new entrants into the business. For exchange-traded securities, competition could arise from financial intermediaries or firms that are not financial intermediaries, while for OTC securities, potential competitors are limited to other dealers active in the OTC market. Competition for benchmark indices cannot arise overnight, however, as there are sizeable fixed costs involved and as credibility concerning accuracy and integrity of index numbers and of the indexation process takes time to develop. As a result, certain network externalities might arise, favouring early entrants into the market.

The revenues from creating and maintaining benchmark indices are derived from a variety of direct and indirect sources. Direct revenue sources include (i) fees for providing the actual benchmark index levels; (ii) fees for providing the constituents and precise weights in the benchmark indexes; (iii) fees (royalties) for the use of the name of the benchmark index in some form of investment or derivatives product; and (iv) fees for ancillary services (such as customised benchmark creation). Some providers also sell index-related information and services to their clients. This type of business model appears prevalent in indices involving the OTC markets, where financial intermediaries have certain information

¹⁰ With regard to the role of consultants, the US interviews pointed to a conflict of interest not highlighted in the Myners report: Consultants may be hired by an institutional investor to rate fund management firms, while simultaneously doing project or consultancy work for the same fund management firm. In some markets the trend towards "implemented consulting" (where investment consultants act both as fund managers and consultants) creates a further potential conflict of interest.

advantages. In such cases, the index provider employs its proprietary knowledge of its own market index to offer services designed to provide competitive advantages to investors.¹¹

The structure of the index provision industry is also influenced by differences in index maintenance costs, particularly between indices for exchange-traded and OTC securities. While price information for exchange-traded securities is publicly available, prices of securities that trade strictly OTC are often not published. Furthermore, the tracking of additional information (such as amounts outstanding) may also become more burdensome. Therefore, OTC indices tend to be provided by financial intermediaries who, in the course of their business, maintain proprietary databases for the data required for index construction and maintenance.

The financial intermediaries who maintain benchmark indexes recognise the potential for conflicts of interest between those in their organisation who maintain the benchmark index and those who trade the securities in that index. As a result, firms stress their sensitivity to the need for implementing objective criteria for the construction and maintenance of their indices.

2.2 Rapid growth

The relative importance of institutional investors has grown substantially over time (Table 1). The main drivers of current and future growth of assets under management are:

- *Demographic developments:* Members of the baby boom generation are now approaching retirement and have accumulated substantial financial assets, which have increasingly been placed under professional management. This generation is noteworthy in its relative size as well as in terms of the duration over which its members will be drawing retirement income. In response to pressures on existing government-administered pay-as-you-go (PAYG) pension schemes, regulatory and taxation environments have been adjusted. Common policy responses to pressures arising from demographics, ie increasing dependency ratios, have been a lowering of the target share of expected retirement incomes under PAYG pension schemes, counterbalanced by the introduction of incentives designed to encourage future retirees to accumulate financial wealth through investment in regulated asset pools.
- *A trend towards professional management of financial assets in collective investment vehicles combined with a tendency to delegate strategic asset allocation back to owners of funds:* This shift has significantly increased the share of financial assets for which households take responsibility for setting strategic asset allocations, while shifting investment risk to them. As a result, households' decisions may also have become more yield-oriented. This has been reflected, for example, in the growth of mutual funds (in particular, equity funds) relative to bank accounts and the displacement of traditional DB pension plans by DC schemes. While being driven by fundamental forces, these developments have been accelerated by other factors, such as booming equity markets in the mid- to late 1990s. In the future, further impetus might be provided by changes to accounting rules which will require treatment of differences between marked to market values of DB pension fund assets and fund liabilities as a component of current income. One possible reaction to resulting volatility in reported earnings could be to move to DC schemes.
- *Further factors:* In addition, growth in professionally managed financial funds has been supported by financial liberalisation, technological advances and the emergence of a low-inflation environment, which have all increased the attractiveness of financial asset holdings.

¹¹ More recently, financial intermediaries have attempted to further enhance the revenues from their benchmark index business by selling to investors *investible* index products in the form of investment trusts that consist of baskets of securities that the index provider has chosen to "optimally" track its own index. Investors can, with minimal transactions costs, buy shares in such index-tracking trusts in order to hold a fairly diversified portfolio of rather illiquid OTC securities, which is chosen and managed by the index provider.

2.3 Broad industry trends

2.3.1 Broadening array of asset classes

The range of asset classes and investment strategies available to institutional investors and their clients has expanded well beyond the narrow traditional asset markets, such as domestic government-issued fixed income securities and equities listed on local exchanges. With some differences across jurisdictions and investment vehicles, it may now include such things as corporate fixed income securities, foreign securities, real estate, traded loans and hedge funds. Asset managers frequently explained this development, ie increasing activity in a wider range of assets, by noting that the efficiency of pricing in the most established financial markets had left little incentive for active management.¹² In addition, regulatory developments have resulted in a globalisation of institutional portfolios, with the focus moving more towards international asset classes. As a result of more diversification opportunities, home bias has tended to decline, equity components of portfolios have been raised, and the demand for alternative investments (absolute return strategies) has become more prominent.

Recently, alternative asset classes have also been supported by other factors, with conjunctural developments being particularly influential. While the bull market in the late 1990s used to push up assets under management and investment fees (as investors felt comfortable with relative performance vis-à-vis indices), equity weakness has since driven the move into alternative assets, while equity allocations have tended to be reduced.

In addition, as most investors have significant exposure to equity markets via traditional, equity-long strategies, investing in alternative investments (including hedge funds¹³) can provide risk diversification for such an investment portfolio. Finally, use of hedge funds and similar vehicles may provide funds with the means to implement long-short arbitrage that would otherwise not be possible. In some cases, funds not allowed to short stock may take a long position in a hedge fund as a means to circumvent regulatory, statutory or client-mandated constraints.

The role of hedge funds, however, should not be overestimated. As indicated in the Group's interviews, hedge funds and similar investments still only account for a small part of assets under management, despite their recent rise. Overall, difficulties in monitoring and verifying the performance of these vehicles are still seen as limiting their use. Notably, funds-of-funds have proved attractive in the hedge fund area, in part because providers of these funds help improve transparency.¹⁴ However, while seen as more transparent, funds-of-hedge-funds might have only limited diversification benefits.¹⁵ Other limits to hedge fund growth, finally, relate to issues of scalability, based on the fact that markets do not necessarily support large numbers of these funds, given that their success depends on their limited size and their flexibility.

2.3.2 Growth of passive asset management

Investors are increasingly, though to varying degrees, choosing to follow indexed or "passive" investment strategies.¹⁶ A primary impetus for this development is the recognition that in the largest,

¹² This view is consistent with the concept of informationally efficient markets under rational expectations and costly information. In such an environment, prices will reflect the information of informed individuals, ie active asset managers, only partially, as these investors have to be compensated for the resources spent on information acquisition. This implies that, for a given asset class, there will be an equilibrium amount of investment in market information and that superior performance on the part of an investor will, on average, reflect greater expenses. See Grossmann and Stiglitz (1980).

¹³ In the interviews, asset managers typically described hedge fund investments as an investment strategy, rather than an own asset class, making the overall tendency a trend towards broadening investment strategies.

¹⁴ The Group's interviews suggest that funds-of-funds allow investors to screen various potential hedge fund investor opportunities. However, this does not help with the inherent fact that hedge fund strategies as such remain non-transparent.

¹⁵ As the number of hedge funds in a funds-of-funds portfolio increases, idiosyncratic risks may get increasingly diversified away. A highly diversified portfolio of funds-of-funds, therefore, may show a substantial correlation with the overall market, carrying mainly beta risk.

¹⁶ Academic research tends to find that active funds do not earn returns in excess of their costs. While some individual portfolio managers might generate excess returns, these excess returns are typically not found to be persistent when controlling for risk and survivorship bias.

most informationally efficient markets returns to information gathering are low and returns to scale are large. Further impetus for passive strategies has been provided by the introduction of capitalisation-based indices, which are, in the absence of index changes, self-rebalancing, thus providing cost-efficient benchmarks for indexed portfolios. Exchange-traded funds (ETFs), finally, might be seen as potentially boosting index tracking even further, as most of these funds are designed to mimic index performance. While not being strictly new products, ETFs have received increased attention recently. Their impact on institutional asset management and the importance of passively managed strategies will ultimately depend on how liquidity, eg bid-ask spreads, for ETFs develops.¹⁷ In contrast, in discussions of alternative investments, a number of interviewed firms referred to the competitive advantages for active management.

While the approaches applied across sectors and institutional investors tend to differ in detail, institutional portfolios typically consist of a passively managed core component, where active management is deemed to promise only marginal risk-adjusted excess returns. In addition, a substantial portion of assets is divided among actively managed funds specialising in particular asset classes. In the pension fund industry, according to the interviewed industry representatives, passively managed portfolio components are currently at around 35% in the United States, 30% in the United Kingdom, 12% in Canada and 10-20% in continental Europe. In Germany, for example, where the vast majority of mandates is still actively managed, there are initial indications of a growing demand for passive forms of investment, following a relaxation of regulatory restrictions on the employment of index replication strategies. However, although other factors may have played an important role, the increased popularity of index funds cannot be fully disconnected from the exceptional performance of equity markets during the second part of the 1990s.

Historically, there has been a relatively clear delineation between active and passive management. However, with *tracking error*¹⁸ increasingly used as a measure of portfolio risk, even active mandates now tend to be based on limits on allowable tracking error around a given market benchmark. Interviewees in Belgium and Spain indicated that the threshold between passive and enhanced passive investments on the one hand and active investments on the other is roughly defined by tracking errors of 2% for equity funds and 0.25% for fixed income portfolios. Some of the interviews suggest that, partly due to the influence of consultants, there has also been some tendency for the line between active and passive investment to shift, with narrowing limits on tracking error, capped portfolio weights and other regulatory¹⁹ and contractual constraints being imposed on active managers. In response to tightening tracking errors, fund managers have reportedly tended to increase the number of their positions, that is, taking a larger number of small positions rather than a few large positions, in order to diversify their holdings.

More recently, the dividing line between active and passive mandates has tended to become increasingly blurred. Contractual and regulatory investment constraints, for example, when used together with limits on tracking error, can eat significantly into the asset manager's room for manoeuvre, potentially converting active funds into quasi-passive funds. Among the passive funds, on the other hand, enhanced passive strategies have recently gained prominence. Such strategies, realising that tracking errors close to zero come at a cost, allow for some flexibility in replicating a given index, which enables the necessary transitions to be managed more smoothly when indices are being reweighted or when index constituents change.

Industry representatives pointed out that, in general, asset managers are expected to make full use of agreed deviations from benchmark and highlighted the importance of the firm's internal processes for

¹⁷ ETFs are promoted with the argument that they enable investors to quickly buy and sell exposure on certain sectors of the overall market. Therefore, ETFs might also serve as a tool for a more active asset management by ultimate investors.

¹⁸ Tracking error, defined as the standard deviation of excess returns over a sample period, is a measure of the divergence of a portfolio's return from that of a selected benchmark. The standard horizon is one year.

¹⁹ Investment constraints are a common regulatory feature. In the European Union, for example, the operation and sale of mutual funds are covered by the so-called UCITS directive. It specifies rules for the kinds of investments that are appropriate for mutual funds and how these funds should be sold. Under UCITS, 90% of assets must be invested in publicly traded instruments, no more than 5% of the outstanding securities of any company may be owned by a fund, and there are limits on a fund's borrowing rights. Real estate, commodity and money market funds are excluded from UCITS. Similar rules apply in other countries, with restrictions as to the use of leverage and derivatives being a common feature.

dealing with these issues. An Italian interviewee, specifically, stressed that, in case of unanticipated events, it is the responsibility of the asset manager to propose amendments to the agreed mandate.

2.3.3 Trends towards consolidation and specialisation

The expansion of passively invested funds is one of the factors most responsible for consolidation among investment managers, due to the scale economies exhibited by closely-indexed funds.²⁰ It was noted in the interviews that markets had, as a result of the consolidation process, become more dependent on the day-to-day operational services of these firms. In addition, it was suggested that such firms have also increased their presence in closely related businesses, such as securities lending. While this has fostered consolidation among passive funds, increased indexing has also led to increasing pressure on assets under management at traditional, active funds, thus reducing the fee income for many of these fund managing firms. As a result, intragroup concentration has also been pushed forward as asset managers have tended to concentrate their operational businesses in order to reap scale economies.

At the same time, among active portfolio managers, the number of highly specialised asset management firms has grown rapidly, particularly in research-intensive, non-core asset classes. While index funds tend to be involved in both the wholesale and retail sectors, active asset managers in many countries tend to focus on either wholesale or retail clients. Concentration levels tend to be higher in the retail sector, while wholesale asset managers are typically small or medium-sized. Interviewees also noted that the high degree of ownership concentration in asset management companies, which is a feature of the industry in some countries, could lead to copy-cat behaviour as individual asset managers might be encouraged to comply with a specific group-wide approach or investment philosophy. German practitioners also pointed to the increasing presence of major asset managers in multiple national markets as a further source of consolidation in the industry. Finally, as indicated in a recent G10 report, consolidation among banks and insurance companies might have affected other parts of the asset management business.²¹ For example, some of these firms have recently established “corporate umbrellas”, bringing together various specialised asset managers to contribute to investment strategy “supermarkets”.

3. Principal-agent relationships in asset management

3.1 The nature of agency relationships in delegated asset management

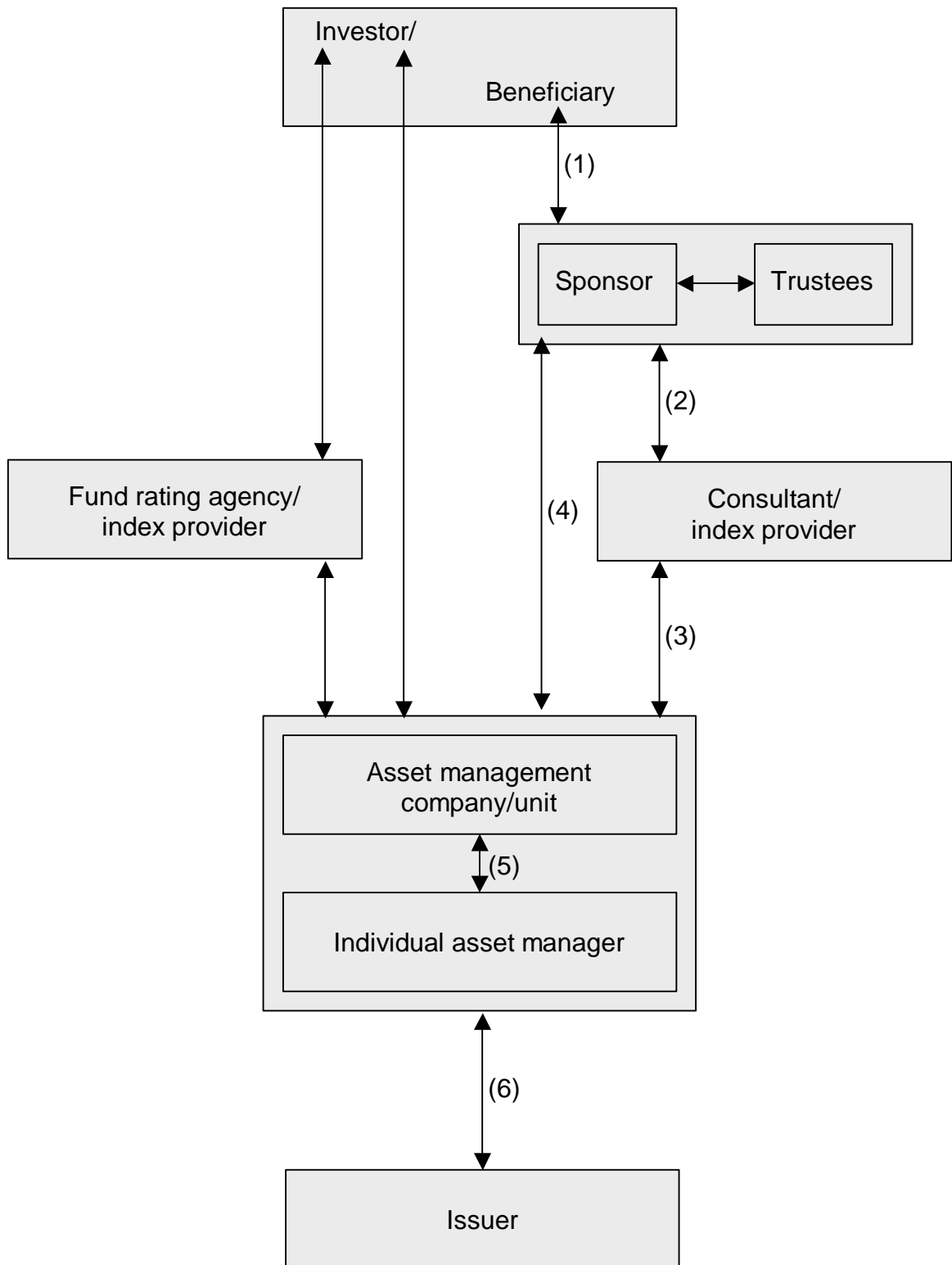
At the core of the asset management industry is a separation between ownership and control of financial wealth. The costs to wealth owners from monitoring those who are charged with managing their financial holdings have encouraged approaches to improve the alignment of incentives between owners and asset managers. First, specialised incentive and control mechanisms have been developed. Second, explicit evaluation standards have been established to help owners distinguish the extent to which overall performance is affected by ability, effort, environment and luck. This section reviews these approaches to addressing principal-agent issues within the asset management industry and discusses their current evolution.

²⁰ These scale economies arise from the *crossing of trades* (ie the simultaneous off-market sale and purchase of assets for different clients) as well as from the fact that passive management avoids *churning* (unnecessary trading activity to generate commissions), both of which will save transaction costs.

²¹ See Group of Ten (2001).

Figure 2

Agency relationships in institutional asset management



Delegated asset management involves layering of agency relationships. In a mutual fund, there are two agency relationships: the *internal relationship*, between individual fund managers and the fund management firm, and the *external relationship*, involving the ultimate investor and the fund management firm. By contrast, a participant in a defined contribution plan, for example, is involved in at least six principal-agent relationships:

(1) The relationship between the participant, that is the beneficiary, and the sponsoring firm, which gives the participant a menu of investment choices; (2) the relationship between the sponsor and the investment consultant; (3) the relationship between the consultant and the asset management company (that wins the investment mandate); (4) the relationship between the sponsor and the asset managers whose products are part of the chosen menu; (5) the relationship between the asset manager and the individual portfolio manager, who makes the actual investment decisions; and (6) the relationship between the individual making the investment and the issuer of the financial instrument that was purchased (Figure 2 highlights the agency layers involved in a DC scheme).

In addition, the activities of fund and credit rating agencies as well as index providers will directly or indirectly influence the behaviour of one or more of the other agents. They will, hence, have a bearing on the relationship between ultimate investor and fund manager. Seemingly insubstantial changes to the way a benchmark index is measured, for example, can have a material impact on index levels and returns. Therefore, once the benchmark index for a portfolio is chosen, index providers influence asset allocation and portfolio returns by deciding on index composition. Such changes to index composition can generate sizeable adjustment needs, with portfolio managers incurring two types of costs: costs for handling transition turnover and the cost of the price impact of adjusting the portfolio (which tends to be anticipated by front-runners, leading to distributional effects). Therefore, in response to competition in the index industry, those enterprises that introduce and maintain the various benchmarks have tried to be responsive to users' critiques. As a result, index providers tend to update the inclusion criteria, index measurement methodologies and other aspects of benchmark maintenance, based on user feedback. Recent index adjustments, therefore, include benchmarks that had formerly been weighted by total market capitalisation and have now been switched to schemes based on free float, reducing the burden imposed on passive asset managers.²²

As the number and complexity of agency relationships increase, the likelihood that there will be conflicts of interest between investors and their agents is likely to increase as well. In consequence, investment decisions can vary across funds, in part due to differing numbers and combinations of agency relationships. For example, investments chosen by DC pension funds can differ substantially from those in DB plans, since the former choices are made by households investing on their own, while the latter are guided by corporate treasurers or pension fund trustees acting for the pension fund's beneficiaries as a group. In addition, investment decisions by individual customers might further be influenced by the advice of investment firms' sales networks, which may have certain incentives to sell or recommend particular products.

These differences in the agency relationships may also imply differences in optimal contractual relationships. Optimal (compensation) contract design for delegated portfolio managers is a thoroughly researched topic. Interestingly, the results of this research have not been fully conclusive. The basic conclusion is that contract design is extremely sensitive to the specifics of individual agency problem(s). That being said, theory has in practice been reflected through the presence of contracts that generally have some combination of the following components:

- a profit sharing rule (ie fee structure), to align incentives in terms of returns;
- a relative performance component measured against a benchmark, to monitor performance, make returns comparable and control for common uncertainty; and
- checks on risk-taking, such as maximum allowable tracking error, reporting requirements and constraints on available investment choices.

Various combinations of these components are used in an attempt to align incentives across all agency layers, that is between the owner of funds and the individual in charge of the ultimate investment decision.

²² "Free float" measures the market value of the securities that are free to trade among institutional and individual investors.

3.2 Asset allocation and the nature of investment mandates

Tiering and narrowing of investment mandates

Investment mandates and fund prospectuses set out privately agreed constraints on investment behaviour in the wholesale and retail asset management sectors, respectively. Fund owners have historically left all management decisions, from strategic asset allocation to tactical decisions regarding individual securities, in the hands of their fund managers. Increasingly, however, strategic asset allocation has been assumed by, or delegated back to, owners of funds, leaving day-to-day tactical asset management in the hands of professional asset managers. At this tactical level, fund management mandates and investment prospectuses have become narrower. Taken together, these tendencies appear to have led to a tiering and narrowing of mandates. For example, even for active mandates, tracking error around a given market benchmark is now frequently applied, while other investment constraints appear to have also been tightened.

In the interviews, it became apparent that, in most countries, the industry continues to be characterised by an ongoing move away from traditional funds, in which a single asset manager controls a broad-based portfolio, towards specialist mandates focused on narrowly defined asset classes and clearly delineated investment “styles”. Style classification in particular has become the standard language for communicating among investors, asset managers and investment consultants. The latter monitor and evaluate managers’ performance against appropriate style benchmarks.

These tendencies, along with the general trends towards a broadening of asset classes of interest to institutional investors, an increased reliance on passive (index-based) strategies, and simultaneous specialisation and consolidation, as discussed above, are embodied in the so-called *core-satellite* approach. Under this approach, active and passive mandates are strictly separated and the size of any given active position is limited by the size of the respective satellite portfolio. Whether this size restriction is binding will therefore ultimately depend on the propensity of fund owners to reallocate funds between different passive and active strategies.

Relative performance measurement

Wealth owners need to carefully evaluate their managers’ performance using objective criteria. Historically, when broad-based portfolios were the norm, peer group benchmarks were commonly used to measure performance. The prevalence of this practice has reportedly decreased substantially. The decline was attributed in the interviews, in part, to increasing specialisation of funds’ portfolios. In those cases where peer group benchmarks are still used, as in Hong Kong, they are applied to funds without an appropriate market benchmark or when market indices cannot be easily replicated.

The criterion used most commonly today is performance relative to market indices such as those in the MSCI and S&P families or Lehman’s bond market indices. Fully customised benchmarks, which are used infrequently, are most often applied in two settings. First, they are used for funds investing in asset classes for which standard benchmarks are unavailable, such as real estate funds. Second, they are used to evaluate overall portfolios comprising various specialised mandates. In this case, according to a UK asset manager, customisation comes indirectly through the weighting of the different asset classes. With regard to the increasing use of market benchmarks, interviewees also commented on the influence of firms like MSCI and how relatively tight limits on tracking errors and the use of only a small range of core market indices might lead to convergence in behaviours.

In particular, industry representatives referred to three different factors encouraging convergence associated with the use of market benchmarks:

(1) Overvalued assets/stocks tend to find their way into major indices, which are generally capitalisation-weighted and therefore will more likely include overvalued securities than undervalued securities. Asset managers may therefore need to buy these assets even if they regard them as overvalued; otherwise they risk violating agreed tracking errors. (2) Once a given asset is included in an index, scope for underweighting is limited by the allowable tracking error. Both effects together lead to a trade-off between the risk of increased tracking error and the risk of holding overvalued securities. The problem is most severe for more narrowly defined indices that may be dominated by a relatively

small number of individual securities. (3) Assuming an index is only partially replicated, feedback effects might be generated as asset managers are forced to increase their holdings of the main drivers of the index (principal components) when rising index values coincide with underperformance of the principal components against the index.²³ This effect is likely to arise for broad indices, which are more difficult to replicate. Smaller indices tend to be fully replicated and are, therefore, self-rebalancing when based on market capitalisation. All of these effects, however, may be subject to negotiation between asset manager and client, who might agree on some degree of customisation, eg via percentage limits on particular assets.

With regard to the influence of index providers, it was noted in the interviews that competition among these players has led market participants to focus on the “integrity” of the various indices in determining which of these will become benchmarks. While no metric for “integrity” of an index exists, common characteristics of the indexation process reportedly important to investors can be cited: (i) index composition (in order to avoid index manipulation, either the composition must have objective criteria for its inclusion/exclusion rules, or the index provider must have sufficient reputation and incentives for impartiality); (ii) index rebalancing methodology (eg if the announcement of an index change has a significant market price impact, there must be a delay between the announcement date of an index change and the date the change becomes effective);²⁴ and (iii) precisely defined index measurements (eg which prices are used for securities that trade on multiple exchanges or for securities that trade only over the counter, what are the sources of shares outstanding and “free float” shares outstanding?).

Use of tracking error and investment constraints

To control the risk taken by their asset managers, investors typically impose limits on allowable deviations from performance targets. For specialist mandates, performance targets tend to be specified in terms of information ratios (ie relative return per unit of tracking error), with relatively tight bounds on permissible tracking error. Allowable tracking error appears to increase with the riskiness and expected return of the benchmark: for example, tracking errors for equities typically exceed those for fixed income portfolios and tracking errors for international shares exceed those for the domestic market.²⁵ Nevertheless, as mentioned in the Australian interviews, contracted mandates remain, in many cases, vague on precise limits. That is, in many cases, there tends to be no specific wording on how breaches of agreed performance limits would be penalised - making termination the only penalty.

Finally, asset manager behaviour tends to be subject to regulatory or client-imposed investment constraints. In particular, one or more of the following investment constraints tend to affect the average institutional investor: (a) limits on investing in equities, (b) limits on investing in international assets, (c) mandated investment in specific securities, (d) diversification rules, (e) limits on leverage, (f) limits on short-selling, and (g) limits on the use of derivatives. Such constraints, eg minimum standards regarding the creditworthiness of the securities to be held in institutional portfolios, may add to other limits on the ability of investors to maintain or establish certain positions. At times, eg after a downgrading of a security, there may be asset price changes due to mandated liquidations by investors constrained by public regulations or private contracts, a form of pre-emptive stop-loss. As a result, these constraints could have feedback effects on asset prices, as reactions to credit downgrades might be stronger than suggested by the new information contained in such a downgrade. Investment mandates may also include constraints that are meant to limit potential conflicts of interest. For example, one interviewee mentioned that institutional clients may ask the money manager not to invest in securities issued by entities belonging to the same group as the client

²³ It should be noted that such feedback can also be negative, depending on the structure of the covariances between the principal components and the overall index. However, for both stock and bond returns, the first principal component usually accounts for a very large share of total variability, making the case of negative feedback somewhat unrealistic.

²⁴ For example, in the year 2000, there was approximately a 10% turnover in the S&P 500 composition. The academic literature finds that the stock price reaction to the announcements of recent additions to the S&P 500 is about 5%. If there was no delay between announcement and implementation, an investor who followed the composition of the S&P 500 index perfectly would underperform the *measured* index by 50 basis points, because the measured index would include the 5% run-up in price of the additions while the investor would be unable to participate in the price appreciation.

²⁵ Tracking errors will vary across countries, asset classes and investment styles, with average tracking errors for actively managed fixed income portfolios at around 1% and in the 2-6% range for actively managed equity portfolios.

firm or to specify in advance the list of brokers. While the first constraint addresses the issue of pension funds investing in shares of entities belonging to the sponsoring firm's group, the second constraint is connected with the risk of churning.

3.3 Performance review and investment process

Investors in institutionally managed portfolios operate in a high-noise, low-signal environment, since it is difficult to monitor effort or to distinguish whether performance is driven by effort and ability or plain luck. In addition, it has become widely recognised that asset managers frequently operate in financial market segments for which past performance is not a good predictor of future performance. As a result, there are indications that the criteria applied in selecting asset managers place increasing emphasis on managers' investment processes, rather than their past performance. Increasingly, the investment process is regarded as a risk management tool, ensuring eg that no risks are being taken to recover previous losses in a *gamble for resurrection*. For example, as indicated by a Japanese corporate pension fund official, pension funds may extend identical mandates to multiple asset managers. By directly comparing operations of these managers under the same mandate, the fund is then able to identify important qualitative characteristics, such as decision-making processes.

Further, institutional investors such as pension funds have increased their reliance on investment consultants to aid in the asset manager selection process. These consultants conduct detailed operational reviews concerned with those procedural aspects of the investment manager's activities which consultants have found to produce superior long-term performance. Among these, risk controls and risk management systems have increasing prominence. There is particular focus on style consistency and process transparency. The consultants then compile a short-list of eligible asset managers. A Belgian interviewee, for example, indicated that, for mandates with larger amounts, consultants tend to require a sort of "standard approach" from asset managers in order to be eligible for shortlisting. It was further suggested that this, in turn, might have fostered higher uniformity among asset managers and the ways in which they execute their investment strategies.²⁶

While reliance on overly rigid processes may limit the asset manager's room for manoeuvre, more clearly defined processes can help to avoid potential adverse effects of regular performance reviews. Since it is clearly appreciated that performance in any given year may be heavily influenced by events outside the control of individual managers, clients and investment consultants have come to judge performance over rolling three- or four-year periods, although, in some cases, the evaluation period can be as short as one year.

Investment mandates extend over periods of between one and five years, depending on the country and industry sector. As the costs involved in changing asset managers are sizeable, management mandates are generally renewed, implying that effective contract duration can be substantially longer. In some cases, it is standard for mandates not to have defined maturities and to be automatically rolled over unless notice of termination has been given. In the interviews, it was emphasised that the frequency over which performance is reported was, in general, considered to be independent of the investment horizon over which managers would be evaluated. Nonetheless, it was noted that performance reviews can influence asset manager behaviour and a number of interviewees mentioned occasional pressure to shorten investment horizons - a view that mirrors the findings of the Myners report.

However, as a result of the focus on investment process, historical performance, although part of the evaluation process, is no longer regarded as the sole factor in manager evaluations. In some cases, it was even indicated that, in a situation of underperformance, investors would rather stick to the manager than terminate the mandate (particularly as the switch to a new asset manager will be costly) if the manager continues to maintain the agreed management style along with the usual management process. If deemed necessary, as indicated in some interviews, monitoring frequency might be increased to make sure that this is indeed the case. Only if underperformance persisted over extended periods would investors consider termination of the mandate, with the termination decision balanced

²⁶ The standardisation of investment processes is also apparent, as indicated in the interviews, from the increased use of portfolio management software packages. These systems are designed to assist asset managers in strategy implementation, while controlling for investment style, portfolio allocations and tracking error.

against the costs of changing asset managers. This heavy reliance on the management process might actually distinguish the pension fund and insurance-related businesses from mutual funds, where branding and historical performance tend to be of greater importance. Against this background, there is a tendency of the retail and wholesale sectors of the asset management industry to remain rather separated and to be served by different players.²⁷ For example, while the wholesale sector tends to favour a team-based investment approach, the retail market, at least in some countries, appears to retain more of a focus on stars - a tendency that might be partially explained by the influence of sales networks and fund rating agencies.

The Merrill Lynch-Unilever UK court case was also discussed in the interview process. Unilever sued Merrill Lynch in connection with the chronic underperformance of its pension fund, managed by what was then Mercury Asset Management. Ultimately, the case was based on a lack of oversight on the part of the asset management firm vis-à-vis the individual asset manager in charge of Unilever's pension fund assets. According to some of the interviewees, even though it was settled out of court, the case has caused asset managers in a number of countries to reconsider the character of investment mandates. This reflects how the case has affected thinking about who bears investment losses when tracking errors written into mandates are not treated as binding constraints on the performance of asset managers. In response, more importance is now attached to unambiguous, explicit wording of investment mandates. Overall, the case has produced a reassessment of how investment managers document their broad risk management concept, including performance measurement issues and ongoing oversight of individual portfolio managers. As a result, risk management and compliance teams have been set up or increased and asset managers are reviewed more frequently to determine whether they are actually operating to the terms of their mandate.

3.4 Performance-related compensation schemes

Compensation schemes are an integral part of any agency relationship. While the academic literature tends to be somewhat inconclusive as to whether and to what degree optimal compensation should be linked to relative or absolute performance, industry practice seems to show a clear pattern. In the external agency relationship, which involves the owner of funds or trustee and the fund management firm, the industry favours schemes in which fees are a fixed percentage of assets under management (AUM), with fee levels differing across countries and management styles as well as across asset classes, reflecting asset classes' riskiness and research intensity.

Such schemes reward the relative performance of asset managers in an indirect manner, through fund inflows (ie new mandates or mutual fund investments). Therefore, even when fees are not directly performance-based, the nexus between performance and fund inflows may act as an implicit incentive structure. Against this background, fund managers and their clients appear to regard AUM-based fees as sufficiently performance-related to, in combination with other measures, align incentives. In addition, some industry representatives noted that they have themselves actively discouraged explicit performance fees as these tend to induce high earnings volatility. As a result, fees that are explicitly performance-related remain rather uncommon. Nevertheless, in some countries, clients seem to increasingly demand some sort of performance-based component. For example, interviewees pointed to a recent, though controversial, turn towards performance-related fees in the Canadian pension fund sector. At the same time, in the UK pension fund industry, some 20% of funds appear to have performance-based fee structures. As regards, in particular, asymmetric performance fees, interviewed firms mentioned possible adverse incentive effects, arising from the option-like payoff structure of these schemes.

Even in the absence of explicit performance features, the prevalence of AUM-based fees and reliance on relative performance measures suggest incentives for individual asset managers to systematically react to recent portfolio performance. In particular, the fear that underperformance, even if it could be attributed to purely random events, may lead to cash outflows or loss of mandates tends to create incentives to avoid positions that can result in large deviations from benchmark. Similarly, asset managers might wish to lock in returns and dampen portfolio volatility - relative to the volatility of the

²⁷ In the Australian market, however, wholesale and retail are very much served by the same players, although the dynamics of the demand side of the two markets are very different.

benchmark - when outperforming the benchmark index. The importance of these incentives for fund managers, in both the mutual and pension fund businesses, is evident from empirical features like *fee waiving* and *benchmark gaming*.²⁸ This suggests that, while the link between performance and compensation is now largely indirect, it nevertheless appears to be an important factor in terms of determining fund managers' behaviour.

Explicitly performance-related fee structures are, in most countries, largely confined to hedge funds and other alternative investment vehicles. Several reasons can be advanced for the use of performance fees by these specialist asset managers: first, for these vehicles, reputation costs might be higher than elsewhere, due to their clientele and to the way they are marketed. This suggests that the adverse incentives of performance-based fees could be less of a problem for these funds, as managers need to balance risk-taking against the cost of damaging their reputation in the case of peer underperformance. Second, performance fees, ie the manager's willingness to accept earnings volatility, might help to signal fund manager quality. Third, in the interviews, hedge funds were seen to have total return as the key management variable, and therefore were viewed as less prone to copy-cat behaviour than they would be if fees were based on relative performance.

One shortcoming of fees set as a proportion of funds under management is that such a structure makes no allowance for the potential for diseconomies of scale. This applies equally to simple AUM-based fee structures and explicitly performance-based fee arrangements, as the latter usually set a base fee as a share of AUM and allow fees as a proportion of AUM to rise with fund performance. In a world where fund performance may decline as a fund gets large relative to the markets it invests in, this may create incentives for fund managers to increase their funds under management beyond the point where it is in the best interests of ultimate investors.²⁹ This point is important for countries such as Australia, with a large fund management industry relative to the size of their financial market. It is also important for specialised vehicles like hedge funds, whose returns depend on their limited size.

Compensation structures are very different in the internal agency relationship, which involves asset management firms and individual fund managers. Compensation of these individual managers tends to be performance-based, with a fixed base salary topped by bonuses based, partially, on relative performance. The benchmark used in evaluating and rewarding the individual asset manager will usually be the same as the one used for external performance measurement. Typically, bonuses will be paid from a bonus pool, the size of which is determined by the overall performance of the asset management firm. An individual's share of the pool will largely be driven by own performance, but there will also be other, "soft" factors not related to investment performance, such as professional experience, teamwork and seniority. As a result, there is no mechanistic relationship between relative return performance and an individual manager's remuneration, though performance relative to benchmark will clearly have a noticeable influence.³⁰

²⁸ Empirical studies find that investment funds voluntarily waive their stated fees in an attempt to boost net performance and, thereby, to attract additional funds (*fee waiving*). In addition, underperforming managers, near the end of the evaluation period, appear to increase portfolio risk, while outperformers seem to lock in returns and dampen portfolio volatility (*benchmark gaming*). Finally, there is evidence that money managers tend to move return between periods by *marking up* their portfolios, ie by last-minute trading of stocks they already hold at end-quarter (based on the practice of calculating asset values from the closing transaction prices of fund holdings). All these empirical features suggest the existence of a non-linear fund flow/performance relationship that yields de facto convex payoff functions. That is, while superior relative performance generates an increase in the growth of assets under management and, in turn, managerial compensation, there tends to be no symmetric outflow of funds in response to poor relative performance, at least over the short term.

²⁹ See Beckers and Vaughn (2001).

³⁰ The size of the bonus component in individual asset managers' compensation varies considerably across countries. However, at least in some countries, there seems to be a general trend towards a higher share of variable compensation in total pay over recent years. The Group's interviews suggest that bonuses are, on average, around 25-40% in Spain, 30% in Germany, 30-60% in Canada and, as a rule, no larger than 50% in France. In Italy, bonuses range from between 15-20% of base pay at the low end up to 150% at the high end. In Australia, the United Kingdom and the United States, however, the importance of bonuses seems to be higher. Australian fund managers' base salaries are topped by bonuses of between 50 and 100%, while US managers can earn average bonuses of 100% and higher. In the United Kingdom, where the median fund manager will get a bonus of about 100%, exceptional asset managers can earn as much as six times their base salary in the form of bonuses.

4. Implications for the structure and functioning of financial markets

Trends in the institutional asset management industry, as highlighted above, may affect financial markets in numerous ways. This section discusses the implications of the Working Group's findings for such issues. It mainly focuses on three broad areas: market efficiency and volatility; market liquidity; and risk management. Other implications are highlighted, though not discussed in any great detail.

4.1 Market efficiency, volatility and liquidity

4.1.1 Market efficiency and volatility

The efficiency of financial markets relies, in practice, on the ability of arbitrageurs and contrarian investors to correct "pricing errors". Such investors may sell or short overvalued securities while, at least potentially, taking an offsetting long exposure in close substitutes of these securities in order to hedge their risks.³¹ However, even in the presence of arbitrage and contrarian strategies, mispricings may become worse before disappearing. That is, even when prices ultimately converge with certainty, such trades may generate temporary losses for the contrarian investor.³² Efficient markets, therefore, require the existence of investors with enough capital and sufficiently long investment horizons to arbitrage potential misalignments away so as to fully incorporate available information into prices. Institutional features that may influence the ability of potential arbitrageurs to maintain a given arbitrage position, eg by limiting the investor's effective investment horizon, may therefore affect market efficiency.³³ Given a limited horizon, prices may not converge early enough for these contrarian investors to be able to sustain their positions, which will prevent or delay the correction of misalignments.³⁴

This raises the question of whether there are features in the industry and incentive structure of institutional asset managers that might limit the ability of these investors to use their size and, in principle, relatively long investment horizons to contribute to market efficiency. An example for a possibly limited ability to correct mispricings would be a fund manager whose performance is measured relative to that of its peers. If its peers decide to shift funds out of a particular asset (class), it will tend to do the same, even if it thinks its peers have misjudged the fundamentals of the situation. This is because of reputational risks, which tend to be largest when underperforming relative to the peer group rather than performing badly along with that group.³⁵ By following the decisions of its peers, the fund manager may fail to correct or may even intensify any associated asset mispricing.

As this example illustrates, investment decisions based either directly or indirectly on the decisions of others, ie positive feedback effects, can raise market volatility and can limit the effectiveness of asset managers in contributing to achieving market efficiency via arbitrage strategies. In theory, fund managers can become most constrained precisely when they have the best opportunities to profit from contrarian positions, ie when the mispricing they are trying to adjust widens further. By implication, the fear of this happening will make asset managers more cautious in the first place, when putting on their initial trades. As a result, arbitrage might be particularly ineffective in extreme circumstances, when prices are significantly out of line. This, in turn, could lead to potential instability of financial markets.

Market volatility, finally, will also depend on investors' attitudes towards, and practical implementation of, portfolio risk diversification, ie holding a variety of assets whose returns are not closely correlated

³¹ Riskless arbitrage relies on the existence of two essentially identical securities. Arbitrageurs, while selling overpriced securities, will buy close substitutes of the same securities to hedge their risks until prices converge. Without such close substitutes, arbitrage will become risky and amounts to putting up a contrarian position, ie a position that stems (perceived) market misalignments without being effectively hedged by a position in a close substitute.

³² This has been termed *noise trader risk*; see DeLong et al (1990b).

³³ See Shleifer and Vishny (1997).

³⁴ Comprehensive survey results from Germany indicate that this is indeed the case. Equity fund managers who were identified to be best suited for fundamental arbitrage were asked how long they would hold on to a portfolio strategy if underperformance became significant. The response was just over three months on average. See Arnswald (2001).

³⁵ See Scharfstein and Stein (1990).

with each other. A powerful source of negative feedback trading is represented, for example, by investors with balanced portfolios, such as insurance firms, DB pension funds and endowments. By choosing fixed asset allocations at periodic intervals, these investors help stabilise securities prices inasmuch as they tend to reduce (increase) the holdings of assets that have lately appreciated (depreciated) considerably. A fund invested in bonds and equities, for example, with a cap of 60% for holdings of either asset class, would be forced to liquidate equity holdings if a bull market raised the share of equities in the portfolio above the 60% threshold, thus stemming the rise in equity prices, unless allocation rules are changed. However, such strategies are, of course, static and do, as such, not contribute to the pricing of new fundamental information.

Aggregate effects

The Working Group identified several trends in the incentive schemes faced by institutional asset managers. Some of these trends suggest an increasing importance of structural features that might limit the ability or willingness of institutional asset managers to help correct any mispricings, while others provide evidence of counterbalancing forces.

Trends increasing the potential for market misalignments

The asset management industry in many countries is characterised by tendencies towards the narrowing and tiering of investment mandates and the adoption of market benchmarks in evaluating performance. These indices have become the strongest determinant of investments for many funds. The increased use of these indices in combination with standard compensation structures (eg fees based on average assets under management) and the reported tightening of allowable tracking error could discourage managers from taking contrarian positions. This, in turn, could contribute to a loss of institutional asset managers' ability to serve as a market control mechanism which, by its operation, limits the effects of feedback trading and similar behaviours by other market players.

Another mechanism that may contribute to limiting asset managers' incentives to engage in contrarian positions derives from the fact that the benchmarks used to evaluate investment performance tend to be chosen from a limited number of established market indices. As this practice can amount to evaluation being effectively performed against a peer universe, underperformance, together with the rest of a comparable group of asset managers, will be less damaging to the individual than the risk of being singled out after a contrarian position fails to perform in the short run. This, together with the direct and indirect tying of compensation to relative performance, can lead to a shortening of asset managers' performance horizons.

Moreover, the increasing concentration of both mutual and pension funds on single asset class (sub-) portfolios, together with the observed tendency of individual investors to invest based on past performance, can give rise to mechanisms that might feed asset price momentum. Such effects could arise, for example, as a result of increasing reliance on style classifications. As managers are unlikely to deviate from their declared investment style, new cash inflows in a particular asset class will tend to be invested with those managers adopting the investment style with the highest recent performance.³⁶ Similarly, assuming a given benchmark index is only partially replicated, feedback effects might be introduced directly as asset managers could be forced to increase (decrease) their holdings of the principal index components in times of rising (declining) index values.

Feedback effects on asset prices could also stem from herding behaviour on the part of institutional investors, a research topic that has attracted a great deal of attention recently. Most econometric studies, however, fail to establish robust empirical support for herding, with the possible exception of US mutual funds, for which some researchers do find some degree of herding.³⁷ These effects, when found, appear to be greater in trades of small stocks and in trading by growth-oriented funds. This suggests that the incentive to herd seems to be stronger for stocks on which public information is harder to obtain and for stocks whose future returns are more difficult to forecast.

³⁶ See Barberis and Shleifer (2000). However, the increasing focus on style classification goes hand in hand with increasing investor preference for style consistency. This, together with enhanced emphasis on investment processes, might help to mitigate feedback effects.

³⁷ See the literature review, Annex 3, for more detail on these issues.

In addition, market efficiency might be reduced because of industry consolidation and the associated consolidation of research activity. With even fewer independent analysts contributing insights regarding the implications of information when publicly released, prices may take longer to reflect the implications of such information. On the other hand, the rise of indexing might imply that, in the past, in certain market segments excessive resources have been devoted to research. This is because, when information gathering is costly and when those who gather information find that their returns fall short of their costs, the achievement of long-run equilibrium could require a market not to incorporate all available information into prices. The explosive growth of indexed equity funds over recent years suggests that markets for large-cap shares in many countries may have reached a point where the cost of gathering additional information exceeds associated returns. By implication, in asset classes where indexed management is less common, such as emerging markets, returns to information gathering may remain relatively high.

Counterbalancing trends

Trends in the asset management industry that counterbalance the potential for a reduced ability of institutional investors to undertake transactions that attempt to profit from perceived misalignments include reduced reliance on peer-based benchmarks, increased asset class choices, the “retailisation” of asset management, and increased emphasis on investment process. In addition, efficiency could be enhanced by the rise in the fraction of total assets controlled by well informed (active) asset managers and by enhanced short-selling abilities.

Discussions with market participants highlighted a widespread decline in the 1990s in the reliance on peer-based benchmarks. It was generally recognised that basing each fund manager’s performance on the performance of other fund managers is a recipe for copy-cat behaviour. This recognition, as noted above, has led to an increase in the use of market indices as benchmarks of performance.

Whether reliance on market benchmarks might be subject to similar concerns depends partially on how quickly relative underperformance shows up in fund withdrawals. Even if funds under management decline in response to bad performance, there will be a lag, allowing the fund to sustain a loss-making position for some time. The length of this period, at least in the retail sector, will depend on various factors. These include the known tendency of ultimate investors not to react to short-term underperformance³⁸ and the importance of load-charges and other contractual restrictions on fund withdrawals. Similarly, in the wholesale sector, such effects will depend on how quickly underperformance translates into the loss of the investment mandate. Institutional clients, such as pension funds, now pay closer attention to the quality of the decision-making process and managers’ ability to stick to the agreed asset management style. With increasing emphasis being put on investment processes, investors may be inclined to lengthen performance assessment periods. This might encourage fund managers to assume and retain, within the scope of their (relatively narrow) mandates, more long-lived investments in assets that seem inappropriately priced relative to fundamentals. In addition, there will usually be some diversification, so that not all (contrarian) holdings of a given investment fund will be losing money at the same time. This will help in alleviating underperformance of specific positions and fund withdrawals.³⁹ Finally, arbitrageurs might be able to avoid withdrawals altogether. Private equity funds and similar vehicles, for example, tend to encourage self-selection of investors, by imposing higher minimum investments and lock-in periods, to avoid sudden fund outflows.

The past two decades have witnessed an explosive growth in the spectrum of asset classes available to investors. This trend suggests a broadening of investment strategies available to investors and a concomitant decline in the potential for highly correlated investment behaviours. The “retailisation” of asset management - that is, the shift towards fund management of retail accounts, such as mutual funds - has also decreased the potential for such effects, at least across asset classes. For example, the trend towards specialised fund managers, making investment decisions within a sector, and a

³⁸ Empirical evidence on this issue is provided by Remolona et al (1997), who show that retail investors tend not to generate sizeable feedback effects by moving out of mutual funds in response to short-term underperformance.

³⁹ Increasing use of the core-satellite approach, however, suggests that the scope for such diversification effects might decrease, given that the size of any active position is limited by the size of the respective satellite portfolio. Whether the scope for diversification within and across these portfolios is large enough on average will depend, among other things, on the consolidation trends highlighted earlier in the report.

diffuse retail investor base, making asset allocation decisions across sectors, may have led to a decline in the likelihood of feedback effects. The above might be enhanced by the clear tendency in the asset management industry towards a shift of responsibilities for strategic asset allocation away from fund managers and towards the owners of funds. The shift from DB towards DC retirement plans, for example, shifts responsibility for asset allocation from plan sponsors to individual recipients. This permits individuals to take on greater or less risk than other participants in their retirement plan. It also permits them to allocate their investments across broadly defined asset classes (eg equities vs bonds) according to their personal views of future market trends, depending on the menu of choices they are offered and the extent beneficiaries actually make use of these possibilities. Recent academic research based on retirement savings plan data, however, suggests that individual portfolio choices might be unduly influenced by the menu of funds offered to plan participants, which may result in unbalanced portfolios.⁴⁰

Informational efficiency might increase for a number of additional reasons. First, a rise in the fraction of assets controlled by well informed, professional managers could raise the speed with which the prices of individual assets adjust to changes in known fundamentals. Efficiency could also be enhanced by the recent shift towards hedge funds and other forms of alternative investments, which might help to establish contrarian positions. To the extent that these vehicles act on discrepancies between prices and fundamental values, this would stem potential misalignments. Similarly, informational efficiency could be improved by any increase in the average ability to short-sell assets.⁴¹ The shift towards alternative investment vehicles could increase the average ability to short-sell, since such investors face fewer constraints on their trading strategies. The rising importance of index funds may support this effect, as these funds are known to enhance the returns on their holdings by securities lending.

Effects on the individual asset level

Given the multitude of at least partially offsetting effects highlighted above, it is hard to reach a definitive view on whether and how these various tendencies will, in the aggregate, affect market efficiency and volatility. However, even if broad misalignments on an aggregate, market-wide level might not be seen as a problem, inefficiencies due to institutional asset managers' behaviour could, for much the same reasons, still arise and persist on the level of the individual asset or security. For example, according to Miller (1977), when short-selling is restricted, the marginal investor will be an optimist when there is sufficient divergence of opinion about the fundamental value of a given asset. Therefore, short-sale constraints may lead to upward biases in securities prices as pessimistic investors are restricted from short-selling. Such constraints include, among other things, the cost of obtaining securities in the securities lending market. Recently, the cost of shorting stocks has been quantified in the literature.⁴² One crucially important finding of these studies is that apparent anomalies, such as the poor long-run performance of IPOs as well as "negative stub values" (situations where a firm's market value is less than the value of its stake in a publicly traded subsidiary), cannot be eliminated by arbitrage, reflecting the prohibitively high overall costs of shorting these securities.

Overall, however, it appears that actual short-sale costs (ie expenses for borrowing and shorting securities) or potential non-availability of securities for lending are not able to explain the "lack of shorting" in settings with negative stub values and in other "special situations". In such cases, therefore, arbitrage activity appears to be limited - even when explicit arbitrage costs (such as securities lending fees) are small and when the arbitrage opportunity looks perfect from the outside. This, in turn, suggests that a critical mass of potential arbitrageurs is either not able to short or simply chooses not to do so. Against the background of ongoing industry trends, one possible explanation for this observation might be that, given the structure of institutional asset management, certain restrictions apply that serve to drive up the implicit costs of implementing arbitrage for certain

⁴⁰ It appears that there is a positive correlation between the (relative) number of equity funds offered to plan participants and the percentage invested in equities as investors tend to divide their assets equally among the number of funds that are made available to them. As a result, plan participants might choose an inappropriate risk/return profile. See Benartzi and Thaler (2001).

⁴¹ See, for example, Miller (1977), who notes that the inability to sell assets short can lead to over-pricing.

⁴² See, among others, Mitchell et al (2002).

institutional investors. For example, it has been documented that, even though about 30% of US mutual funds are permitted by their by-laws to sell short, only some 2% of funds actually engage in such activity.⁴³

In addition to actual short-selling prohibitions, which might be regulatory or client-imposed, other aspects of asset managers' incentive structures might prevent them from implementing contrarian strategies. Many of these aspects, as noted above, relate to the asset manager's risk of being forced to prematurely unwind such a position, to reputational considerations or to the explicit requirement to track a given index with some degree of precision. In each of these cases, the prospect of incurring a loss will limit the amount the potential arbitrageur is willing to invest. Under these conditions, any given mispricing essentially needs to become large enough to attract less restricted investors, such as hedge funds. As this will require a degree of specialisation on the part of these funds, apparent anomalies can persist for extended periods.

Market volatility

The trading strategies of institutional investors, as noted above, can be directly relevant to the efficiency of financial markets. If, in the aggregate, the importance of feedback trading and market misalignments were to increase on average as a result of current trends in the asset management industry, such as a narrowing and tiering of investment mandates and tighter permissible tracking errors, then medium- to long-term market volatility would be expected to rise relative to the degree of volatility based solely on a change in fundamentals. If the importance of these effects were to decrease, due perhaps to greater participation of well informed agents and by enhanced short-selling abilities, the opposite would occur.

Against this background, the overall effect of recent trends in the institutional asset management industry on the volatility of financial markets is impossible to establish at this stage. While, in general, most of the different effects should tend to cancel each other out, it is conceivable that, at times, institutional investors might add to the volatility of financial markets.⁴⁴ However, the institutional asset management industry provides at least one clear source of negative feedback trading, which is prone to help limit volatility: the fixed asset allocations chosen at periodic intervals by asset managers such as insurance firms, DB pension funds and endowments. A fund invested in bonds and equities, as argued above, with a cap of 60% on holdings of either asset class, would be forced to liquidate equity holdings if market developments raised the value of the equities in the portfolio above this threshold. In the aggregate, such a cap would thus influence the appetite for equity purchases, unless allocation rules were changed.

Finally, even if market efficiency were to increase and, consequently, volatility to be reduced from a medium- to long-term perspective, such a development could involve a trade-off between long- and short-term effects. As a result, trends such as improved short-selling abilities and the increasing importance of alternative investment vehicles, while dampening longer-term volatility, could add somewhat to the short-term volatility of financial markets. It has been noted, for example, that the quarterly rebalancing of asset managers' strategic benchmarks can temporarily increase market volatility, particularly at the end of any given quarter.

4.1.2 Market liquidity

By extension of what was argued above, market liquidity conditions, particularly in times of stress, could be influenced by privately and/or publicly imposed constraints. This would occur if trends in institutional asset management were to constrain the investment horizon, and hence the behaviour, of institutional investors in a way that limited their ability to provide market liquidity. Overall, as noted earlier, due to various offsetting effects, there appears to be no compelling reason to expect institutional investors to be constrained in a way that would systematically affect liquidity on a broad

⁴³ Furthermore, some 79% of US equity mutual funds make no use of derivatives, suggesting that these funds are either not allowed or choose not to use synthetic short positions. See Koski and Pontiff (1999) and Almazan et al (2001).

⁴⁴ Empirical evidence based on the contemporaneous correlation between the fraction of shares held by institutional investors and the volatility of stock returns is indeed suggestive of a degree of added short-term volatility due to institutional asset managers. See, for example, Sias (1996).

market level. On the other hand, one should also not expect institutional investors, because of their potentially long investment horizons or their balance sheet structure, to necessarily step in when structural providers of market liquidity, such as banks and securities firms, prove unable or unwilling to provide such liquidity under difficult market conditions.

Moving beyond these general observations, the specific effects on market liquidity of trends in the asset management industry are likely to differ widely across asset classes and individual securities. The broadening of institutional asset management into additional asset classes, for example, may have fostered issuance activity and securitisation in various markets, with potential consequences for the relative trading liquidity of the respective assets. In addition, assets included in prominent market indices are likely to find their liquidity enhanced, as institutional funds include those assets in their portfolios. As a result, investors will require lower liquidity premia, which will tend to support prices for these securities. Effects like this might be further supported by the increasing importance of indexing, which will tend to drive up the price of securities relative to others not in a particular index. This effect has been observed for stocks in the S&P 500, as additions to this index tend to yield statistically significant and economically meaningful price effects of considerable persistence.⁴⁵

By implication, the cost of funding for large issuers might be reduced, as compared with that of smaller firms, as size is associated with the liquidity of a given market. In addition, market liquidity and the cost of capital could also be affected by interlinkages between public and private regulation of institutional asset managers and the activities of rating agencies as, for example, in the US market for commercial paper. As a result, to the extent that the institutionalisation of savings is expected to foster capital market funding at the expense of intermediated credit, firms may therefore be encouraged to adapt their financing patterns to more volatile sources of funds.

4.2 Risk management

One of the main trends in the institutional asset management industry, as already argued, is the ongoing backwards delegation of investment risk-bearing, along with certain responsibilities for strategic asset allocation, to owners of funds. This increased financial risk borne by households adds to the need for sound risk management on both the household and institutional investor level.⁴⁶ At the same time, this calls, more generally, for a more thorough understanding of risk-related issues on the part of all parties involved in the investment decision process. Increased emphasis on risk management, in turn, may shorten fund managers' investment horizons and contribute to some of the effects discussed previously. This is because risk management assessments tend to have shorter time horizons than traditional performance assessments, possibly making it more difficult to maintain longer investment horizons.

Overall, these developments are likely to increase the structural demand for risk transfer instruments (including derivatives) and guaranteed investment products. This might even be reinforced by cyclical factors, given the current environment of low interest rates and depressed equity markets, which tend to put added pressure on DB pension schemes and insurers. In addition, as far as asset managers are concerned, the Merrill Lynch/Unilever case has highlighted the potential for legal and operational risks. This, in turn, calls for an improvement of asset managers' internal and external communications, which includes regular reviews of mandate compliance within firms and between firms and clients.

Given the above, it is possible that retail investors will increasingly demand products with, for example, put options on equity indices to set a floor on how far their equity portfolio values can fall. This would drive demand for equity-linked retail investment products with a capital guarantee on the invested funds. As a result, the need for stronger risk management on the part of those offering such

⁴⁵ See, among others, Lynch and Mendenhall (1997). However, the increasing popularity of index management and ongoing consolidation in this area of the industry could also affect broad market liquidity negatively, due to off-market crossing of trades.

⁴⁶ In this regard, developments in institutional asset management are likely to add to other ongoing trends, eg those involving IT-driven changes of production processes. As the ensuing transformation of the firm is mirrored by changes in the household sector, households tend to assume more business risk both through the provision of capital and, tententially, also through labour income. This will add to risk management demands on the household level. In addition, as IT-driven changes tend to increase idiosyncratic risks, diversification may require larger portfolios and more widely ranged exposures, reinforcing the rationale to invest in pooled vehicles and to broaden the scope of asset classes. See CGFS (2002).

guaranteed investment products would increase. Providers of such products would need to accurately assess the costs involved and ensure correct pricing as well as put aside appropriate resources to reserve against possible losses. Furthermore, to the extent that capital-preservation strategies amount to implementing portfolio insurance, some of the feedback-related considerations reviewed above might be reinforced if these strategies gain significant importance in the institutional asset management industry.

Finally, to the extent that asset managers have started to invest in relatively new and/or complex instruments, additional risk management issues might arise. Investments in collateralised debt obligations (CDOs), for example, have recently gained popularity with institutional investors hoping to diversify portfolio risk. This seems to raise risk management issues on the part of these CDO investors, particularly as record numbers of CDOs have recently been downgraded in response to deteriorating creditworthiness of those companies who tended to be popular credits included in these instruments.⁴⁷ Overall, given that institutional investors' risk management practices tend to be less advanced than those in the banking sector, it seems that asset managers would have to go beyond differential value-at-risk (tracking error) and other traditional tools in terms of measuring and communicating their exposures.

4.3 Other implications of policy relevance

Questions as to how financial market development is related to the structure and growth of the institutional asset management industry have long attracted the interest of the policy community, particularly with regard to the financial landscape in the developing countries.⁴⁸ The rise in passive management and the tendency towards funded, DC pension schemes, for example, encourage the demand for tradable, relatively liquid assets. This, in turn, can foster a deepening of existent financial markets and the securitisation of previously non-tradable assets. Growing demand for transferable securities, for example, seems to some extent to be driving the increased activity levels in the market for certain securitisations. A similar reasoning applies to specialist asset managers who, by acting at the "fringes" of established financial markets, broaden the scope of asset classes available for individual investors. Finally, effects like this will also extend into the derivatives markets, as increasing exposure by households and risk management needs of institutional investors are likely to boost demand for risk transfer products.

By implication, regulation, such as restrictions on investing in unregulated markets or limits on the use of derivatives, can hamper market development by imposing restrictions on the activities of institutional asset managers. This suggests that regulation, eg for consumer protection reasons, may cause unexpected costs in areas unrelated to the underlying rationale of the regulatory effort, and argues for a full cost-benefit analysis prior to the imposition of regulatory constraints.

5. Conclusions

The goal of this Working Group report is to outline trends and developments in the institutional asset management industry and to identify possible implications for financial markets of the main developments that have affected the size of and the way business is conducted by that industry. This industry has grown substantially since the mid-1990s, matching the rise in stock market valuations up to early 2000. Since its growth is driven by underlying demographic shifts and pension reform, this trend is likely to continue beyond the present cyclical downturn. Overall, an increasing share of financial wealth is now placed with professionally managed funds, complemented by rising interest in non-core markets and, recently, some growth in funds placed with unregulated asset managers. In

⁴⁷ CDOs are synthetic securities that are created by issuing bonds secured by income from pools of other bonds, loans or mortgages. Usually, the pool is separated into tranches with different ratings and the issuer will hold on to parts of the equity (ie first-loss) tranche. This tranche, in turn, has an option nature as its value will fall to zero once a certain number of defaults have materialised. See CGFS (2003).

⁴⁸ See, eg, OECD (1998).

addition, increasing emphasis is placed on strategic decision-making and risk-taking by ultimate investors, with potential implications for, among other things, the way risk management is implemented.

As a result, the industry is characterised by increasing complexity, which also affects the agency relationships involved in delegating asset management decisions. The instruments used to deal with the need to align the interests of fund owners and managers, including public regulation, can, in turn, affect the behaviour of market participants and, thus, market outcomes. Therefore, ongoing industry trends have an obvious potential to change institutional investor behaviour in ways that can be important for global financial markets, given the size of institutionally managed portfolios and their central role in managing private and public savings. Based on available research and two rounds of interviews with market participants, this report documents many of those industry trends and highlights possible implications.

5.1 Core findings

Within the industry, established trends offer a number of potential implications for financial markets. Among these, some can be expected to influence market efficiency, volatility and liquidity. The net effect of these trends, however, is not clear cut. While some aspects of the industry structure in institutional asset management suggest scope for influencing market outcomes, robust evidence on these effects is not available. Incentives to seek to profit from making informed judgments about long-term asset price relationships might be reduced by, for example, the growing reliance on a limited number of core market benchmarks to measure performance and the narrowing of permissible tracking errors. Potentially offsetting these trends is an increase in the control of individual investors over their portfolio allocations and the rising proportion of assets managed by alternative investment vehicles, which are not as strictly constrained by benchmarks or limits on tracking errors.

Given these at least partially offsetting effects and the lack of empirical evidence, there is, on balance, no clear-cut support for the hypothesis that aggregate market efficiency and volatility are unduly affected by recent developments in the incentive structure of institutional asset managers. While, at times, asset managers might find their performance horizons shortened, profit opportunities and relatively free entry suggest that pricing inconsistencies, when they occur, will tend to be corrected over the medium term, once misalignments grow too big. Hence, there seems to be no clear-cut evidence that institutional investors systematically contribute to or consistently fail to correct large-scale misalignments. However, short-term effects along the lines of what was argued above are well conceivable, particularly when assets under institutional asset management are relatively large in comparison to the size of a particular market or market segment. In addition, constraints on the behaviour of institutional investors do apparently have their effects “in the small”, as suggested by recent empirical research on misalignments at the level of individual securities, ie “special situations”. Further academic research along the lines of these recent empirical papers, therefore, seems to be a particularly fruitful way to more fully understand how various aspects of the industry structure in institutional asset management interact and how this interaction can possibly affect market dynamics more globally. This, of course, applies also to other econometric approaches, as only such empirical efforts can help to approximate the net effect of the different, potentially offsetting trends in institutional asset management. Deep insights could, in particular, be gained by extending the datasets used in existing research papers to include the period of the recent tech bubble and the subsequent, prolonged correction in equity valuations.

In addition, as some of the ongoing industry trends are likely to further enhance the involvement of individual investors in investment decision-taking and investment risk-bearing, further research on ultimate investor decision-making seems warranted. In particular, researchers should try to reconcile the various effects, such the known tendencies to hold on to assets in times of falling prices or to buy “past winners”, that an increased individual investor involvement could have on overall investment behaviour and market dynamics. Specifically, as some recent empirical evidence suggests that the decisions of retirement savings plan participants might be biased towards making choices inconsistent with their risk/return profiles, such research should aim to shed some more light on the specific role of financial advisers, research analysts, retail sales networks and other parties that might influence, and potentially skew, investor decisions towards specific products and strategies.

5.2 Policy-related implications

Central banks, being placed at the crossroads of most financial flows and thus at the centre of the financial system, have a long tradition of analysing financial market developments. This applies to both the operational, ie monetary policy-related, and the financial stability perspectives. Furthermore, given their responsibilities in the latter area, central banks are, in practice, charged with encouraging, and actively contributing to, the development and maintenance of a robust financial market infrastructure.

Based on this set of responsibilities, the Working Group believes that, as part of their role in the financial stability-related oversight process, central banks need to monitor and understand structural developments in the financial system on an ongoing basis. This will include, although not necessarily a set of topics unique to central banks, issues related to how the financial system evolves in response to demographic changes. As implications in this area go beyond the confines of the banking sector, the traditional focus of central banks' oversight activities, critical awareness of a number of core issues seems important in developing a central bank perspective on the various challenges in the area of managing public and private (retirement) savings.

Against the background of what was argued above and standing clear of more specific regulatory issues, a number of policy-related recommendations can be made. Many of these recommendations are, in turn, related to the general issue of preserving the diversity of investment behaviour. This results from the fact that parts of the institutional asset management industry have moved towards becoming a "commodity" industry, offering investors more and more standardised investment products and approaches. A policy implication of this observation is to ensure that, going forward, ongoing industry trends do not result in developments that could ultimately affect the functioning of financial markets. Therefore, providing ultimate investors with as large a choice of potential investment vehicles and strategies as possible seems to be key in diversifying the behaviour of asset managers. This, in turn, calls for promoting an environment in which ultimate investors can take informed decisions about investment strategies and about how these strategies could best be implemented by asset managers.

The more specific recommendations arising from these implications fall into four broad and somewhat overlapping categories: encouraging improved risk management and disclosure, awareness of potential conflicts of interest, avoidance of explicit and implicit barriers to market entry, and awareness of regulatory trade-offs.

- *Encouraging improved risk management and disclosure:* Many of the ongoing industry trends in asset management suggest that risk management demands on both the asset manager and household levels are bound to increase. Improvements in this area are therefore likely to be beneficial. In addition, with regard to specialised, alternative investment pools, benefits can be expected from enhancing the transparency of such investment vehicles, particularly when offered to retail clients, while not discouraging their operations. Similarly, the more risk is being transferred back to the final investor, the more important the need for asset managers to provide these investors with detailed and accurate information on the characteristics of the products they are offered. In this context, it also seems appropriate to pay increased attention to consumer protection issues, as well as the potential for reputational and legal risks.
- *Awareness of conflicts of interest:* Potential conflicts of interest are an inherent feature of financial delegation processes. While transparency, disclosure and a competitive environment can go a long way in terms of restraining or avoiding conflicts of interest, certain features of the institutional asset management industry could potentially bias the decisions of ultimate investors. While recent debates on corporate governance issues have shifted attention to the incentive framework of, in particular, auditing firms and research analysts, other important areas have so far been left out. This includes the incentive structures of players like investment consultants, index providers, rating agencies and fund managers' sales networks, which, given the industry trends highlighted above, are likely to further gain importance in terms of shaping investors' decisions. Going forward, critical awareness of such potential conflicts of interest and their implications seems to be warranted.
- *Avoidance of explicit and implicit barriers to market entry:* To support market efficiency and liquidity, and to help limit volatility, care should be taken to maintain an environment that encourages market entry by pooled investment vehicles in general and by specialised investment pools seeking to exploit arbitrage opportunities in particular. Until recently, for example, fund management companies in Germany had not been permitted to outsource back office and non-core activities in order to avoid unclear responsibilities for operational

risks. This, however, has tended to burden smaller firms with a relatively high fixed-cost base, increasing the cost of entry into the asset management industry. A similar reasoning applies to other parts of the institutional investment industry, particularly if these are characterised by a high degree of concentration and potential conflicts of interest.

- *Awareness of regulatory trade-offs:* Regulatory actions, such as forced name diversification rules, short-sale restrictions or investment constraints based on issuers' credit ratings, and accounting rules can affect the efficiency and dynamics of financial markets. With this being the case, market stability can, at least potentially, be affected as well. In addition, regulation, such as restrictions on investing in unregulated markets, can hamper market development by imposing constraints on the activities of institutional asset managers. Regulation, therefore, tends to involve a trade-off between the underlying rationale for regulating financial markets, eg investor protection, and the costs imposed on other market participants and markets as a whole. This suggests that moves towards further regulation should be carefully evaluated against the costs imposed in terms of changed behaviours and their possible impact on market structure and dynamics. Similarly, current regulation, when proceeding along the lines of what was argued above, might be reviewed in the light of these trade-offs.

Annex 1: Mandate of the Working Group

The following mandate was approved by the Committee on the Global Financial System of the central banks of the Group of Ten countries at its 11 November 2001 meeting.

Mandate for a CGFS Working Group on incentive structures in institutional asset management

The Working Group is to explore developments relating to the environment in which institutional asset managers (eg mutual funds, pension funds, insurance companies) operate, with a view to enhancing understanding of how various types of incentive structures affect asset managers' behaviour. The work is to provide a stylised review of the different layers of agency problems in the delegation of investment decisions, of approaches adopted to manage these principal-agent relationships, of other determinants of the behaviour of institutional asset managers, and of the possible side effects as to the functioning of financial markets. Main issues to be addressed in the study are:

- description of developments in institutional asset management and the structural forces behind these developments, based on the relevant literature, on the available data, and on interviews with market participants;
- identification of different classes of market practices relating to the monitoring, performance assessment and compensation of asset managers and assessment of the impact of these practices on the diversity of investment behaviour via the consequences for incentives;
- potential implications for financial markets, with a particular emphasis on asset price dynamics and issues related to market liquidity in normal times;
- avenues for future research, based on the preliminary results of this study.

It is envisaged that, as a first step, the Working Group will survey the relevant literature (including work undertaken by other working groups and bodies) to provide a foundation for its work. In addition, a number of pilot interviews could be conducted on a voluntary basis by a few central banks. Based on the review of the literature, the pilot interviews and its deliberations, the group will then, as a second step, identify issues to be explored further in a series of discussions with market practitioners. The Group will begin its work immediately with a view to producing an interim report by early 2002. Based on the interim report and on the interviews with asset managers, to be held after the interim report's approval by the CGFS, the Group aims to produce its final report in time for consideration by the CGFS at its meeting in November 2002.

Annex 2: Guideline for interviews with industry representatives

The purpose

The Committee on the Global Financial System (CGFS) has recently established a Working Group on incentive structures in institutional asset management. The Working Group, chaired by Michel Cardona of the Bank of France, is to explore developments in the operating environment of institutional asset managers. The objective is to enhance the Committee's understanding of how various types of incentive structures affect asset managers' behaviour.

Interviews

The Working Group's project involves conducting series of interviews with representatives of the asset management industry (such as asset managers and pension fund trustees). In order for us to get a better sense of the salient features of current practice as regards the structure of compensation schemes, performance evaluation and other issues, each national central bank could contribute to the Working Group's effort by interviewing a number of experts in the institutional asset management industry.

Guidance for the interview process

The following has been designed to provide guidance for Working Group members when preparing their interviews with representatives of institutional asset managers. Its purpose is to encourage consistency with respect to the topics covered in the interviews by use of a common framework.

Please note that what follows is meant as an interview guideline and not as a questionnaire. You are, therefore, not advised to collect answers for every question from every participant. As the group aims for broad coverage of the various categories of industry actors (eg mutual fund managers, pension fund managers and trustees, consultants), particular questions may be more important for some actors than for others.

In the course of the interviews, questions should therefore be tailored to fit the particular circumstances of the interviewee. Furthermore, it is probably advisable for you to send a, possibly edited, version of this paper to interview participants in advance. In addition, individual central banks will be free to choose whom to contact and when.

I. General questions

1. What is the outlook for assets under management in the various sectors of the asset management industry? What are the principal drivers of growth?
2. What are the roles of the regulatory framework, the trustees/owners of funds and managers in shaping current industry practices?
3. Is there a trend on the part of insurers, pension funds or other asset managers towards investing in hedge or other pooled investment funds?
4. Do separate fund managers specialise in retail vs institutional business? Is the industry dominated by large businesses maintaining large numbers of funds and accounts for retail as well as institutional investors?
5. To what extent is institutional asset management conducted externally and/or in-house? If managed externally, are funds split between several managers?
6. How would you describe the influence of investment consultants on your business and the industry?

II. Fee structures

1. What are the commonly used elements of fee structures that accompany asset management mandates (eg fees based solely on a percentage of assets under management, performance-related fees, penalties for underperformance etc)?
2. How are these elements combined for different types of contracts/institutions? Are there important trends and rationales behind them?
3. Can you give an estimate of the relative importance of each of these types of contracts?
4. What is the order of magnitude of fees charged across funds dedicated to different asset classes and strategies?
5. What is the order of magnitude of the yearly compensation paid to service providers (eg distribution channels/selling networks/customer relationship managers) as a percentage of assets under management?
6. What are the factors underlying the decision of setting loading charges on customers? What are the criteria used in choosing between front-end and back-end loads?

III. Performance measurement

1. What is the typical contract length of an asset management mandate, what a typical investment horizon?
2. Is performance measured in absolute or relative terms? What are the most commonly used benchmarks (broad indices, customised benchmarks, peer groups, risk-adjusted performance measures)? Is performance measured net of transaction costs?
3. Is (relative) performance adjusted for risk?
4. Is there a significant use of limits on divergence from the selected benchmark (tracking error) in the formulation of mandates? What are typical tracking errors used for different types of mandates and have agreed errors changed over time?
5. What type of relationship do you have with distributors? Is there an influence of the distribution network on customers' investment horizons, asset allocation decisions and the pattern of fund in- and outflows?
6. Would you welcome a greater role for fund rating agencies?

IV. Investment and decision-making process

1. What are the main characteristics of in-house decision-making and investment processes? Is your company's decision-making process rule-bound or discretionary?
2. What are the differences in the processes applying on the strategic and tactical asset allocation level? How and how frequently are decisions reviewed?
3. What type of information and/or model and/or algorithm is used at the various levels of the decision-making process? In terms of making investment decisions, what is the relative importance of the fund manager's personal view/estimate?
4. How do you rate information on peer companies according to its usefulness in assessing your own company's prospects and in making asset allocation decisions? What are your main sources of information on peer companies' asset choices and attitude towards risk (eg data vendors, financial press, peer company accounts)?
5. What are the primary risk management techniques applied, both at the company level and by individual managers? If products offered have guaranteed returns or similar features, how does this affect risk management practices?
6. In case of significant underperformance, when would an investment strategy be modified? Are there any sanctions imposed for persistent underperformance? What constitutes persistent underperformance?

7. Are there any regulatory or other commonly used investment constraints in fund mandates (eg diversification requirements, capped portfolio weights, limits to the use of leverage or particular instruments)?
8. In terms of day-to-day decision-making, what are the most important constraints to asset managers' behaviour (eg explicit investment constraints, performance measures, aspects of the in-house decision-making process, asset size)?
9. Do asset managers use the room for manoeuvre (deviation from benchmark) provided by their mandates?
10. What are the aspects of your own decision-making process that are regarded as the most valuable by your clients and consultants?
11. When choosing external asset managers, what are the aspects of their decision-making process you would regard as most valuable? How would you weigh your assessment of the decision-making process relative to (past) performance?

V. Fund manager selection and compensation

1. What are dominant criteria in selecting fund managers? Have they been changing or do you foresee changes in the years to come?
2. What are typical tasks of a fund manager? Are there any observed tendencies in how tasks have developed or will develop over time?
3. What is the character of the compensation paid to individual fund managers? How important are bonuses and how are they determined?
4. Are the benchmarks used in evaluating individual managers' performance different from those used in the client relationship?
5. Are there incentive mechanisms other than compensation and what are the criteria used, for example, in deciding on professional promotions?
6. What is the typical profile of a fund manager in terms of age and experience? Are there patterns in staff turnover?

VI. Other topics

1. What were the lessons learned by your firm during the tech bubble of the late 1990s? Have these lessons led to a reconsideration of the structure of incentives in the asset management industry?
2. What is the markets' view on the Myners report (www.hm-treasury.gov.uk), particularly with regard to its findings' implications for financial markets?
3. What is the industry representatives' view on the "lessons to be learned" from the Unilever/Merrill Lynch UK court case? What might be the broad consequences for the functioning of financial markets of efforts to address problems surfaced by the case?

Annex 3: Institutional asset management - a survey of the literature⁴⁹

I. Introduction

Institutional asset management is a service involving management (by a securities firm, insurance company or mutual fund) of an investment portfolio (bonds, equities, property) on behalf of a group of clients (individual investor, company, bank or pension fund). The growth of the asset management industry over recent years is a key feature of ongoing structural changes in the financial system, with the importance of the industry readily apparent from size of the assets under management by different institutional asset managers (OECD (2001)). At the core of any asset management relationship is a pool of assets, the returns on which are shared by the principal owners of these assets and the professionals that have been hired to manage the portfolio on the owners' behalf (Davis and Steil (2001)). This setup, paired with asymmetric information, implies the existence of principal-agent relationships and suggests that appropriate incentive and control mechanisms need to be put in place to ensure optimal outcomes. Different classes of institutional investors can be distinguished in terms of the agency problems and, in turn, the contractual relationships involved. Investments in mutual funds, for example, differ from those in occupational pension funds as the former are decided by individuals investing their own wealth, while the latter are guided by corporate treasurers acting for the corporation that provides the benefits to its employees (Lakonishok et al (1992b)).

Typically, remuneration schemes will be used to align managers' objectives with those of investors. In addition, investors have the option to shift funds to another asset manager or investment vehicle, ensuring that some form of competitive pressure is being put on managers. As a result, managers of investment funds will suffer loss of business or may be taken over if they underperform, while pension fund managers may lose their mandate. Performance measurement and attribution are thus essential prerequisites for effectively monitoring delegated investment management, as assessments of relative performance will guide investors' decisions. However, differences in the agency relationships involved imply differences in the contractual relationships. For each class of investor, therefore, a specific set of rules will determine the distribution of risk and returns that will, together with the competitive structure of the industry, shape agents' behaviour. It is thus conceivable that the incentive structure in place can itself give rise to distinct patterns in the behaviour of market participants (BIS (1998)).

In general, institutional investors, having access to a wide variety of information sources, should help to stabilise asset prices by ensuring that prices do not (substantially) deviate from fundamentals. According to this view, institutional investors are likely to speed up asset price adjustment, since they are well informed and operate on low transaction costs. However, arbitrage is being conducted by asset managers taking large positions with other people's money (Shleifer and Vishny (1997)). In this agency context, their ability to take large contrarian positions to bring prices back to fundamentals might be limited. In addition, institutional investors might theoretically influence markets by themselves moving prices away from fundamentals, ie by exacerbating movements in prices and volatility. This view is based on the sheer size of institutional holdings relative to those of individual investors, the possibly greater use of automated trading and hedging strategies (Genotte and Leland (1990)), reputation effects (Scharfstein and Stein (1990)) and other forms of possible herding behaviour suggested in the literature (Bikhchandani and Sharma (2000)).

Although the academic literature provides some theoretical results and empirical evidence, the general picture that emerges is largely inconclusive. For example, the precise nature of the optimal contract between an investor and a mutual fund appears to depend crucially on the specifics of the problem setting. Small changes to the assumptions regarding the underlying agency problem can therefore yield very different optimal contract structures, with different theoretical models typically addressing only specific aspects of real-world decision problems. Similarly, whereas institutional investors display some degree of positive feedback trading, there is no strong evidence of herding behaviour. Moreover, evidence on potentially destabilising effects of institutional investor behaviour is rather weak.

⁴⁹ This survey was drafted, in cooperation with members of the Working Group on Incentive Structures in Institutional Asset Management, by Ingo Fender (BIS) and Eric Jondeau (Bank of France).

II. The agency problem

II.1 Theoretical considerations

The potential conflict between investment managers and investors is a classic example of an agency problem (Ross (1973) and Jensen and Meckling (1976)). Investors (principals) find it desirable to contract with an investment manager (agent) due to the latter's investment skills or his advantage in the collection or processing of information. Cheaper diversifiability (due to indivisibilities of share size), lower transactions costs (bid-ask spreads, commissions), economies of scale and scope, more effective monitoring of issuers' activities, and more effective shareholder-management bargaining are additional reasons for the use of pooled investment vehicles. However, several conflicts of interest may arise. Investors, on one hand, would like the fund in which they invest to use its judgment to maximise risk-adjusted expected returns. Fund managers, however, are motivated by their own profits and may not expend the optimal amount of effort. In addition, the information they possess and the way the information is used are not directly observable. As a result, an investment manager's actions may deviate from those that would maximise risk-adjusted expected returns for the investor.

A natural tool for controlling the investor-manager agency conflict is the manager's compensation contract. An optimal contract between investors and the fund manager should align the manager's interests with those of his clients by giving the manager incentives to expend effort in gathering information and to make good use of the information in the portfolio management process. In a traditional agency problem, the optimal trade-off between incentives and risk-sharing is obtained by a sharing rule that defines the contractually specified share of profits to go to the manager. In delegating portfolio management services to fund managers, owners of investment funds will therefore have to choose a remuneration package that induces the fund manager to make portfolio decisions that maximise the principal's return. Bhattacharya and Pfleiderer (1985), for example, find the optimal compensation scheme to be a convex function of the difference between the ex post return of the risky asset and the announced expected return.

In addition, owners of managed portfolios are faced with the basic difficulty of adequately measuring the performance of the professionals hired to manage their portfolios, which involves judgments of whether the net return on a portfolio is an adequate compensation for the portfolio's risk. While the returns of a given portfolio will generally be observable, risk will not, implying that performance measurement involves a choice of how risk is to be measured (Shukla and Trzcinka (1992)).

II.1.1 Performance measurement

Given investors' basic problem of assessing portfolio performance, benchmarks will be needed to put an individual portfolio's performance into perspective, making it useful to assess actual investment performance against some overall index of performance. Such an index would have to measure the actual returns of traders relative to some equilibrium risk-return relationship. Any performance index, therefore, has to consider the return relative to the risk of the portfolio and then rank alternative portfolios accordingly (Shukla and Trzcinka (1992)).

There are three basic performance measures, known as the Sharpe ratio, the Treynor index and Jensen's alpha. The Sharpe performance index (S) is a reward-to-variability ratio and is defined as

$$S = \frac{R - R_f}{\sigma} \quad (1)$$

where R , σ , and R_f denote the return and standard deviation of the fund, and the risk-free rate, respectively. The mutual fund manager will be outperforming the random selection strategy provided his value of S is greater than that given by the randomly selected portfolio. The Treynor performance index (T) is a reward-to-risk ratio, defined as

$$T = \frac{R - R_f}{\beta} \quad (2)$$

where β denotes the systematic risk of the fund, ie the risk that cannot be diversified away by adding extra securities to the fund. Under the CAPM, values for the Treynor index should be the same for all funds when the market is in equilibrium. There have been a large number of studies of mutual fund

performance using and comparing the above indices. Most of these studies find that the same ranking is obtained for both indices. This is because there is a very strong correlation between the σ and β for each fund (Shawky (1982)).

Jensen's alpha is defined as the difference between a portfolio's actual average return and the equilibrium return that should have been earned by the portfolio given market conditions and portfolio risk. Technically, using the CAPM model to determine equilibrium returns, alpha can therefore be measured as the deviation of a portfolio return from the so-called securities market line and is obtained as an estimate of α in the following CAPM relationship:

$$R - R_f = \alpha + \beta(R_M - R_f) + e \quad (3)$$

where R_M denotes the market return. A mutual fund earns a return in excess of that given by the CAPM if α is positive.⁵⁰

In real-world applications, when measuring performance relative to a market benchmark and when defining performance targets in fund management mandates, allowance tends to be made for risk by measuring the portfolio's excess return per unit of tracking error. This measure, dividing excess return relative to benchmark by the tracking error, is frequently called the information ratio (Lee (2000)). By definition, the tracking error (TE) of a given investment strategy is defined as the standard deviation of excess returns over a sample period. That is

$$TE = \sqrt{\frac{1}{T-1} \sum_{t=1}^T \left(\alpha_t - \frac{1}{T} \sum_{\tau=1}^T \alpha_\tau \right)^2} . \quad (4)$$

This makes the tracking error a summary statistic of the degree of dispersion of excess returns. The higher the riskiness of a given investment strategy, the higher will be the dispersion of the distribution of excess returns, leading to a higher tracking error as well as higher excess returns. Therefore, similarly to the other performance measures mentioned above, the information ratio provides a risk-adjusted measure of the asset manager's performance.

II.1.2 Optimal contracting

Investment managers receive fees as compensation for the portfolio management services they provide. The structure of these fees, at least for US-based mutual funds, is largely unconstrained by regulation. The only exception is a prohibition of the use of asymmetric "performance fees", ie contracts that compensate advisers for portfolio gains, while not penalising losses (ICI (1997)). Several authors have investigated the problem of deriving optimal compensation contracts for portfolio managers. Interestingly, this literature on optimal contract design in delegated portfolio management is less than conclusive. The sensitivity of contract design to the specifics of the underlying agency problem is highlighted by the variety of results derived in the literature. Starks (1987), for example, argues that symmetric (that is, non-convex) fees dominate asymmetric bonus contracts, while Bhattacharya and Pfleiderer (1985), as already indicated, find that the optimal compensation scheme should be a convex function of the difference between the ex post return of the risky asset and the announced expected return. In addition, Admati and Pfleiderer (1997) argue that compensation schemes based on benchmark-adjusted performance measures are not optimal, while Maug and Naik (1996) find that optimal compensation structures will always contain relative performance elements.

Based on the literature, however, it can be argued that optimal contracts should, in general, contain (either explicitly or implicitly) some sort of performance-related compensation component, which, in turn, will tend to be measured relative to a benchmark rather than in absolute terms (to control for common uncertainty). A delegated portfolio management contract, therefore, is generally found to have the following components:

- a profit sharing rule, to align incentives in terms of returns;

⁵⁰ It is important to note that performance measures are heavily affected by the choice of benchmark. As pointed out by Roll (1978), if the benchmark is not mean-variance efficient, Jensen's and related measures will not reflect the ability of the money manager but the inefficiency of the benchmark.

- a relative performance component, to make returns comparable and control for common uncertainty;
- checks on risk-taking, such as explicit investment constraints.

As a rule, the specifics of a given contract will depend on the precise nature of the problem setting, with differences in the agency relationships involved implying differences in terms of the optimal contractual relationships: is the underlying problem of a one- or multi-period nature, what is the number of risky assets, is there any inside information, what is the structure of this inside information across agents, is asset manager effort observable, and how many layers has the agency problem?

Bhattacharya and Pfleiderer (1985) study a simple model with a risk-free asset and a single risky asset. In their model, managers receive private information about security returns and investors need to distinguish between managers who react to past returns and those who have truly valuable information on future returns. The optimal contract scheme, therefore, is chosen to force the manager to reveal his true beliefs about future returns based on his predictive abilities. The authors find the optimal compensation scheme to be a convex function of the difference between the ex post return of the risky asset and the announced expected return.

Maug and Naik (1996) consider a single risky-asset model, in which the manager has imperfect, private information about stock returns and chooses his portfolio after observing the benchmark. It is shown that, under these conditions, optimal portfolio management contracts will always contain relative performance elements. The compensation of the fund manager increases with his own performance and decreases in the performance of a benchmark. Fees and management contracts should therefore, according to these findings, be performance-related and relative rather than absolute return-oriented. Admati and Pfleiderer (1997), on the other hand, argue that benchmark-adjusted performance measures are not optimal with respect to efficient risk sharing and incentive alignment. The authors analyse the problem of delegating portfolio management in a multiple-asset model and examine the use of benchmark portfolios in the compensation of a privately informed fund manager. In doing so, they show that commonly observed benchmark-based compensation schemes: (1) are inconsistent with optimal risk sharing; (2) are inconsistent with the goal of obtaining the optimal portfolio for the investor; (3) tend to weaken a manager's incentives to expend effort; (4) are not useful in screening out bad (ie uninformed) managers; and (5) play no role in aligning the manager's preferences with the investor's when constraints are placed on the manager's portfolio choice due to uncertainty about the manager's risk tolerance.

Due to opaqueness about talent, asset managers attempt to use non-return characteristics to signal quality. Dow and Gorton (1997), for example, indicate that, although fund managers may find that the best decision is simply to hold the existing portfolio, ie to do nothing, they may have an incentive to engage in noise trading, ie to trade even though they have no reason to prefer one asset to another. This is due to the inability of the fund manager to convince the client that inactivity might be optimal. Hence, clients might wrongly interpret his decision to be inactive as a signal of not having spent enough effort or being untalented. This reflects the fact that any ex post measure of return or risk is a very noisy measure of the expected return or risk of the portfolio or portfolio strategy undertaken. Therefore, given short-term horizons for evaluation, distinguishing luck from talent, either good or bad, is a daunting task. In such an environment, designing a contractual portfolio management relationship is thus largely a question of how to maximise the distinction between optimal inactivity and shirking (that is, more generally, ability and lack of ability), so that the two activities are distinguishable.

Kapur and Timmermann (1999) examine the effects of relative performance contracts on portfolio choice and consider equilibrium outcomes. They argue that relative performance contracts provide incentives for managers to perform well, while insuring them against the uncertainty common to all investment funds. The authors find that if fund managers are risk-averse and rewarded purely on relative performance, they will hold identical portfolios. Holding the average portfolio is thus a safe strategy for risk-averse investors in a world where all fund managers are homogeneous in terms of their expertise and information. Their result is, hence, consistent with Holmstrom (1982), who points out that relative performance evaluation is valuable if agents face some common uncertainty.

Lynch and Musto (1997) explain the widespread use of contracts based on net asset value (NAV) as a contracting variable, with the standard contract paying the manager a fixed fraction of NAV. As compensation depends on NAV, which in turn depends on effort, NAV contracts align fund manager incentives with those of investors. In their model, manager effort is observable prior to the investment decision, but is not verifiable. On this basis, it is shown that fixed fractions of NAV do better than return-based contracts, particularly when fund return is a noisy signal of effort. However, if managerial

ability is high, contracts with NAV fractions that are increasing in fund returns are much more attractive than fixed fractions. This might explain why hedge funds tend to have performance fees, while mutual fund contracts are based on fixed NAV fractions. These findings add to the results in Starks (1987), who compares symmetric “fulcrum” performance fees with bonus contracts, ie contracts that pay a percentage of NAV plus a bonus for outperforming the benchmark, in terms of their ability in aligning the interests of fund managers and investors. In her model, asset managers decide on the portfolio’s overall risk level as well as the amount of effort used in managing the portfolio. Based on this model, the author finds that, although symmetric performance fees do not completely eliminate agency problems, they still dominate bonus contracts as managers are forced to choose the optimal risk level.

Das and Sundaram (1998a,b) examine funds’ fee structures in an adverse selection model with multiple funds and multiple risky securities. In their model, portfolio managers decide on the risk level and fee structure of the fund’s portfolio, while investors influence managers’ behaviour by choosing the amount they invest with them. It is found that when leveraging is not permitted and the fee structure must be of the fulcrum variety, the equilibrium fee in the model is a flat fee with no performance component. On the contrary, if asymmetric incentive fees are allowed and leveraging is permitted, the equilibrium fee is an incentive fee with a large performance component. The authors also find that incentive fees do, as alleged, lead to more risk-taking than do symmetric fulcrum fees. Overall, these findings seem to match observed fee structures in the mutual fund industry and the hedge fund industry. Finally, fee structures may also serve as a signalling device. Since fees are relatively easy to observe and easy to understand, they form a credible precommitment device for the asset manager trying to signal ability. Empirical evidence, however, is not entirely supportive with regard to this view of the fee structure as a signalling mechanism, as even the area of mutual fund fees does not seem to be fully transparent. Christoffersen (2001), for example, highlights “fee waiving”, where mutual as well as institutional funds voluntarily waive their stated fees (motivated by the desire to make their net performance stronger and thereby attract additional funds for the following year), while other authors have highlighted “expense shifting”, where mutual funds will trade with a particular intermediary in order to accumulate “soft-dollar commissions” - potentially benefiting the mutual fund at the expense of the mutual fund shareholder (Siggelkow (1999)).

Grinblatt and Titman (1989a), Goetzmann et al (1997) and Ross and Turner (1999) examine various fee structures in an options-based framework. All show analytically that the value of the manager’s contract is increasing in portfolio variance due to the call-like nature of the incentive contract. Ross and Turner, for example, start off by explaining that incentive fees will serve to align managers’ and investors’ interests with regard to returns. However, if taken literally, such incentive fees could become significantly negative, which might reduce managers’ willingness to accept such fees. Bonus-based contracts, by adding a floor to the fee, are asymmetric and create manager payoffs that resemble a call option. Given this structure, managers will have an incentive to influence fund volatility towards the end of the evaluation period. Underperforming managers will, therefore, tend to increase volatility, while outperformers may have an incentive to lock in returns and dampen portfolio risk. If this is checked by capping the bonus, manager compensation will be most profitable when volatility is low, generating an incentive to dampen volatility. The authors conclude that performance-related fee structures, while aligning investors’ and fund managers’ interests with regard to returns, might create a divergence of interests with regard to the preferred level of volatility.

Brown et al (2001), however, document in an empirical study that this is not necessarily the case. They examine hedge fund data over the 1989-98 period and find that hedge fund managers do not systematically increase risk when their performance options are out of the money. Instead, they are concerned about relative (peer) performance over time, rather than absolute performance. The authors argue, therefore, that the hedge fund industry provides disincentives to the maximisation of short-term profits through risk-taking by imposing a reputation cost on managers. This cost is sufficient to offset the gambling incentive. Overall, the need to beat the peer group, rather than beating a given benchmark, appears to influence risk choice and, in turn, future fund survival.

Dybvig et al (2000) analyse optimal contracts in a model of security returns and a set of portfolio strategies and contracts. They explicitly examine fund manager compensation in a setting where managers need to acquire costly private information before being induced to reveal that information to their principal. Based on these assumptions, they show that: (1) optimal contracting provides managers with a performance-related payoff based on an uninformed benchmark plus a multiple of the difference between the investor’s return and the benchmark; (2) portfolio choice is limited to a menu; and (3) the manager should reveal information about the planned strategy at the start of the period, after performing the research but before any investment returns are realised.

Almazan et al (2001), in expanding on the second finding in Dybvig et al (2000), highlight the importance of investment constraints as substitutes for explicit and implicit monitoring mechanisms in portfolio management-related delegation problems. The authors find these constraints to be a common feature of contracts between mutual fund managers and investors and point to the fact that these constraints can take a variety of different forms, including restrictions on derivatives use, short sales, borrowing and the holding of liquid assets. In addition, using a large sample of equity funds in the late 1990s, they show that use of restrictions varies significantly across funds. Finally, although the analysis does not control for transactions costs, the results are consistent with the hypothesis that constraints may reduce expected returns.

Kristiansen (2001) studies, from a theoretical perspective, the interplay between market structure (determining implicit incentives) and explicit incentives. He shows that competition for new investors creates implicit incentives which may result in inefficient use of managers' private investment signals. On the other hand, explicit incentives provided by contracts counteract harmful implicit incentives and improve fund manager performance. The interaction of implicit and explicit incentives results in a non-monotone relationship between the level of competition (rivaling funds) and expected performance.

Gervais et al (2001), finally, by focusing on the multi-tiered nature of fund management relationships, examine the role of monitoring mechanisms in delegated fund management. In their model, fund managers as well as investors are subject to uncertainty with regard to the fund manager's skills. In this environment, the fund manager, being able to draw on more information than just portfolio returns, has a comparative advantage in learning his own ability. The authors show that a credible monitoring mechanism can add value in allowing good fund management to be rewarded. The credibility of monitoring, in turn, increases in the number of funds monitored by a given monitor, as the firing of a subset of managers can provide information about the remaining fund managers.

II.2 Empirical evidence

II.2.1 Mutual fund performance

The return performance of institutional asset managers has attracted considerable attention in the academic literature. For reasons of data availability, however, the available research has almost exclusively focused on risk-adjusted returns in the US mutual fund industry. The first generation of papers on mutual fund returns concluded that mutual funds do not earn rates of return sufficient to offset the costs of their operation (Sharpe (1966), Jensen (1968)). Jensen, for example, finds that of the 115 mutual funds studied over the 1945-64 period, 98 were characterised by alphas, ie risk-adjusted excess returns, that were insignificantly different from zero, three by significantly positive alphas and 14 by significantly negative alphas. Shawky (1982) finds measures of Jensen's alpha to be significantly different from zero for only 25 out of the 255 mutual funds examined. Of these, 16 have a negative alpha and only nine a positive alpha. Using the Sharpe index, between 15 and 20% of mutual funds are found to have outperformed an unmanaged portfolio, while for Treynor's index the figure was slightly higher, with about 33% outperforming the unmanaged portfolio.

A second generation of papers finds more mitigated evidence. Ippolito (1989), taking all fees and expenses into account, shows that mutual funds do not exhibit abnormal performance. Grinblatt and Titman (1989b), similarly, suggest that superior performance may exist, particularly among aggressive-growth and growth funds, and funds with the smallest net asset values. These funds, however, also have the highest expenses, so that their actual returns, net of all expenses, do not exhibit abnormal performance.

Related studies investigate the issue of performance persistence, ie the question whether past mutual fund returns predict future returns. More specifically, this line of research allows one to assess whether some portfolio managers can consistently outperform the market. Grinblatt and Titman (1992), for example, test the persistence hypothesis by regressing the abnormal return of a fund over the last 60 months of the data set on the abnormal return over the first 60 months. They obtain evidence of a positive persistence in mutual fund performance: mutual funds in the second five-year period are expected to realise a 0.28% greater abnormal return in the second five years for every 1% abnormal return achieved in the first five years.

Hendricks et al (1993) and Goetzmann and Ibbotson (1994) reassess the extent to which the relative performance of mutual funds can reliably be predicted by past performance, but over shorter

evaluation horizons than Grinblatt and Titman (1992). Hendricks et al obtain that portfolios of recent poor performers do significantly worse than standard benchmarks; those of recent top performers do better, though not significantly so. The strongest evidence is found for a one-year evaluation horizon. Goetzmann and Ibbotson obtain a similar result, even by controlling for different measures of performance, different evaluation horizons, and for management style.

Other authors have argued, however, that a large part of the performance persistence shown in the above papers can be attributed to either survivorship bias or use of an inappropriate benchmark. Mutual fund attrition can create problems because the funds that disappear tend to do so either because their performance is very poor over a period of time or because their total market value is sufficiently small that management judges that it no longer pays to maintain the fund. Thus, to study only funds that survive overstates the measured performance. Brown et al (1992), for example, illustrate that the magnitude of persistence depends on the precise way in which survivorship depends on past performance and whether there is any strategic risk management response on the part of surviving managers. They show that the apparent persistence of performance obtained by earlier studies does not necessarily reflect the skill among surviving managers.

Carhart (1997) uses a large data set of equity mutual funds from 1962 to 1993, which includes all known equity funds over this period. Extending Elton et al (1996) and earlier work by Fama and French (1996), he adopts a four-factor model to calculate fund excess returns. Based on this model, which includes a stock market index, a size index, a value/growth index and a one-year momentum effect (the return differential between the previous year's winning and losing stocks), he shows that the "hot-hand" phenomenon is mainly driven by the one-year momentum effect in stock returns. Once this momentum effect, which translates into the finding that last year's winning stocks are likely to win this year, is taken into account, last year's winner funds infrequently repeat their abnormal performance. This, again, suggests that, when correctly controlling for risk and survivorship bias, fund returns do not exhibit performance persistence. Carhart's contribution, however, has been radically challenged by Wermers (2002), who finds persistence in the US equity fund returns.

Asset size is another potential determinant of fund performance. There may be diseconomies to scale, due to the market impact generated by large trades and management diseconomies, that limit fund managers' ability to deliver excess returns. Blake et al (2002), for example, analyse the performance of a large cross-section of UK pension funds. They find strong evidence of clustering in ex post average performance and fund size appears to be the only variable that can account for an important fraction of the cross-sectional variation in measured performance. In addition, the authors find that fee structures in the United Kingdom, over the sample period 1986-94, appeared to provide strong disincentives for pension fund managers to undertake active management, while relative performance evaluation provided strong incentives to avoid underperforming the median fund manager. Moreover, Collins and Mack (1997) study diseconomies to scale by investigating mutual funds' expenses, finding diseconomies to start at fund sizes of US\$ 600 million, while not tackling market impact costs.

II.2.2 Investment management contracts and fund inflows

Empirical evidence on how the contractual relationships in delegated portfolio management interact with managers' behaviour tends, just like the literature on fund manager performance, to concentrate on the US mutual fund industry. From an empirical viewpoint, the nature of delegated portfolio management has two main implications that are investigated in the literature.

The first of these two issues is related to fund manager behaviour and how it might be affected by the fee structure and performance evaluation scheme in place. In particular, mutual fund portfolios are often found to be altered towards the end of the year. As investors tend to react to year-end returns, a fund may at times increase its expected inflow of investment by altering the riskiness of the portfolio. The incentives to do so derive from the fact that flows are a non-linear function of calendar year returns. The second strand of the literature investigates the determinants of investor behaviour by studying the relationship between mutual fund performance and the net inflow of new investments into mutual funds. Several authors have documented a strong relationship between the inflow of new investments into a mutual fund and the fund's past performance. In addition, fee size, fund family membership and fund age are found to influence fund inflows.

II.2.2.1 Fee structure, performance evaluation and fund inflows

Mutual fund companies typically receive fees that are proportional to the assets under management plus a flat amount (ICI (1997)). Compensation will, therefore, depend on absolute performance, that is

NAV growth, as well as net cash inflows in response to prior relative performance. There is, thus, an incentive for companies to compete with each other for new fund inflows. Fund managers themselves, however, tend to receive performance-related compensation, which includes, in addition to the base compensation, an incentive bonus. This bonus is designed to reward two important elements: the ability of the manager to achieve a high return and the ability to attract new fund inflows. Since both elements are strongly related, in practice contracts are specified primarily in terms of the manager's success in securing above average returns relative to one or multiple benchmarks.

With regard to the structure of mutual funds' fees, many studies have highlighted that the relationship between fund performance and subsequent investment flows acts as an implicit incentive contract (Lakonishok et al (1992a), Orphanides (1996), Chevalier and Ellison (1997)). In these studies, fund performance over the recent past, relative to the performance of similar funds, is found to be the most important determinant of net inflows. Fees, being tied to asset size, will therefore depend on performance as such, that is NAV growth, as well as net inflows due to prior performance. Lakonishok et al (1992b), for example, find a positive correlation between the relative performance of pension funds, as indicated by league table positions, and new fund inflows. Given that management fees depend on asset size, outperforming the market thus leads to higher future rewards through increased inflows, ie higher fees. Even if relative performance is not built into a contract in an explicit manner, it may thus still be part of implicit arrangements guiding remuneration over time.

In addition, managers may attempt to manipulate fund riskiness, to improve relative performance. Chevalier and Ellison (1997) and Sirri and Tufano (1998), among others, document non-linear fund flow/performance relationships that yield de facto convex payoff functions. They show that while superior relative performance generates an increase in the growth of assets under management, which will in turn increase managerial compensation, there is no symmetric outflow of funds in response to poor relative performance. Chevalier and Ellison, therefore, confirm that mutual funds respond to the flow/performance incentive scheme. The authors find the incentives for fund managers to increase or decrease the riskiness of the fund to depend on the fund's year-to-date return. In particular, funds that trail the market may have an incentive to "gamble" and try to avoid underperforming and loss of business, or funds that are ahead of the market may have an incentive to index the market and "lock in" a winning year. Interestingly, the authors do not control for differences in fee structures, indicating that incentives for adjustments to a portfolio's riskiness are strong even in the absence of (explicitly) performance-related compensation schemes.

Brown et al (1996), similarly, show that mutual fund managers with worse relative performance near the end of a performance period tend to increase portfolio risk more than those with a relatively strong performance. The authors do not reject the hypothesis that, when compensation is based on relative performance, managers of portfolios that are likely to end up as losers will manipulate fund risk differently from those managing winning portfolios. Mid-year losers among the investigated 334 growth-oriented mutual funds thus tend to increase fund volatility in the latter part of their assessment period. However, it should be noted that, while the de facto convex nature of fund managers' payoffs may distort portfolio choice by increasing risk appetite, manager's compensation contracts, ie those between the asset management firm and the individual fund manager, could, in principle, be designed to offset these effects (Almazan et al (2001)). Finally, there is evidence from Carhart et al (2002) that money managers tend to move return between periods by "marking-up" their portfolios, ie by last-minute trading of stocks they already hold at end-quarter, based on the practice of calculating net asset values from the closing transaction prices of fund holdings. It is noteworthy that the incentive to mark up comes from the same source as the incentive to boost variance, as noted above, which is the convex relation between new investment and performance. While there was previous evidence suggesting that portfolio managers window-dress their portfolios in response to implicit or explicit incentive compensation, the new evidence is that managers actively try to manipulate the prices of securities they hold. The practice is found to be more common for the best-performing funds, rather than those funds which might like to try to just beat the benchmark (ie those just below benchmark shortly before end-quarter).

Deli (2001) and Coles et al (2000) examine the determinants of fund managers' compensation, with Deli finding that marginal compensation rates are greater for: (1) equity fund advisers than for debt fund advisers, (2) foreign fund advisers than for domestic fund advisers, (3) advisers of funds with higher portfolio turnover, (4) closed-end fund advisers than for open-end fund advisers, (5) advisers of small funds than for large fund advisers, and (6) advisers of funds that are members of small fund families. These results suggest that the sensitivity of payoffs under investment contracts depends on the marginal product of fund advisers and the difficulty of monitoring performance. In addition, Deli

finds that 93% of mutual fund fee contracts are based solely on a fixed percentage of fund assets. Contracts are, hence, linear in asset size, which is consistent with Admati and Pfleiderer (1997), who argue that benchmark-adjusted performance measures are sub-optimal with respect to efficient risk sharing and incentive alignment.

Lemmon et al (2000) provide direct evidence for the effects of incentive contracts on the behaviour of fund managers. The authors examine compensation contracts for managers of dual investment companies to investigate whether financial incentives influence their behaviour. Dual investment funds are homogeneous with observable incentive contracts for which compensation-maximising choices may be derived. While other studies have provided evidence consistent with the incentive effects of contracts, establishing links between incentives and real behaviour is difficult because the data tend to encompass only parts of the total compensation package. The authors demonstrate that dual investment fund contracts create incentives to engage in active portfolio management and that this was reinforced when managers were constrained by minimum dividend requirements. These results suggest a positive role for financial contracts in providing incentives and that the effects of these incentives can significantly affect the wealth of the firm's claimants.

Other studies have investigated the question of whether performance evaluation affects individual fund managers' risk attitudes and time horizons. Baker (1998), among others, surveys 64 UK fund managers and finds that managers are regularly evaluated against performance benchmarks, with the extent of the evaluation and the benchmark differing across types of funds under management. Investment horizons of pension fund managers, for example, are found to be negatively correlated with the frequency of performance measurement. Arnswald (2001) finds similar evidence in a survey of German equity fund managers, indicating that investment horizons appear to be quite restricted. Myners (2001) and Blommestein (1997), in their reviews of the asset management industry, argue along the same lines. Myners, in particular, suggests that frequent, in the case of the United Kingdom quarterly, trustee appraisal meetings have encouraged an emphasis on short-term investment strategies. Although trustees and their advisers tend to stress that short-term performance is not their main concern, fund managers believe that it is, which, in turn, affects their behaviour. Finally, Myners points out that the use of peer group benchmarks in the evaluation of broad investment mandates and of index benchmarks and tight tracking errors may have led to active asset management effectively becoming more passive. The decline in the dispersion of equity returns amongst UK pension fund managers over the past 20 years is seen as indicative in this regard.

11.2.2.2 The determinants of money flows into mutual funds

It is well documented that investors chase past positive performance and that performance persists on a short-term basis. Ippolito (1992), Chevalier and Ellison (1997), Sirri and Tufano (1998) and Rockinger (1996) have reported that money flows into past good performers, while flowing out of past poor performers. Early papers report a positive, linear relationship between the performance of a given fund and subsequent asset growth of that fund. These results suggest that investors react to individual fund performance by directing investment to funds that have performed well in the recent past and directing investment away from poorly performing funds. If performance persists, this behaviour is rational for investors who seek to maximise their individual returns, and this strategy is likely to discipline fund managers and to align their interests with those of investors.

Chevalier and Ellison (1997) apply a semi-parametric model to a data set of mutual funds observed over the 1982-92 period. They find that the relationship between relative performance and subsequent flows is in fact non-linear, with the sensitivity of the relationship and its shape being dependent on the age of the fund. In contrast to the pattern for younger funds, outflows in older funds do not increase significantly at the worst performance levels. Inflows do, however, increase sharply for the best-performing funds whatever the age. Similarly, Lunde et al (1999), examining a sample of UK mutual funds, find that a fund's relative performance is an important factor in an eventual closure decision. Of the 973 UK trusts that were closed between 1972 and 1995, more than 70% were closed within a period of three to 15 years. It seems that very young and very old mutual funds are least likely to be closed down, as investors learn about the quality of a fund by way of a process in which they extract information about fund performance from published return records over time.

Sirri and Tufano (1998) study 690 open-end equity funds from 1971 to 1990. They find that consumers' mutual fund purchase decisions are based on prior performance, but asymmetrically. Investors in equity funds disproportionately move into high-performing funds, while failing to move out of lower-performing funds at the same rate. This suggests that the performance-flow relationship gives mutual funds a payoff that resembles a call option. If returns are high, funds gain assets and total fee

revenue rises. But if relative returns are very low, losses of assets and fees are more modest. Hence, funds can exploit the option-like nature of their payoff by increasing the variance of returns, hoping for an extraordinary payoff. The authors also find consumers to be fee-sensitive in that lower-fee funds or those reducing fees grow faster. However, investors' response to fees is also asymmetric, in that they respond differently to high and low fees, as well as to fee increases and decreases. Finally, the authors find evidence that investors respond to the risk of their portfolios, which may offset, but not eliminate, managers' incentives to increase fund volatility. Rockinger (1996) uses a panel of US mutual funds over the 1987-93 period. He shows that past growth and the Sharpe ratio, rather than volatility, are the most important drivers of current inflows. The past rank of a mutual fund is also a very important determinant. Asymmetries in investors' behaviour, as apparent in Sirri and Tufano, disappear once macroeconomic year effects are taken into account. As a result, investors are found to react symmetrically to changes in returns or ranks independently of the sign of those changes.

Although the mutual fund industry has been growing rapidly for several decades now, the development of large mutual fund families is a rather recent phenomenon. Membership in a large complex has been found to be an important determinant of fund flows (Rockinger (1996) and Sirri and Tufano (1998)). There are many possible interpretations of this relationship: (1) larger complexes reduce consumers' search costs of funds and facilitate the shift from one fund category to another; (2) the existence of a common research department helps to create synergies; and (3) services provided by complexes are an important determinant of consumer financial decision. Khorana and Servaes (1999) consider what motivates families to open a new fund. They find that fund starts are positively related to the total net assets invested in the funds pursuing the same objective in the family, capital gains exposure of these funds, the fund family's past performance, the fraction of funds in the family in the low range of fees, recent openings of similar funds by large families, fund-family size and experience in opening new funds. Furthermore, Khorana and Servaes (2000) find that both price competition and product differentiation have been determinants of family market share in the mutual fund industry: lower fees, strong past performance, a wider product range and a higher degree of innovation are all positively related to mutual fund families' relative positions in the industry. The last finding is consistent with the result in Deli (2001), who shows that marginal compensation rates for fund advisers are lower when the funds are members of fund families. This, in turn, seems to suggest that there are scale economies in fund management that are passed along to investors in fund families.

Nanda et al (2000) show that the presence of a star performer in the family helps attract additional inflow of investment into the family. The spillover effect is such that, compared to a standalone fund, the fund inflows resulting from a star performance are about 40-120% larger for a typical family with seven member funds. The incentives are thus in the direction of increasing family size, to lock in benefits from star performance. The increase in family size can, in turn, make star performance more likely. Primary factors that affect the likelihood of producing a star are increasing the number of funds and decreasing the correlation between fund return in the family. However, families with star performers generally deliver lower returns in the subsequent period to investors. This finding may reflect the cost of implementing a star-oriented strategy.

Ivkovich (2000) also studies the effect mutual fund families have on the individual funds they offer with respect to the ability of funds to attract new investment (flow spillover). He finds that net flows into families depend both on short- and long-term family performance and on the presence of stellar funds in the family. There is a positive relationship between family performance and fund net flow for most investment categories. The author also provides evidence of performance persistence at the family level, yet no evidence that family performance predicts performance of its individual mutual funds.

III. Institutional investor behaviour

There are two competing views on the impact of institutional investors' behaviour on market prices. The first view is that institutional investors are rational investors. Since they have access to a variety of information sources, they are in a good position to evaluate the fundamental value of stocks and other assets. The existence of institutional investors thus favours a faster, more comprehensive and thorough investment process, ranging from improved information gathering and analysis to more consistent decision-making. Arbitrage by large institutional investors should hence stabilise asset

prices by making sure that prices do not (substantially) deviate from fundamentals. Moreover, since they benefit from economies of scale, their clients are likely to enjoy lower transaction costs.

A theoretical foundation for the role played by institutional investors can be found in Grossman and Stiglitz (1980), who investigate a model of asset price determination under conditions of rational expectations and costly information. They show that prices will reflect the information of informed individuals, ie arbitrageurs, only partially, as arbitrageurs have to be compensated for the resources that have been spent on information acquisition. Their argument implies that there will be an equilibrium amount of investment in market information and that superior performance on the part of an investor will reflect, on average, greater expenses. According to the other view, institutional investors can influence and potentially destabilise markets by moving prices away from fundamentals, ie by exacerbating price movements and by adding to volatility. This view is based on the sheer size of institutional holdings relative to those of individual investors and on the idea that price movements might be aggravated by certain trading patterns, such as feedback trading and herding behaviour. The presence of institutional investors might, for example, add to the risk of positive feedback trades due to their relatively large average trade sizes and greater use of automated trading and hedging strategies (Genotte and Leland (1990)). Both effects might, at times and depending on market size, overwhelm market liquidity in a given market and exacerbate price movements. In addition, institutional investors might be expected to engage in positive feedback trading as these strategies may be regarded as rational, provided that better informed investors are assumed to move market prices (Banerjee (1992)) or knowing that an initial price increase will stimulate buying of other traders in the near future (De Long et al (1990a)).

III.1 Rational speculation and feedback trading

The argument against the importance of noise traders for price formation has been forcefully made by Friedman (1953). He argues that rational speculators/arbitrageurs must stabilise asset prices, because destabilising speculators would, on average, lose money as prices return to fundamental values and would eventually be eliminated from the market. Speculators earning positive profits, therefore, do so by trading against less rational investors (feedback traders) who move prices away from fundamentals. In general, greater mispricing should thus attract larger resources and arbitrage activity should increase as prices diverge from fundamental values. However, contrary to Friedman's position, arbitrage activities dedicated to exploiting noise traders' misperceptions can be limited, as shown by De Long et al (1990b) and Shleifer and Summers (1990).

According to these authors, fully rational investors (arbitrageurs, rational speculators) are likely to be risk-averse and to have reasonably short horizons. As a result, their willingness to take positions against investors that are not fully rational (noise traders, liquidity traders) may be limited. The risks faced by arbitrageurs are twofold. First, dividends may turn out to be better than expected and, hence, the actual price of the share rises even further (fundamental risk). Second, if there are noise traders in the market, they can, by their collective actions, push prices even higher than they are at present (noise trader risk). Thus, the unpredictability of noise traders' future opinions may deter arbitrage, so that prices can diverge significantly from fundamental values even when there is no fundamental risk. Furthermore, as pointed out by Shleifer and Vishny (1997), arbitrage is, in reality, conducted by a relatively small number of specialised investment managers taking large positions with other people's money. In such an agency context, arbitrage resources are limited and investors judge the ability of arbitrageurs by evaluating past performance. A good track record thus brings new funds, while a bad track record causes a withdrawal of funds. As a result, arbitrageurs will lean against any mispricing but their ability to do so is limited. In extreme circumstances, arbitrageurs may already be fully invested, and arbitrage activity will hence not be able to bring prices back to fundamentals.

In the above studies, risk aversion, short investment horizons and limited arbitrage resources keep rational speculators from taking large arbitrage positions, so that noise traders can affect prices. Nonetheless, the effect of rational speculators' trades is to move prices in the direction of fundamentals. Rational speculators buck noise-driven price movements and so dampen, though do not eliminate, them. But, in the presence of positive feedback traders, even rational speculation can be destabilising (De Long et al (1990a)). When rational speculators receive good news and trade on this news, they recognise that the initial price increase might stimulate buying by positive feedback traders tomorrow. In anticipation of these purchases, rational speculators buy more today, and so drive prices up to levels that might be higher than warranted by fundamentals. In return, positive feedback traders

will buy in response to the price increase and so may keep prices above fundamentals even as rational speculators are selling out.

Genotte and Leland (1990) develop a theoretical model to explain market “crashes” by the presence of positive feedback trading. They argue that portfolio management techniques, such as stop-loss orders and dynamic hedging, may contribute to procyclical price developments. This is because market participants try to interpret uninformed (stop-loss orders/hedging) order flow in terms of informed trading, thus exacerbating price movements. In their model, information differences among market participants can cause financial markets to be relatively illiquid. As a consequence, even relatively small uninformed trades by hedging programs can have destabilising effects. The authors develop an example in which a market crash occurs even when only 5% of the investors employ a hedging program replicating a put option.

Feedback effects have also been attributed to the combination of certain investment styles and fund inflows. If managers conform to a specific investment style and good performance is rewarded with fund inflows, new inflows are likely to be invested in the same asset class, introducing feedback effects (BIS (1998)). Barberis and Shleifer (2000) study a model of asset prices in an economy with style investors. These investors classify assets into different groups and allocate funds in response to relative performance. The authors suggest that, under these conditions, news on one group of assets can affect the prices of another, seemingly unrelated, asset group and that assets within the same style group will co-move too much, while assets in different groups will co-move too little.

III.2 Herding behaviour

Broadly speaking, “herding” is defined as behavioural patterns that are correlated across individuals. There are four popular theories why herding might be more prevalent among institutions than among individuals. First, objective difficulties in evaluating money managers’ performance create agency problems between fund managers and their principals. Therefore, fund managers might end up being evaluated against each other. To avoid falling behind their peer group, they then have incentives to trade with the crowd (reputation-based herding) to avoid the reputational risk of acting differently from their peers (Scharfstein and Stein (1990)). Similarly, herding can be compensation-based (Maug and Naik (1996)) when fee contracts for delegated portfolio managers contain relative performance elements. Second, institutions might infer private information about the quality of investments from each others’ trades (as in Banerjee (1992) and Bikhchandani et al (1992)). Third, institutional investors might trade together simply because they receive correlated private information from analysing the same indicators (Froot et al (1992)). However, this does not necessarily destabilise markets as institutions might herd in response to the same new information on fundamentals. They might thus make the market more efficient by speeding up price adjustment.

Herding results from an obvious intent by investors to copy the behaviour of others. This form of herding (intentional herding) needs to be distinguished from spurious herding where groups of agents facing similar decision problems and information sets take similar decisions independent of each other (Banerjee (1992), Bikhchandani and Sharma (2000) and Devenow and Welch (1996)). These authors argue that intentional herding is based on the fact that market participants take their decisions sequentially and that they observe each other’s actions, but not the private information each other market participant receives. Herding thus results from institutional investors ignoring their own noisy information and trading with their peers because they infer information from each others’ trades.

Rational herding behaviour can also be explained by principal-agent concerns, when managerial performance is measured in relative rather than absolute terms. Scharfstein and Stein (1990), for example, show that, if investment managers and their employers are unsure about the manager’s ability/performance, conformity is the manager’s rational response to preserve the existing uncertainty about performance. Reputational considerations may thus limit a manager’s willingness to take contrarian positions even contrary to his beliefs. In their model, each manager receives a signal about the return from an investment. Neither the manager nor the employer knows whether the manager is of low or high ability. Since both the manager and his employer are uncertain of the manager’s ability to pick the right investment, conformity with other investment professionals preserves uncertainty regarding the ability of the manager to manage the portfolio. Therefore, each manager ignores private information, to avoid being revealed to be of low ability (reputation model).

If compensation depends on how performance compares to other investors’ performance, then this may distort investor incentives. Maug and Naik (1996) consider a risk-averse manager whose

compensation increases with his own performance and decreases in the performance of another investor (the benchmark). Both the agent and the benchmark have imperfect, private information about stock returns. Under these circumstances, the fee structure provides an incentive to imitate the benchmark, since the agent's compensation decreases if he underperforms (compensation model). According to Froot et al (1992), herding may also occur when a group faces similar decision problems and information sets and each member of the group takes similar decisions independently. Such a situation may occur simply because investors receive correlated private information from analysing the same indicators. If horizons are short, information will disseminate into the market the faster the more investors study a given piece of information. These positive information spillovers create incentives to analyse and follow the same indicators. If investors react simultaneously to the same fundamentals, then such herding speeds up the adjustment of prices and it is not destabilising stock prices.

A special case of these interaction-based herding models is the model based on strategic interaction between investors (Morris and Shin (1999)). Market participants' decisions to buy, sell or hold assets are modelled by endogenising how agents form their beliefs. A key feature of the model is that small information asymmetries exist between agents and that actions of different agents are mutually reinforcing, based on the assumption that the asset price falls by a constant proportion every time an agent sells. Decisions are based on best estimates of the underlying fundamentals and the market price is determined by the actions of the participants, which are, in turn, mutually reinforcing. As a consequence, relatively small changes in underlying fundamentals can lead to sizeable price adjustments as the execution of similar trading strategies introduces added price dynamics.

IV. Implications for financial market performance

Corresponding to the two competing views on the behaviour of institutional investors that have been documented in the literature (rational speculators vs feedback traders), institutional investors can be seen as having either a stabilising or destabilising effect on asset prices. According to the first view, institutional investors are likely to speed up asset price adjustment to fundamentals, since they are well informed and operate on low transaction costs. In addition, they are likely to stabilise asset prices, by making sure that prices do not substantially deviate from fundamentals. Price volatility should therefore be introduced only to the extent that fundamentals themselves are volatile.

However, according to the competing view, there are potential inefficiencies created by limits to the ability of institutional investors to take large contrarian positions (Shleifer and Summers (1990), Shleifer and Vishny (1997)) and by feedback trading (Genotte and Leland (1990)) and herding behaviour (Bikhchandani and Sharma (2000)). Institutional investors might, hence, possibly destabilise asset prices, by moving prices away from fundamentals. However, the existence of feedback trading or herding does not imply that such behaviour affects prices in a destabilising fashion. Indeed, if this type of behaviour arises because informed portfolio managers tend to invest into the same underpriced assets, then prices would move towards their fundamental values more quickly.

In general, the potential consequences of feedback trading and herding behaviour for asset prices are of two kinds, short-term volatility and longer-term misalignment and volatility. Each of these two issues is addressed below. Overall, while the theoretical case for potential herding and feedback trading by or linked to institutional investors might appear to be a rather strong one, the empirical evidence on these issues is rather weak, particularly with regard to any destabilising effects.

IV.1 Short-term volatility

Institutional investors, due to the sheer size of their positions, might affect market prices in the short term when the size of a given trade overwhelms market liquidity. Accordingly, Holthausen et al (1987) provide evidence for the fact that, in large seller-initiated transactions like those of large institutional traders, buyers receive temporary price concessions related to the size of the block trade. There is only weak evidence, however, of permanent price effects associated with these transactions. For buyer-initiated blocks, a premium is offered to current holders. The increase in price is permanent, not temporary, and is a function of block size.

Chan and Lakonishok (1995) study the price impact and execution cost of the entire sequence ("package") of trades that are interpreted as an order. They find that the price impact associated with

trade packages is quite sizeable: the average price change (weighted by the dollar size of the trade) from the open on the package's first day to the close on the last day is almost 1% for buys, and -0.35% for sells. Not only is the price impact larger for buys, but the subsequent reversal is also much smaller than for sells; thus there is an asymmetry in the overall impact of buys and sells. The price impact is also related to the capitalisation of the stock traded and to relative trade size. However, the dominant influence is the identity of the money management firm undertaking the package. Differences across money managers stem mainly from their demands for immediacy in execution. Managers following a growth-oriented strategy, or with higher turnover rates (who would in general be perceived as being less patient in trade execution) incur a larger price impact.

Sias (1996) investigates the relationship between institutional ownership and volatility using data on the securities listed on the NYSE. After controlling for market capitalisation, he finds a positive contemporaneous correlation between the fraction of shares held by institutional investors and the volatility of stock returns. He also presents evidence that the increase in the share of institutional ownership precedes the increase in securities market volatility. There is no evidence that increases in volatility attract institutional investors, while volatility might rise in response to institutional investments. The results are thus suggestive of a degree of added short-term volatility due to institutional asset managers.

Nofsinger and Sias (1999) consider the fraction of shares held by institutional investors for all NYSE firms for the 1977-96 period. They document a strong positive correlation between changes in institutional ownership and returns measured over the same period. This result may be consistent with two hypotheses: (1) either institutional investors are short-term (intra-year) positive feedback traders. Hence, when a stock does well, institutional ownership grows; (2) or institutional herding affects prices more than herding by individual investors, so that changes in institutional ownership drive returns (price pressure). They find evidence that both factors play a role. They then evaluate the relation between daily changes in institutional ownership, returns for the same day and lag returns, for a small sample of firms. Their result reveals a strong positive relation between daily changes in institutional ownership and returns for the same day. This is consistent with the hypothesis that changes in institutional ownership affect stock returns or that institutional investors are very short-term (intraday) positive feedback traders. Dennis and Strickland (2002), in a recent paper, present evidence consistent with the notion that institutions react more strongly than individuals when market returns are large on any given day and, by doing so, contribute to market volatility, at least over the short term.

IV.2 Longer-term misalignment and volatility

The literature presents evidence that stock picking among mutual fund managers exhibits considerable momentum, ie buying securities whose value has appreciated in the recent past. There is, however, no strong evidence of herding behaviour that extends beyond this positive feedback (eg Grinblatt et al (1995)). The implication of these findings is that share and other asset prices may not (always) represent fundamental values and that they may depend significantly on how much money is invested and when. As yet, and given the econometric difficulties involved, there is therefore no compelling evidence that institutional herding affects markets in a destabilising manner, in the sense that prices are driven away from fundamental values.

IV.2.1 Testing positive feedback trading and herding behaviour

Testing positive feedback trading and herding behaviour is a truly challenging task. Since an asset bought by one investor is necessarily sold by another, all market participants cannot be part of a herd. To evaluate the possibility of herding behaviour, therefore, one needs to find a group of investors who trade actively and act similarly. Such a group is more likely to herd if it is sufficiently homogeneous. Lakonishok et al (1992a) examine the investment behaviour of US pension funds and investigate potential effects of their trading on stock prices by use of a statistical measure of positive feedback trading and herding. This measure is based on excess demand, with herding being defined as the average tendency of a group of investors to buy (or sell) particular stocks at the same time, relative to what could be expected if investors traded independently. In fact, this measure assesses the correlation in trading patterns for a particular group of investors and their tendency to trade the same set of stocks. Based on this measure, the authors present evidence for some degree of herding and positive feedback trading, with slightly stronger evidence for both in small stocks.

The authors first test for herding by assessing the degree of correlation across money managers in buying and selling a given stock (or industry grouping). The evidence suggests that fund managers herd relatively little in their trades in large stocks, which is where over 95% of trading is concentrated. There is evidence of more herding in smaller stocks, but even there the magnitude of herding is far from dramatic. Then, they test for positive feedback trading by examining the relationship between money managers' demand for a stock and the past performance of that stock. Institutions appear to follow neither positive nor negative trading strategies, on average. There is some evidence of positive feedback in smaller stocks, but not in large stocks. The authors conclude that there is no solid evidence that institutional investors destabilise prices of individual stocks. Instead, evidence seems to favour the view that, by and large, institutions follow a broad range of styles and strategies and that trades tend to offset each other without having a large price impact.

However, the measure used by Lakonishok et al (1992a) is not without drawbacks, as it is based on the number of investors on the two sides of the market, without regard to the amounts traded. Wermers (1995), therefore, proposes another measure, capturing the extent to which the portfolio weights assigned to various stocks by different investors move in the same direction. In addition, the authors' analysis is based on quarterly data and does not preclude herding at shorter time intervals. This is why Dennis and Strickland (2002) attempt to circumvent this problem by examining price reactions and trading for a cross-section of stocks on specific days between 1988 and 1996 when the absolute value of the market's return is large, ie exceeds 2%. They find evidence consistent with the hypothesis that institutions sell more than individual investors on days with large stock market drops. Similar effects are found for rising stock markets, particularly for stocks that have a greater percentage of institutional ownership and even after controlling for liquidity. The authors also find evidence for differences in the behaviour of banks vis-à-vis pension and mutual funds and for the hypothesis that, on event days, institutions are driving prices below their fundamental values. Overall, these findings are consistent with the notion that institutional investors trade with the market's momentum on days with large price movements, thus contributing to market volatility.

Grinblatt et al (1995) examine the extent to which herding and momentum investing affect fund performance. If either irrationality or agency problems generate these trading styles, then mutual funds that exhibit these behaviours will tend to push the prices of stocks that they purchase above intrinsic values, thereby realising lower future performance. However, if this type of behaviour arises because informed portfolio managers tend to buy the same underpriced stocks, then funds that exhibit these styles should realise high future performance. The authors find that 77% of the mutual funds are "momentum" investors. On average, those funds following a momentum strategy realise significantly better performance than other funds. The overperformance of the momentum strategy largely disappears, however, when controlling for the funds' tendency to buy past winners.

Wermers (1999), using the Lakonishok et al (1992a) herding measure, obtains some evidence of herding by US equity mutual funds. Overall, his conclusions are the same for mutual funds as those reached by Lakonishok et al for pension funds. That is, herding is, in general, not present for most stocks. Herding effects, when found, are greater for small stocks, while growth-oriented funds are shown to have a greater tendency to herd than income-oriented funds. This suggests that the incentive to herd is greater for stocks on which public information is harder to obtain and for stocks whose future returns are more difficult to forecast. The observed stock price adjustments appear to be permanent, supporting the idea that herding helps incorporate new information into equity prices.

Falkenstein (1996) documents the revealed preferences of US mutual funds for stock characteristics. Mutual funds display a non-linear preference towards stocks with high volatility (ownership is concave in variance). In addition, funds show an aversion to low-price stocks, while demand is consistently increasing in liquidity. Other than the small-cap sector, which specialises in small firms, funds show an aversion to small firms. Funds also tend to avoid stocks with little information, as measured by the number of major newspaper articles or the number of months since listing on the exchange. The author then proposes an alternative interpretation of revealed herding and feedback trading: as stocks acquire specific characteristics, mutual funds are more likely to hold them. For instance, mutual funds show a strong aversion to low-priced stocks (priced less than USD 5). Over time, as the stock price rises, the stock will attract mutual fund demand. This may be interpreted as evidence of trend following, whereas it only translates the comparative disadvantage of mutual funds buying low-priced stocks.

Arnswald (2001) provides some survey evidence on herding-related issues based on a sample of 278 German equity fund managers from 60 different companies. He uses cluster analysis to form groups of investors according to their behavioural patterns and identifies three groups. The first group, labelled

fundamentalists (30% of the sample), is characterised by the use of fundamental evaluations. Such managers exercise discretion in decision-making. The second group, labelled tacticians (46% of the sample), gives greater importance to technical analysis. These managers are also very likely to be influenced by the market situation and hence appeal to their discretion in making decisions. The last group, labelled methodologists (24%), favours forecasting on the basis of both econometric and portfolio optimisation models. These managers follow clear decision rules after systematically analysing the market ("quantitative management"). All managers are found to use benchmarks, even if fundamentalists feel under less pressure to track the index. Overall, fundamentalists seem most apt to assume the role of stabilising arbitrageurs. Such investors buy when prices are below fundamentals and sell when they are above, using all relevant information. However, fundamentalists may have limited arbitrage ability if evaluation and compensation schemes place constraints on managers' time horizons. When asked how long they would hold on to a strategy if underperformance became significant, only less than 12% of fundamentalists indicated they would keep it up for a year or more.

Cutler et al (1990, 1991) find excess returns in the markets for stocks, bonds and foreign exchange to display positive serial correlation at short horizons, between one month and one year. The authors argue that trading between rational arbitrageurs and positive feedback traders suggests bubble-like features, implying positively correlated returns over short horizons. They take this finding to imply that a substantial number of traders must be using positive feedback rules and that arbitrage does not effectively limit the effect of their trading on prices, which can, in turn, be interpreted as indirect evidence for limited arbitrage theories (Shleifer and Summers (1990)).

Rea and Marcis (1996) and Engen et al (2000), finally, examine the possibility of positive feedback trading on the part of US equity mutual fund investors. They note that fund in- and outflows and stock price changes have a positive contemporaneous correlation. This, and the fact that the proportion of publicly traded stocks held by mutual funds is now much greater than in the past, is seen as suggesting the possibility that household decisions to invest new cash in mutual funds may significantly affect equity prices. While feedback trading is suggested as a possible source of positive correlation between fund flows and equity prices, Engen et al (2000) do not find empirical evidence supporting the feedback hypothesis and argue that equity fund investors appear to have behaved no differently from other investors in the equity market. They conclude that there is little indication that mutual fund investors have been a destabilising force in equity markets even as mutual funds were growing in size and importance. The result, therefore, mirrors the earlier finding by Remolona et al (1997) that individual investors do not seem to generate sizeable feedback effects by moving out of mutual funds in response to bad short-term returns.

IV.2.2 Index funds

Goetzmann and Massa (1999) investigate the relationship between demand shocks and the movement of the S&P index, by focusing on index funds. They obtain a strong contemporaneous correlation between fund inflows and S&P returns and a strong negative correlation between fund outflows and S&P returns. These effects may be interpreted in two ways. Either investor supply and demand affects S&P prices, or investors condition their demand and supply on intraday market fluctuation (positive feedback trading). To sort out these effects, they examine trailing investor reaction to market moves. The evidence suggests that the market reacts to daily flows, while the lack of any next-day reaction to positive market moves implies that investors are not chasing short-term trends.

Shleifer (1986) finds that additions to the S&P index yield statistically and economically significant price effects of a permanent nature, ie without subsequent return reversal, while Lynch and Mendenhall (1997) document significant post-announcement returns that are only partially reversed in the event window studied. According to Malkiel and Radisich (2001), however, the substantial price increases of stocks entering the S&P 500 index during the late 1990s appear to be almost fully reversed during a period of about 12 months following the week of entry. Malkiel and Radisich (2001) also show that the gap between the performance of index funds and active managers can be fully explained by the extra management costs and transactions costs involved in active management. Hence, they find no evidence that the success of indexing is self-fulfilling.

IV.2.3 Hedge funds

Hedge funds are funds that aim to use active management skills to earn positive returns on capital regardless of market direction. Three features are most characteristic of the hedge fund sector. First, these funds tend to be absolute-return funds, that is, the aim is not, as with many institutional funds, to

earn excess returns over a fixed benchmark, but rather to earn appropriate absolute returns for the risk taken on. The second feature of many hedge funds is the use of leverage, even if the level of leverage used varies substantially and has been declining recently. Finally, hedge funds tend to target a clientele of high net worth individuals and institutions, which tends to be characterised by a relatively great tolerance for risk. Edwards and Caglayan (2001) find substantial evidence of both excess returns and performance persistence in hedge-fund returns. The authors also find that the higher the incentive fee (the percentage of a fund's profits paid to fund managers), the better is a fund's after-fee performance.

The market impact of hedge funds was first studied by Eichengreen et al (1998). They argue that hedge funds are no more likely or able to manipulate a market than any other entities. Moreover, they find that hedge funds are less likely to herd than other investors. This is because hedge funds typically view their trading strategy as proprietary and take great pains to prevent disclosure of their positions. Last, they find no evidence that hedge funds used positive feedback trading strategies. Fung and Hsieh (2000) provide quantitative estimates on the market impact of hedge funds during a number of major market events. In some episodes, hedge funds had significant exposures and were in a position to exert substantial market impact. In other episodes, by contrast, hedge fund exposures were insignificant, either in absolute terms or relative to other market participants. In all cases, the authors find no evidence of hedge funds using positive feedback trading. Moreover, there is also little evidence that hedge funds systematically caused market prices to deviate from economic fundamentals.

IV.2.4 International markets

A strand of the literature, finally, focuses on whether positive feedback trading or herding behaviour by international investors may lead to excessive volatility in emerging markets. Kim and Wei (1999) consider the end-of-month investor holdings for each stock listed on the Korean Stock Exchange (KSE). The data set contains information on whether the investor is Korean or foreign, resident or non-resident, an individual or an institution. Using the measure of herding proposed by Lakonishok et al (1992a), they obtain that non-resident investors do herd significantly more than resident investors. Moreover, individual investors are shown to herd significantly more than institutional investors.

Using daily transactions data from the KSE, Choe et al (1999) arrive at similar conclusions. They examine the behaviour of foreign investors before the Korean crisis (from November 1996 to September 1997) and during the crisis (from October 1997 to December 1997). They find a significant herding into Korean stocks. They also find that prior to the crisis, foreign investors used positive feedback trading strategies. During the crisis subperiod, they find some decline in herding.

Froot et al (1998) explore the behaviour of daily international portfolio flows. First, they find that there is a significant correlation in contemporaneous cross-country flows, and that this correlation is larger within regions. Second, they obtain substantial evidence that flows are persistent. Third, flows are strongly influenced by past returns, so that investor trend-following is apparent. Fourth, they find that inflows have forecasting power for future emerging market returns, but not for developed country returns. Fifth, the sensitivity of local stock prices to foreign inflows is positive and transitory inflows impact future returns negatively.

Kaminsky et al (2000a) study the role of mutual funds in spreading crises in emerging markets. They focus on whether funds' flows are linked to emerging economies' degree of fragility, their capital market openness and liquidity, and their level of country risk. They find that economic fragility is not the only factor that triggers withdrawals. Liquidity is also important. In particular, faced by investor redemptions, mutual fund managers tend to liquidate their most liquid positions. Kaminsky et al (2000b) examine the trading strategies of mutual funds in emerging markets, while attributing actions to fund managers versus underlying investors. They show that emerging market funds engage in momentum trading. Their strategies exhibit positive momentum, ie they systematically buy winners and sell losers. The authors also show that contemporaneous momentum trading is stronger during crises, and stronger for fund investors than for fund managers. Lagged momentum trading, on the other hand, is stronger during non-crisis periods, and stronger for managers. Finally, funds engage in contagion trading, selling assets from one country when prices fall in another. This contagion trading is found to be due primarily to underlying investors, not managers.

Borensztein and Gelos (2000) study 400 emerging market equity funds. While during tranquil and turbulent periods inflows coexist with outflows, on a net basis these funds tend to withdraw money one month prior to crises. Using a VAR methodology, the authors find that inflows or outflows by regional or single-country funds Granger-cause flows of global and international funds into the same country.

Moreover, the degree of herding is found to be significantly different from zero. Herding is less pronounced among closed-end funds, suggesting that such behaviour might be due to individual investors rather than managers.

IV.2.5 Arbitrage and “special situations”

Indirect evidence of how contractual structures in the institutional investment industry might affect asset managers' ability or willingness to engage in contrarian strategies, ie risky arbitrage, might be obtained from the newly emerging literature of limited arbitrage in special situations. Investigating such situations involves an analysis of the cost of shorting securities in the securities lending market. Recently, the explicit costs of shorting stocks have been empirically documented by, among others, Geczy et al (2002) and Mitchell et al (2002). One application of the results documented in these papers is that apparent anomalies, such as high prices of IPOs in the weeks after issuance and their poor long-run performance as well as “negative stub values” (situations where a firm's market value is less than the value of its stake in a publicly traded subsidiary), are impossible to arbitrage even against the background of relatively small explicit shorting costs.

Geczy et al (2002) find in their empirical study that, during 1999, equity-loan shortages, that is shorting costs, were only a minor impediment to those traders who felt that dotcom stocks were overvalued. They examine the issue by tracking the performance of long/short trading strategies subject to actual short-selling costs. In addition, they find strong evidence that most of the other trading strategies investigated in their study, including those based on IPOs, when subjected to shorting costs (the costs of borrowing stock), are still at least somewhat profitable. While there is a return difference between unconstrained portfolios and those portfolios that investors can actually hold, this difference tends to be relatively small. Constrained investors (with only partial and costly access to equity loans) therefore enjoy at least some of the documented profitability of unconstrained investors. If short-selling problems explain this availability, there are problems of another variety (ie, other than the mere cost of equity loans), such as short-selling prohibitions or liquidity constraints (as in Shleifer and Vishny (1997)). Mitchell et al (2002) look at “negative stub values” to examine impediments to arbitrage of relative mispricings. They show that stubs are not risk-free arbitrage opportunities and that there are costs limiting arbitrage in equity markets. These costs are due to imperfect information and market frictions that make arbitrage a costly and risky business.

V. References

- Admati, A R and P Pfleiderer (1997): “Does it all add up? Benchmarks and the compensation of active portfolio managers”, *Journal of Business*, vol 70(3), pp 323-50.
- Almazan, A, K C Brown, M Carlson and D A Chapman (2001): *Why constrain your mutual fund manager?*, mimeo, University of Texas at Austin.
- Arnswald, T (2001): “Investment behaviour of German equity fund managers”, Deutsche Bundesbank *Discussion Paper 08/01*, March.
- Baker, M (1998): “Fund managers' attitudes to risk and time horizons: the effect of performance benchmarking”, *European Journal of Finance*, vol 4, pp 257-78.
- Banerjee, A V (1992): “A simple model of herd behavior”, *Quarterly Journal of Economics*, vol 107(3), pp 797-818.
- Bank for International Settlements (1998): “Asset prices and the asset management industry”, *68th Annual Report*, Basel, pp 76-97.
- Barberis, N and A Shleifer (2000): “Style investing”, mimeo.
- Beckers, S and G Vaughn (2001): “Small is beautiful”, *Journal of Portfolio Mngement*, vol 27(4), pp 9-17, mimeo.
- Benartzi, S and R H Thaler (2001): “Naive diversification strategies in defined contribution plans”, *American Economic Review*, vol 91(1), pp 79-98.
- Bhattacharya, S and P Pfleiderer (1985): “Delegated portfolio management”, *Journal of Economic Theory*, vol 36(1), pp 163-87.

- Bikhchandani, S, D Hirshleifer and I Welch (1992): "A theory of fads, fashion, custom and cultural change as informational cascades", *Journal of Political Economy*, vol 100(5), pp 992-1026.
- Bikhchandani, S and S Sharma (2000): "Herd behavior in financial markets: a review", *IMF Working Paper 00/48*.
- Blake, D, B N Lehmann and A Timmermann (2002): "Performance clustering and incentives in the UK pension fund industry", *Journal of Asset Management*, vol 3(2), pp 173-194.
- Blommestein, H (1997): "The impact of institutional investors on OECD financial markets", *OECD Financial Market Trends*, vol 68, pp 15-54.
- Borensztein, E R and R G Gelos (2000): "A panic-prone pack? The behavior of emerging market mutual funds", *IMF Working Paper* No 198.
- Brown, S J, W Goetzmann, R G Ibbotson and S A Ross (1992): "Survivorship bias in performance studies", *Review of Financial Studies*, vol 5(4), pp 553-80.
- Brown, S J, W N Goetzmann and J Park (2001): "Careers and survival: competition and risk in the hedge fund and CTA industry", *Journal of Finance*, vol 56(5), pp 1869-86.
- Brown, K C, W V Harlow and L T Starks (1996): "Of tournaments and temptations: an analysis of managerial incentives in the mutual fund industry", *Journal of Finance*, vol 51(1), pp 85-110.
- Carhart, M M (1997): "On persistence in mutual fund performance", *Journal of Finance*, vol 52(1), pp 57-82.
- Carhart, M M, R Kaniel, D K Musto and A V Reed (2002): "Leaning for the tape: evidence of gaming behaviour in equity mutual Funds", *Journal of Finance*, vol 57(1), pp 661-93.
- Committee on the Global Financial System (2002): *IT innovations and financing patterns: Implications for the financial system*, Basel.
- (2003): *Credit risk transfer*, Basel.
- Chan, L K C and J Lakonishok (1995): "The behavior of stock prices around institutional trades", *Journal of Finance*, vol 50(4), pp 1147-174.
- Chevalier, J and G Ellison (1997): "Risk taking by mutual funds as a response to incentives", *Journal of Political Economy*, vol 105(6), pp 1167-200.
- Choe, H, B-C Kho and R M Stulz (1999): *Do foreign investors destabilise stock markets? The Korean experience in 1997*, mimeo, Ohio State University.
- Christoffersen, S E K (2001): "Why do money fund managers voluntarily waive their fees", *Journal of Finance*, vol 56(3), pp 1117-40.
- Coles, J, J Suay and D Woodbury (2000): "Fund Advisor compensation in closed-end funds", *Journal of Finance*, vol 55(3), pp 1385-414.
- Collins, S S and P R Mack (1997): "The optimal amount of assets under management in the mutual fund industry", *Financial Analysts Journal*, September-October.
- Cutler, D M, J M Poterba and L H Summers (1990): "Speculative dynamics and the role of feedback traders", *American Economic Review*, vol 80(2), pp 63-8.
- (1991): "Speculative dynamics", *Review of Economic Studies*, 58(3), pp 529-46.
- Das, R D and R K Sundaram (1998a): "On the regulation of fee structures in mutual funds", *NBER Working Paper 6639*.
- (1998b): "Fee speech: adverse selection and the regulation of mutual fund fees", *NBER Working Paper 6644*.
- Davis, E P and B Steil (2001), *Institutional investors*, MIT Press, Cambridge.
- De Long, J B, A Shleifer, L H Summers and R J Waldmann (1990a): "Positive feedback investment strategies and destabilizing rational speculation", *Journal of Finance*, vol 45(2), pp 379-95.
- De Long, J B, A Shleifer, L H Summers and R J Waldmann (1990b): "Noise trader risk in financial markets", *Journal of Political Economy*, vol 98(4), pp 703-38.

- Deli, D N (2001): *Mutual fund advisory contracts: an empirical investigation*, mimeo, University of Delaware.
- Dennis, P J and D Strickland (2002): "Who Blinks in Volatile Markets, Individuals or Institutions?", *Journal of Finance*, vol 58(5), pp 1923-1949.
- Devenow, A and I Welch (1996): "Rational herding in financial economics", *European Economic Review*, vol 40, pp 603-15.
- Dow, J and G Gorton (1997): "Noise trading, delegated portfolio management, and economic welfare", *Journal of Political Economy*, vol 105(5), pp 1024-50.
- Dybvig, P H, H K Farnsworth and J N Carpenter (2000): "Portfolio performance and agency", *Working Paper*.
- Edwards, F R and M O Caglayan (2001): *Hedge fund performance and manager skill*, mimeo, Columbia Business School.
- Eichengreen, B, D Mathieson, B Chadha, A Jansen, L Kodres and S Sharma (1998): *Hedge fund and financial market dynamics*, International Monetary Fund, Washington, DC.
- Elton, E J, M J Gruber and C R Blake (1996): "The persistence of risk-adjusted mutual fund performance", *Journal of Business*, vol 69(2), pp 133-157.
- Engen, E M, A Lehnert and R Kehoe (2000): "Mutual funds and the US equity market", *Federal Reserve Bulletin*, December, pp 797-812.
- Falkenstein, E G (1996): "Preferences for stock characteristics as revealed by mutual fund portfolio holdings", *Journal of Finance*, vol 51(1), pp 111-35.
- Fama, E F and K R French (1996): "Multifactor explanations of asset pricing anomalies", *Journal of Finance*, vol 51(1), pp 55-84.
- Friedman, M (1953): "The case for flexible exchange rates", in *Essays in Positive Economics*, Chicago University, Chicago Press.
- Froot, K A, P G J O'Connell and M S Seasholes (1998): "The portfolio flows of international investors, I", *NBER Working Paper no 6687*.
- Froot, K A, D S Scharfstein and J C Stein (1992): "Herd on the street: informational efficiencies in a market with short-term speculation", *Journal of Finance*, vol 47(4), pp 1461-84.
- Fung, W and D A Hsieh (2000): "Measuring the market impact of hedge funds", Fuqua School of Business, Duke University, *Journal of Empirical Finance*, vol 71, pp 1-36.
- Geczy, C C, D K Musto and A V Reed (2002): "Stocks are special too: an analysis of the equity lending market", *Journal of Financial Economics*, vol 66, pp 241-69.
- Genotte, G and H Leland (1990): "Market liquidity, hedging, and crashes", *American Economic Review*, vol 80(5), pp 999-1021.
- Gervais, S, A W Lynch and D K Musto (2001): *Delegated monitoring of fund managers: an economic rationale*, mimeo, University of Pennsylvania.
- Goetzmann, W N and R G Ibbotson (1994): "Do winners repeat? Patterns in mutual fund return behavior", *Journal of Portfolio Management*, Winter, pp 9-18.
- Goetzmann, W N, J Ingersoll and S A Ross (1997): "High water marks", *Working Paper*, Yale School of Management.
- Goetzmann, W N and M Massa (1999): "Index funds and stock market growth", *NBER Working Paper no 7033*.
- Gompers, P A and A Metrick (2001): "Institutional investors and asset prices", *Quarterly Journal of Economics*, vol 116(1), pp 229-59.
- Grinblatt, M and S D Titman (1989a): "Adverse risk incentives and the design of performance-based contracts", *Management Science*, vol 35, pp 807-22.
- (1989b): "Mutual fund performances: an analysis of quarterly portfolio holdings", *Journal of Business*, vol 62(3), pp 393-416.

- (1992): “The persistence of mutual fund performance”, *Journal of Finance*, vol 47(5), pp 1977-84.
- Grinblatt, M, S D Titman and R Wermers (1995): “Momentum investment strategies, portfolio performance, and herding: a study of mutual fund behavior”, *American Economic Review*, vol 85(5), pp 1088-105.
- Grossman, S J and J E Stiglitz (1980): “On the impossibility of informationally efficient markets”, *American Economic Review*, vol 70(3), pp 393-408.
- Group of Ten (2001): *Report on consolidation in the financial sector*, Basel.
- Hendricks, D, J Patel and R Zeckhauser (1993): “Hot hands in mutual funds: short-run persistence of relative performance, 1974-1988”, *Journal of Finance*, vol 48(1), pp 93-130.
- Holmstrom, B (1982): “Moral hazard in teams”, *Bell Journal of Economics*, vol 13(2), pp 324-40.
- Holthausen, R W, R W Leftwich and D Mayers (1987): “The effect of large block transactions on security prices”, *Journal of Financial Economics*, vol 19(2), pp 237-67.
- Investment Company Institute (1997): *The organization and operation of a mutual fund*, mimeo (available for download at www.ici.org).
- Ippolito, R A (1989): “Efficiency with costly information: a study of mutual fund performance”, 1965-84, *Quarterly Journal of Economics*, vol 105(1), pp 1-23.
- (1992): “Consumer reaction to measures of poor quality: evidence from the mutual fund industry”, *Journal of Law and Economics*, vol 35(1), pp 45-70.
- Ivkovich, Z (2000): “Is blood thicker than water: spillovers in mutual fund families”, *Working Paper*, Yale School of Management.
- Jegadeesh, N and S D Titman (1993): “Returns to buying winners and selling losers: implications for stock market efficiency”, *Journal of Finance*, vol 48(1), pp 65-91.
- Jensen, M C (1968): “The performance of mutual funds in the period 1945-1964”, *Journal of Finance*, vol 23, pp 389-416.
- Jensen, M C and W H Meckling (1976): “Theory of the firm: managerial behavior, agency costs, and ownership structure”, *Journal of Financial Economics*, vol 3(4), pp 305-60.
- Kaminsky, G, R Lyons and S Schumkler (2000a): *Economic fragility, liquidity, and risk: the behavior of mutual funds during crises*, mimeo, George Washington University.
- (2000b): “Managers, investors, and crises: mutual fund strategies in emerging markets”, *NBER Working Paper no 7855*.
- Kane, A D Santini and J Aber (1991): *Lessons from the growth history of mutual funds*, mimeo.
- Kapur, S and A Timmermann (1999): *Equilibrium effects of relative performance evaluation contracts*, mimeo, University of London and London School of Economics.
- Khorana, A and H Servaes (1999): “The determinants of mutual fund starts”, *Review of Financial Studies*, vol 12(5), pp 1043-74.
- (2000): “What drives market share in the mutual fund industry”, *Working Paper*, DuPree College of Management.
- Kim, W and S-J Wei (1999): “Foreign portfolio investors before and during a crisis”, *NBER Working Paper no 6968*.
- Koski, J L and J Pontiff (1999): “How are derivatives used? Evidence from the mutual fund industry”, *Journal of Finance*, vol 54(2), pp 791-816.
- Kristiansen, E G (2001): *Explicit and implicit incentives in fund management*, mimeo, Department of Economics, Norwegian School of Economics and Business Administration.
- Lakonishok, J, A Shleifer, R Thaler and R W Vishny (1991): “Window dressing by pension fund managers”, *American Economic Review*, vol 81(2), pp 227-31.
- Lakonishok, J, A Shleifer and R W Vishny (1992a): “The impact of institutional trading on stock prices”, *Journal of Financial Economics*, vol 32(1), pp 23-43.

- (1992b): “The structure and performance of the money management industry”, *Brookings Papers: Microeconomics*, pp 339-91.
- Lee, W (2000): *Advanced theory and methodology of tactical asset allocation*, mimeo, Fuqua School of Business, Duke University, Durham, North Carolina.
- Lemmon, M L, J S Schallheim and J F Zender (2000): “Do incentives matter? managerial contracts for dual-purpose funds”, *Journal of Political Economy*, vol 108(2), pp 273-99.
- Lunde, A, A Timmermann and D Blake (1999): “The hazards of mutual fund underperformance: a Cox regression analysis”, *Journal of Empirical Finance*, vol 6(2), pp 121-52.
- Lynch, A W and R R Mendenhall (1997): “New evidence on stock price effects associated with changes in the S&P 500 index”, *Journal of Business*, vol 70(3), pp 351-83.
- Lynch, A W and D K Musto (1997): “Understanding fee structures in the asset management business”, *NYU Working Paper FIN-98-050*, New York University.
- Malkiel, B G and A Radisich (2001): “The growth of index funds and the pricing of equity securities”, *Journal of Portfolio Management*, vol 27(2), pp 9-21.
- Maug, E and N Naik (1996): *Herding and delegated portfolio management*, mimeo, London Business School.
- Miller, E M (1977): “Risk, uncertainty and divergence of opinion”, *Journal of Finance*, vol 32(4), pp 1151-68.
- Mitchell, M, T Pulvino and E Stafford (2002): “Limited arbitrage in equity markets”, *Journal of Finance*, vol 57(7), pp 551-84.
- Morris, S and H S Shin (1999): “Risk management with interdependent choice”, *Oxford Review of Economic Policy*, vol 15(3), pp 52-62.
- Myners, P (2001): *Institutional investment in the United Kingdom*, HM Treasury, March.
- Nanda, V, Z Wang and L Zheng (2000): “Family values and the star phenomenon”, *Working Paper*, University of Michigan.
- Nofsinger, J R and R W Sias (1999): “Herding and feedback trading by institutional and individual investors”, *Journal of Finance*, vol 55(6), pp 2263-95.
- Organisation for Economic Co-operation and Development (1998): *Institutional investors in the new financial landscape*, Paris.
- (2001): *Institutional investors, financial market trends*, vol 80, pp 43-130, Paris.
- Orphanides, A (1996): “Compensation incentives and risk taking behavior: evidence from mutual funds”, Board of Governors of the Federal Reserve System, *Discussion Paper*.
- Patel, J, R Zeckhauser and D Hendricks (1991): “Investment flows and performance: evidence from mutual funds, cross-border investments, and new issues”, in S Ryuzo, R M Levich and R V Ramachandran (eds), *Japan, Europe, and International Financial Markets: Analytical and Empirical Perspectives*, Cambridge University Press, Cambridge.
- Rea, J and R Marcis (1996): “Mutual fund shareholder activity during US stock market cycles, 1944-95”, *Investment Company Institute Perspective*, vol 2(2), pp 1-16.
- Remolona, E, P Kleiman and D Gruenstein (1997): “Market returns and mutual fund flows”, *Economic Policy Review*, Federal Reserve Bank of New York, July, pp 33-52.
- Rockinger, M (1996): “Determinants of capital flows to mutual funds”, *Working Paper*, HEC School of Management.
- Roll, R (1978): “Ambiguity when performance is measured by the securities market line”, *Journal of Finance*, vol 33(4), pp 1051-69.
- Ross, L B and A L Turner (1999): *Incentive fees: have our fears been unfounded?*, Russell Research Commentary, Tacoma.
- Ross, S A (1973): “The economic theory of agency: the principal’s problem”, *American Economic Review*, vol 63(2), pp 134-9.

- Scharfstein, D S and J C Stein (1990): "Herd behavior and investment", *American Economic Review*, vol 80(3), pp 465-79.
- Sharpe, W F (1966): "Mutual fund performance", *Journal of Business*, vol 34, pp 119-38.
- Shawky, J (1982): "An update on mutual funds: better grades", *Journal of Portfolio Management*, vol 8(2), pp 5-19.
- Shleifer, A (1986): "Do demand curves for stocks slope down?", *Journal of Finance*, vol 41(3), pp 579-90.
- Shleifer, A and L H Summers (1990): "The noise trader approach to finance", *Journal of Economic Perspectives*, vol 4(2), pp 19-33.
- Shleifer, A and R W Vishny (1997): "The limits of arbitrage", *Journal of Finance*, vol 52(1), pp 35-55.
- Shukla, R and C Trzcinka (1992): "Performance measurement of managed portfolios", *Financial Markets, Institutions and Investments*, vol 1(4), pp 1-58.
- Sias, R W (1996): "Volatility and the institutional investor", *Financial Analysts Journal*, April, pp 13-20.
- Siggelkow, N (1999): *Expense shifting: an empirical study of agency costs in the mutual fund industry*, mimeo, Wharton School, University of Pennsylvania.
- Sirri, E R and P Tufano (1998): "Costly search and mutual fund flows", *Journal of Finance*, vol 53(5), pp 1589-621.
- Starks, L T (1987): "Performance incentive fees: an agency theoretic approach", *Journal of Financial and Quantitative Analysis*, vol 22(1), pp 17-32.
- Walter, I (1998): "The global asset management industry: competitive structure, conduct and performance", *Stern Working Paper FIN-98-072*, NYU, New York.
- Wermers, R (1995): *Herding, trade reversals, and cascading by institutional investors*, mimeo, University of Colorado.
- (1999): "Mutual fund herding and the impact on stock prices", *Journal of Finance*, vol 54(2), pp 581-622.
- (2002): *Predicting mutual fund returns*, mimeo, University of Maryland.

Annex 4: Glossary of terms

Absolute return strategy	An asset management strategy that is geared towards achieving absolute rather than relative returns - performance is measured in absolute terms and not relative to a market benchmark
Active/actively managed investments	An asset management strategy that seeks to actively manage the fund's positions in order to increase returns or reduce costs
Benchmark	A reference portfolio used to evaluate the performance of an investment portfolio. A portfolio is said to outperform (underperform) its benchmark when its returns are higher (lower) than those of the benchmark
Churning	Unnecessary trading activity for the purpose of generating trading commissions
Closed-end (mutual) funds	Investment funds with a fixed number of issued shares that are traded in the open market
Core-satellite approach	An investment strategy that combines separate mandates of actively and passively managed funds
Crossing	Simultaneous off-market sale and purchase of assets for different clients
Defined benefit/contribution schemes	Pension fund schemes under which (DB) the entitlements are calculated on the basis of the employee's salary profile or (DC) are based on the investment returns earned on the beneficiary's regular contributions
Exchange-traded fund (ETF)	An index-based instrument that is similar to a mutual fund, but the shares of which are traded on organised exchanges, thus allowing for intraday trading
Free float	Measure of the market value of the securities that are free to trade among institutional and individual investors, ie adjusted total market capitalisation
Fund-of-funds	A portfolio of fund shares, ie investments in other pooled investment vehicles, that can include hedge fund shares and shares in other so-called alternative management vehicles

Hedge funds	Un- or lightly regulated alternative investment vehicles whose providers of capital tend to be high net worth individuals and institutions and whose investment strategies are typically characterised by use of leverage and the absence of investment constraints
Information ratio	A fund's or portfolio's excess return relative to benchmark per unit of tracking error - a measure of risk-adjusted returns
Investment mandate	Contractual agreement between a client investor and an asset management firm to carry out asset management services on behalf of the client
Investment style	A description of a fund's investment strategy. Equity funds, for example, are commonly characterised as having a growth- or value-oriented style, or a blend of the two
Open-end (mutual) fund	An investment fund that stands ready to sell new shares to the public and to redeem outstanding shares on demand at prices set by reference to the net asset value of the fund
Passive/enhanced passive investments	Asset management strategies designed to closely replicate the return performance of a particular market index - enhanced passive strategies allow for some flexibility in replicating the benchmark
Tracking error	The standard deviation of a portfolio's excess returns over a sample period - a measure of the divergence of a portfolio's return from that of the selected benchmark

Annex 5: List of interviewed firms⁵¹

Addenda Capital Inc.	InverCaixa
AGF Funds Inc.	Inverco
Ahorro Corporación Gestión	InverSeguros
Algemeen Burgerlijk Pensioenfonds	Japan Investment Trust Research Institute
Altamira Investment Services Inc.	Kairós Partners SGR
AMP Henderson Global Investors Limited	Macquarie Investment Management Limited
Asahi Mutual Life Insurance Company	Mapfre Inversión
Assirt	Meiji Life Insurance Company
Aurion Capital Management	McLean Budden
AXA Australia	Mercer Investment Consulting
Baillie Gifford & Co	Mercer Manager Advisory
Banque et Caisse d'Epargne de l'Etat	Merrill Lynch Investment Managers Co.,Ltd.
Banque Générale du Luxembourg	The Mitsubishi Trust and Banking Corporation
BA Pension Investment Management	Mitsui Trust and Banking Company, Limited
Barclays Vida y Pensiones	Morningstar Japan K.K.
BBVA Gestión	Natcan
BBVA Seguros	National Australia Bank/MLC
Beutel Goodman & Company Ltd.	Nextra Investment Management SGR
BT Funds Management	Nippon Life Insurance Company
CaiFor	Nomura Asset Management Co.,Ltd.
CBC Radio Canada Pension Plan	Oliver, Wyman & Company
Colonial First State Investments Limited	Ontario Teachers' Pension Plan Board
The Dai Ichi Mutual Life Insurance Company	Pecoma International S.A.
Daiwa SB Investments Ltd.	Petercam S.A.

⁵¹ The above list contains, in alphabetical order, the names of firms from the institutional asset management industry that participated in the Working Group's interview exercise and agreed to be listed. As firms did not receive draft versions of the report prior to publication, being on the list does not necessarily mean that the listed firm endorses the report or its findings.

Deka Investment	Pioneer Investment Management SGR
Deutsche Asset Management	RAS Asset Management SGR
Dexia Asset Management	Resona Trust & Banking Co.,Ltd.
DIT Deutscher Investment-Trust	Robeco Institutional Asset Management
DLIBJ Asset Management Co.,Ltd.	Romagest SGR
dresdnerbank investment management	Rothschild Asset Management (Japan) Limited
Elantis Desjardins Global Investment Management	SCH Gestión
FERI Trust	SEB Invest
Fonditel	Securities Industry Research Centre of Asia-Pacific
Frank Russell Company	Standard Life Investments
Frontier Investment Consulting Pty Ltd	Stichting Pensioenfonds Hoogovens
Gesmadrid	Sumitomo Life Insurance Company
Gestion D'Actif Structures	Sun Life Assurance Company of Canada
Gestnord Fondi SGR	TAL Institutional Management
Goldman Sachs Asset Management Co., Ltd.	TD Asset Management
Helaba Invest	TIAA-CREF Investment Management
ING Investment Management	Tokio Marine Asset Management Co.,Ltd.
ING Investment Management (Australia)	UBS Global Asset Management
InTech Financial Services	Westpac Investment Management

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Hong Kong Monetary Authority	Mr Yik-Ko Mo
Bank of Italy	Mr Giuseppe Grande
Bank of Japan	Mr Naohiko Baba
Central Bank of Luxembourg	Ms Sandrine Scheller
Netherlands Bank	Mr Paulus Dijkstra
Bank of Spain	Mr Jose Ramon Martinez Resano
Sveriges Riksbank	Mr Johan Molin
Swiss National Bank	Ms Susanne Bonomo Mr Jakob Schaad
Bank of England	Ms Lucy Chennells
Federal Reserve Bank of New York	Mr James Mahoney Ms Carol Osler
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