

Liquidity Conference

On 26 and 27 September 2003, the Financial Markets Group hosted a conference on 'Liquidity'. Understanding market liquidity in pricing stocks and bonds has recently received a great deal of attention by researchers. This conference, which received generous support from Lehman Brothers and the Bank of England, examined the endogenous nature of liquidity and the simultaneous determination of asset prices and asset structure. The conference brought together leading theoretical and empirical researchers, with the purpose of broadening the understanding of these issues and encouraging a more unified view of the myriad aspects of liquidity. In doing so, the organisers of the conference, Professor David Webb and Dr Jean-Pierre Zigrand, aimed to bridge the gap between academic and practitioner views of liquidity.

The conference started with a presentation by **Hyun Shin** (FMG/LSE) on 'Liquidity Black Holes', joint work with **Stephen Morris** (Yale). The presenter noted that during financial market stress, rapid price changes are commonly observed. In episodes like the 1987 stock market crash or the LTCM crisis in the summer of 1998 financial participants sold assets in response to price drops which fuelled further decreases in prices. Practitioners call such episodes 'liquidity black holes'.

The presented model illustrates that uncertainty about the exact execution price of an order, together with the fact that loss limits of traders are not commonly known, can be responsible for such phenomena. As the expected execution price decreases with the expected number of seller-initiated trades, and since each trader would like to sell the asset before her loss limit is reached, the fear of a selling wave in itself, can induce traders to sell. Hence, in a similar fashion to bank runs, expectations of a panic and a resulting price drop can be self-fulfilling. With the help of the tools developed in the global games literature, the authors show that the outcome of the set up is not ambiguous; the equilibrium is unique. Traders with loss limits above a critical level, which depends on the model's parameters, will sell the asset and those with lower loss limits will hold it. A surprising implication of the model is that raising loss limits is socially inefficient, since despite



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the fact that raising loss limits decreases the expected loss of an individual investor, it increases the probability of the occurrence of such liquidity holes.

The second presentation of the morning was given by **Douglas Gale** (FMG/NYU); 'Liquidity, Interest Rates and Asset Prices'. Gale started by discussing the financial crises in the 1990s, including the asset bubbles in Japan and the US, as well as the financial crisis in South East Asia. In particular, he pointed out that following each crisis, questions were asked about whether the monetary authorities and regulators acted correctly or should have responded differently to avert the financial distress. Gale therefore investigates these questions by building a classical general equilibrium model with money whereby liquidity shocks can have effects on asset prices. Money is introduced through a Central Bank that lends money to the private sector, which is needed to purchase goods and services. Gale shows that even in situations where the Central Bank keeps the price level constant or has perfect control over the inflation rate, adverse liquidity (or time preference) shocks can easily cause asset prices to fall and for asset price volatility to increase.

The introduction of a Central Bank converts the *real* exchange economy to a monetary economy and allows Gale to assess how money performs and what the Central Bank can and cannot do in the presence of various shocks. Agents maximise expected utility defined over goods *and* assets and each face their own cash-in-advance and budget constraints. Markets are then allowed to be incomplete and therefore the link between asset prices and liquidity provision is affected. Liquidity shocks can therefore have detrimental effects on asset prices and hence also affect asset price volatility.

Guillaume Plantin (FMG/CMU) presented the third paper in the section on 'Self-Fulfilling Liquidity and the Coordination Premium'. It is quite often the case that new financial innovations have difficulty taking off, even when they appear to be superior to existing products/services. The presented model argues that expectations of the liquidity of forthcoming assets may be self-fulfilling. The more investors believe in the success of the innovation, the more successful it will be.

The critical assumptions of the model are the following: There is an exogenous probability of the asset being a 'lemon' but this probability is not precisely known at the issue date. However, those who buy the asset learn all the relevant information about its return characteristics by trading it. Hence the more traders that invest in the asset, the less severe the adverse selection problem will be, which makes the asset more attractive. Using global games methods, the assumption of not commonly known default probabilities delivers a unique equilibrium; traders with information that this probability is below a critical level will buy the asset, while others will not.

The strength of the paper is that it presents a number of applications with observable implications. It shows that the discount resulting from the coordination problem represents a higher fraction of all discounts in the case of investment bonds than in the case of junk bonds. This observation sheds



Jean Tirole

light on the so-called 'credit spread puzzle'. With a dynamic modification, it also provides an explanation of the exponential pace of new financial innovations gaining popularity.

The final paper of the morning was by **Jean Tirole** (Toulouse and MIT), joint with **Parag Pathak**; 'On Corporate Hedging and Liquidity in a Financially Open Economy'. In this paper the authors ask a number of questions such as why is there so little currency hedging in the private sector? Why do so many countries peg? Why do 'floaters' often try to influence (or manage) their rate? And what type of country should peg its currency? The model Tirole presented is based on two building blocks. The first emphasizes who in an economy benefits from a real appreciation or depreciation. Consumers and borrowers both benefit from real appreciations since purchasing power increases for the former, while the latter benefit from having to pay fewer units of domestic currency to pay off a foreign debt. Producers of tradable goods, on the other hand, benefit from a real depreciation since their goods are made more competitive in international markets. The second building block of the model allows the government to use exchange rate policy to signal its intentions. In this way, since the ex post exchange rate is not given, the paper endogenises the exchange rate regime. In the first stage of the model, the government learns (privately) the level of its reserves and decides its exchange rate. Foreigners then decide whether or not to attack the currency by withdrawing their assets. The government then either defends the peg at the given exchange rate using its reserves, or lets the currency float. By using the exchange rate as a signalling device, the model can endogenously determine the exchange rate regime.

In the afternoon **David Goldreich** (LBS) presented a joint paper with **Bernd Hanke** and **Purnendu Nath** (both University of London) entitled 'The Price of Future Liquidity: Time-Varying Liquidity in the US Treasury Market'. The authors model the liquidity of an asset as a property that reduces transaction costs, both now and in the future. Therefore the values of liquid assets reflect the expected future transaction cost savings for both the current buyer and future holders.

The authors study the (adjusted) yield spread between on-the-run and the most recent off-the-run 2-year US Treasury notes, ie securities that essentially differ only in terms of liquid benchmark status. They measure liquidity in terms of actual and effective bid-ask spreads, average quote and trade sizes, numbers of trades and transacted volumes, where spreads and sizes are averages across the trading day.

The results show that as a Note goes off-the-run, bid-ask spreads increase (by roughly a factor of three), trade sizes decline sharply and the number of quotes and trades collapse. Volume correspondingly declines even more. Testing the model, the authors find that both current and *expected* future liquidity affect prices. Including a time trend to account for the possibility that certain institutions may be obliged to hold on the run securities, the authors find that the future cost coefficients remain statistically significant. Comparing the statistical power of the measures of liquidity used, the authors find that the quoted bid-ask spread is more important to immediacy than the effective spread. It is also the strongest measure overall, followed by measures of market activity (ie volume and number of trades).

Yildiray Yildirim (Syracuse University) then presented the paper 'Estimating Expected Losses and Liquidity Discounts Implicit in Debt Prices', joint work with **Tibor Janosi** and **Robert Jarrow** (both Cornell University). The authors propose a reduced form model of credit risk, incorporating both liquidity risk and correlated defaults. The former is modelled as a convenience yield while the latter are based on default intensities that depend on common macro factors. These factors are the spot interest rate and an equity market index.

The authors study the empirical performance of five different versions of the general model. The data on monthly US Treasury securities and corporate bond prices from May 1991 to March 1997 is obtained from the University of Houston's Fixed Income Database. They use bond prices of twenty different firms' debt issues belonging to seven industry groups and the equity data is taken from CRSP. The authors compute a rolling estimation of the parameters and make in-sample and out-of-sample tests of the different models. Their evidence supports the use of a liquidity discount in credit risk models, while other conclusions of the paper are that this model fits the data well, and the liquidity premium is firm specific, which means that this priced risk is non-systematic.

The last paper of the day was by **Francis Longstaff** (UCLA), who presented the paper 'The Flight-to-Liquidity Premium in US Treasury Bond Prices'. The presentation started with an overview of the traditional asset pricing literature, where the price of an asset is given by discounting its future cash-flows. That framework implies that the law of one price holds and therefore liquidity, or popularity, should not matter. However, there is empirical evidence to show that the lack of liquidity is penalized by a huge discount. In this context, the goal of this paper is two-fold. First, to quantify the pricing effect of being a liquid asset separately from its cash-flows. Second, to identify the factors that drive the liquidity premium.

Both questions are studied by comparing yields on Refcorp bonds with yields on Treasury bonds. Refcorp is a US Government agency whose bonds are guaranteed by the Treasury. Therefore, this set of data constitutes a pure controlled experiment that lets the author isolate the flight-to-liquidity premium in Treasury bonds. The data are monthly and range from April 1991 to March 2001. The author shows that there is a significant difference in valuation between the two assets, which can be more than fifteen percent in some

cases. Finally, it is shown that the liquidity premium is related to market sentiment variables such as consumer confidence and flows into equity and money market mutual funds.

Saturday's first session was opened by **Laurie Hodrick's** (Columbia University) presentation of her paper 'Liquidity', joint with **Pamela Moulton** (Columbia). Starting with the observation that the notion of liquidity consists of three dimensions, (time, price and quantity), the authors construct a model in which an uninformed trader aims to minimise the cumulative shadow costs associated with a deviation from the optimum on any of these dimensions. In particular, their model extends the Glosten-Milgrom framework to allow uninformed traders to choose whether and how much to trade. As a result, several established key results fail to hold in this extended setting. Most importantly, in contrast to traditional results, a market for an asset may break down even when informed traders do not constitute an overwhelming market presence. Furthermore, bid-ask spreads need not be decreasing in the significance of informed traders. Finally, the authors derive several empirical predictions on the nature of the immediacy-quantity trade-off faced by uninformed traders. The presentation was followed by a lively discussion that centred on the empirical applicability of the model.

Roman Inderst (FMG/LSE) continued the session with a presentation of the paper 'Subjective Credit Decision and Borrower Net Worth', joint with **Holger Mueller** (NYU), which analyses the use of collateral in credit decisions. In their model, the lender undertakes a privately observed credit risk analysis of the otherwise symmetrically informed borrower. As the outcome of this analysis is non-contractible and as the lender typically cannot appropriate the project's full returns, the lender's decision to grant credit will in general be too conservative. Borrower collateral, by allowing the lender to appropriate more returns in bad states, will shift the lender's credit policy close to the social optimum. More precisely, the authors show that borrowers with more collateralisable assets are more likely to receive a loan, while borrowers with more favourable projects require less collateral. In contrast to the existing literature, this result does not rely on agency problems on the borrower's side and is thus applicable to environments with strong investor protection and to firms not managed by their owner.

John Moore (LSE and University of Edinburgh) rounded off the morning session with a talk on 'Inside Money and Liquidity', joint with **Nobuhiro Kiyotaki** (FMG/LSE), which concentrated on providing micro-foundations for the use of privately issued money and the determinants of its liquidity. A lack of double coincidence of wants over dated rather than physical goods is introduced into a dynamic general equilibrium model, thus creating a demand for transferable means of short-term saving. The authors then distinguish between two kinds of commitment power that an agent possesses: 'bilateral' commitment power allows him to pledge future cash flows while 'multilateral' commitment power refers to the resaleability of any privately issued obligations. As bilateral commitment power is lowered, the authors show that agents can no longer optimally

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smooth their consumption path. As multilateral commitment power is reduced, the liquidity of privately issued money, defined as the degree to which it circulates among other agents, is reduced. Financial intermediation, which effectively increases multilateral commitment power by bundling privately issued obligations of various agents, can then be interpreted as a means to overcome limited resaleability. Finally, Moore used the model to interpret the historical pattern of inside money usage as well as the correlation between velocity and financial development of various forms of inside money.

The first paper of the afternoon session was presented by **Jiang Wang** (Sloan School of Management, MIT) and co-authored with **Leonid Kogan**, **Stephen Boss** (both Sloan School of Management, MIT) and Mark Westerfield (Dept. of Economics, MIT). The paper, entitled 'The Price Impact and Survival of Irrational Traders', questions the plausibility of the assumption that irrational traders have to control a significant amount of wealth in order to affect prices with their irrational beliefs. The paper develops a canonical, pure exchange economy with irrational traders who have persistently wrong beliefs about the economy. The model shows that the partial equilibrium arguments used to support the long-run survival of irrational traders are flawed, and that the impact irrational traders have on equilibrium prices is important in determining their long-run fortunes. In particular, the paper finds that an irrational trader with very little wealth may still have a large impact on the stock price and that irrational traders with beliefs mildly different from the true probabilities can survive in the long run.

'Price Impact Costs and the Limit of Arbitrage' was then presented by **Zhiwu Chen** (Yale School of Management) and co-authored with **Werner Stanzl** (Ziff Brothers) and **Masahiro Watanabe** (Rice University). The paper investigates the effect of price-impact costs on the profitability of trading long/short strategies based on market anomalies. It tries to answer the question of what the maximum size of the hedge fund can be while still being able to make profits on these trading strategies when the price impact costs are taken into consideration. The anomalies considered in this paper are size, book-to-market and momentum. The paper estimates a non-linear price impact function individually for 4897 stocks over the period 1963 to 2001. The trading portfolios are constructed both equally weighted and value weighted with annual, semi-annual and quarterly rebalancing. The paper finds that the arbitrageur will incur price-impact and trading costs, which will reduce the returns of an investment considerably if the invested amount is large. Consequently there is a limit on the size of the fund that pursues one of the anomaly trading strategies. Of the three strategies considered, the size and B/M strategies are hard to justify under the presence of price impact costs, but the profitability of momentum strategy cannot be disproved.

Jean-Pierre Zigrand (FMG/LSE) then presented his joint work with **Rohit Rahi** (FMG/LSE) entitled 'Strategic Financial Innovation in Segmented Markets'. By

analysing what happens if securities are designed not by a benevolent social planner or by companies issuing financial assets, but by large traders such as investment banks and hedge-funds, the authors provide an interesting answer to which assets we should expect to see in an economy with a variety of clienteles.

In the paper, various investor clienteles have their access to capital markets restricted and financial innovations together with the inter-market traders can be viewed as a means of integrating the various markets. The equilibrium asset structure is chosen to maximize arbitrage profits and therefore depends upon considerations such as depth, liquidity and gains from trade. In fact, in the case in which arbitrageurs are prevented from trading on all exchanges, but can choose one (or more) exchanges on which they are active, it is shown that they gravitate to those exchanges which, other things being equal, are deeper (as measured by the price impact of trading) and stand to gain most from trading with other exchanges. The general equilibrium nature of the model also allows the study of welfare properties.

The final speaker of the day, **Massimo Massa** (INSEAD), focused on the implications of the development of the mutual fund industry on the stock market and its liquidity. His paper, 'Mutual fund competition and stock market liquidity', provides a model that analyses the role of competition between mutual funds on the equilibrium conditions of the financial markets in which they operate. In this framework, there is an implicit trade-off between the number of funds that are set up and the amount of collected information. An increase in the cost of information reduces the amount of information that mutual funds collect and the fees they charge and increases the number of funds they offer. The presence of more and relatively less informed funds has an impact on market participants, increasing liquidity and reducing volatility and returns. This allows Massa to use observable fund characteristics to proxy for the unobservable levels and cost of information and to relate it to market conditions. Based on US equity funds in the past 30 years, the results show that fund characteristics affect stock characteristics and seem to aggregate at the overall market level as priced factors.

GAM Gilbert de Botton Award

The competition for the GAM Gilbert de Botton Award in Finance Research 2003 was completed last May and the presentation ceremony took place at the London School of Economics on June 9 2003.

FMG would like to thank GAM for their generous support, which enables us to promote top quality research by talented young people in financial market behaviour and practice. The annual Award is given in recognition of outstanding research in finance within the discipline of asset management and related fields. Participation was high this year and we would like to thank everyone who submitted a paper in the competition.

A team of experts from the academic and the business community evaluated the research papers submitted. The 2003 Award's Jury included Professor David Webb (Director, Financial Markets Group, LSE) as Chairman of the panel, Professor Charles Goodhart (Deputy Director, Financial Markets Group, LSE), Dr Ross Altman (Governor, LSE), Dr Michael Allingham (Frank Richardson Fellow in Economics, Oxford University), Dr John Makin (Caxton Associates LLC), Professor Avinash Persaud (Gresham Professor of Commerce & Global Head of Research at State Street Bank & Trust Company), Mr Andrew Smithers (Managing Director, Smithers & Co Ltd), Dr Burkhard Poschadel (Group Chief Executive Officer, GAM), Mr Jeremy Smouha (Director, GAM) and Mr Graham Wainer (Group Head of Clients and Portfolio Management, GAM).

The Award Jury shortlisted 5 papers of very high quality:

- Max Bruche 'Corporate Bond Prices and Coordination Failure'
- Paolo Colla 'Non Fundamental Speculation and Index Replacements: A Market Microstructure Approach'
- Christian Huse 'Towards a Macro-Founded Dynamics of the Term Structure of Interest Rates'
- Hassan Naqvi 'The Valuation of Corporate Debt with Default Risk'
- Katrin Tinn 'Risk Premium of Emerging Markets: An Empirical Study'

This years winner is **Hassan Naqvi**. Hassan was presented with a certificate and a prize of £15,000 by the Honourable Mrs Janet de Botton, the wife of the late Gilbert de Botton. The Financial Markets Group presented the short-listed students with the honorarium of £500.00 for the quality of their participation in the competition.



Hassan Naqvi accepting his award from Janet de Botton

Information about the GAM award competition 2004 will be posted in our website <http://fmg.lse.ac.uk> in November 2003.

The Award was created in honour of the late Gilbert de Botton, founder of GAM. Gilbert de Botton founded GAM in 1983. A man of wide-ranging intellectual interests, he is widely acknowledged as the pioneer of the 'open architecture' model of asset management. GAM manages more than billion of clients' assets from ten offices around the world and has been owned by UBS AG since 1999. It continues to have distinctive style and culture.

Discussion papers



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Skewness and Kurtosis Implied by Option Prices: A Second Comment

Emmanuel Jurczenko, Bertrand Maillet and Bogdan Negrea

The celebrated Black and Scholes (BS) (1973) formula enables the practitioner to price options in a straightforward manner, and has now established itself as a benchmark in the option pricing literature. However, many empirical studies have reported strong biases in the option prices predicted by the BS-formula, suggesting that the underlying assumptions are flawed. This has led to various suggestions as to how one can improve the theoretical framework. The specification of the distribution of the underlying asset has received particular attention, since the log-normal distribution of the underlying asset assumed in BS evidently is not correct.

In this context, an appealing approach was suggested in Corrado and Su (1996). Acknowledging that the log-normal density does a poor job describing real data, they consider a wider but still tractable class of densities, which are all expansions of the baseline density. In particular, they allow the practitioner to control for skewness and kurtosis in the data, while maintaining a closed-form option pricing formula. Other papers have since then improved on the original model, and also proposed competing methods based on this idea.

Jurczenko et al give an overview of the existing literature on this type of option pricing formulae, and discuss certain corrections and modifications,

which have been made to the original Corrado and Su formulation. They then compare these with a focus on the sensitivity of the predicted option price to shifts in skewness and kurtosis, finding that the effects of these can be substantial. In particular, they compare the Corrado and Su formula with the modified versions suggested by Kochard (1999) and Backus et al (1997), and find that in certain situations these result in significant differences in the price estimates.

DP 420

Co-Ordination Failure and the Role of Banks in the Resolution of Financial Distress

Spyros Pagratis

This paper develops a model of financial distress where a firm, a large creditor (bank) and a continuum of small creditors interact to determine the solvency condition of the firm in an environment of asymmetric information. Using global games methods, the author studies the game between the firm and its creditors when the firm is hit by a liquidity shock. The analysis shows that if the large informed creditor agrees to restructure the liabilities of the firm (via an additional loan), this in turn facilitates contract revision among the remaining dispersed creditors. Intuitively, the restructuring of the relatively more informed agent sends a positive signal to the less informed creditors regarding the solvency condition of the firm. Thus, it can

be argued that large well-informed creditors have the potential to inject a degree of *strategic solidity* in credit markets.

However, if the bank agrees to restructure only on the condition that a sufficiently high proportion of creditors accept the contract revision, then such conditional restructuring has no impact on the behaviour of the creditors. This is because the condition of a *high* minimum tendering rate undermines the bank's credibility with respect to its information, and hence has no effect whatsoever on the decisions of the small claimants.

DP 421

In-Kind Finance

Mike Burkart and Tore Ellingsen

An enduring feature of short term commercial lending is the role played by trade credit. Suppliers not only sell goods and services, but extend large amounts of credit as well. In the presence of specialised financial institutions, it is puzzling that the exchange of goods is bundled with a credit transaction.

A common explanation for trade creditors in the literature is that suppliers have a monitoring advantage over banks. While the monitoring advantage theory is intuitively appealing the authors feel that it suffers from two shortcomings. Firstly, it fails to explain why banks being specialised in evaluation of borrowers have less information than suppliers. Secondly, suppliers' lending is usually very closely tied to the value of the input transaction.

In this paper the authors propose a new theory of in-kind finance, based on a fundamental monitoring advantage that input suppliers have over other external creditors. They argue that the source of the suppliers' informational advantage is the input transaction itself. Unlike other creditors, an input supplier automatically knows that an input transaction has been completed. The value of input monitoring in turn stems from the fundamental difference between inputs and cash. Cash is easily diverted, whereas inputs are less easily diverted and hence are less subject to moral hazard. The model also explains why firms both take and give costly trade credit even when the borrowing rate exceeds the lending rate.

Finally, the paper suggests reasons why trade credit varies across countries and across time. With perfect legal protection of creditors, trade credit loses its advantage because it becomes as difficult to divert cash as to divert inputs. More generally, the importance of trade credit compared to bank credit should be greater when credit protection is weaker, and when firms are undercapitalised due to entrepreneurs' lack of wealth.

DP 422

Loan Securitisation: Default Term Structure and Asset Pricing Based on Loss Prioritisation

Andreas Jobst

This paper develops an asset pricing approach for collateralised loan obligations (CLO) as a specialised form of asset-backed securitisation (ABS). Generally, such loan securitisation seeks to substitute capital market-based finance for credit finance without the lending and deposit-taking activities of banks. Issuers of CLOs sell contingent claims on expected cash flows generated from a designated loan portfolio in order (i) to 'liquify' their balance sheets, (ii) to reduce both economic cost of capital and regulatory minimum capital

requirements, and (iii) to diversify asset exposures. In order to value CLOs Jobst models Merton-type risk-neutral asset returns of the issued securities as contingent claims on a multi-asset portfolio of corporate loans.

First, the author performs a Monte Carlo simulation of annual expected and unexpected credit exposures of a uniform loan portfolio on the basis of an extreme value theory (EVT) loss function. Due to so-called subordination of investor claims with different seniority, annual losses are computed relative to the size and the seniority of each investor tranche ('loss cascading'). The author then obtains cumulative credit default losses for a common CLO. Finally, risk-neutral returns for expected default loss of each tranche are calculated and compared to zero-coupon bonds with similar maturity and rating. Hence, the suggested model serves as a blueprint for the adequate valuation of CLO transactions. The analysis illustrates the dichotomous effect of loss cascading, since the most junior tranche of CLO transactions exhibits a distinctly different default tolerance compared to the remaining tranches. The resulting tranche spreads are indicative of the default pattern of CLOs, which causes expectations of excess investor returns. By solving the puzzling question of properly pricing the risk premium for expected credit loss, the author explains the rationale of issuers retaining the most junior tranche as first loss protection.

DP 423

Performance Persistence of Pension Fund Managers

Ian Tonks

In this paper the author examines whether UK pension fund managers consistently add value to the performance of the funds under their management. Using quarterly returns to equity portfolios of UK pension funds over the period 1983-97, in which the fund manager managing the fund in each quarter is identified, the author

found evidence of significant persistence in the performance of fund managers at the one-year time horizon, as well as some evidence of persistence at other frequencies. This is a significant result and conflicts with earlier studies where little evidence of fund manager persistence was found. However, the author argues that previous work will have induced a selection bias by restricting the data sample to the same fund manager over a long time period. This survivor bias may have reduced the level of persistence in the sample. Using his dataset, and imposing the restriction that only long-lived funds with the same fund manager are included, he finds the returns on a zero investment portfolio are reduced, which suggests that the earlier work will have under-estimated the true level of persistence.

DP 424

International Asset Allocation with Time-varying Investment Opportunities

Allan Timmermann and David Blake

This paper investigates the market-timing activities in international equity holdings of a large panel of UK pension funds. Arguing that a valid assessment of market-timing skills has to take into consideration the time-varying investment opportunities, the authors model the portfolio weight dynamics as functions of time-varying conditional moments.

The results show strong evidence of market timing activities and that a substantial part of the evolution in portfolio weights can be explained by time-varying conditional expected returns, volatilities and covariances with domestic equity returns. In particular, the analysis indicates that the funds' decisions to scale back their investment in the US stock market during the 1990s were the consequence of low or even negative expected returns



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resulting from rising stock valuations and low dividend yields in this market.

While there is weak evidence in support of international market-timing skills based on unconditional performance regressions, this evidence becomes much weaker in tests that account for a time-varying global investment opportunity set. Once the effects of public information are controlled, the results indicate that the average fund earned a negative return from international market-timing of around -0.2 percent per annum.

DP 425

Performance Clustering and Incentives in the UK Pension Fund Industry

Bruce N Lehmann, Allan Timmermann and David Blake

The relationship between incentives and fund manager behaviour has not been addressed by many researchers. While the majority of such studies focus on mutual funds in the US, this paper concentrates on UK pension funds and the impact that differences in the legal and institutional frameworks have on institutional investors' choices. Employing a panel of UK pension funds' holdings over the period 1986-1994, the authors document several empirical regularities. Firstly the UK pension fund industry has on average underperformed the market, although this underperformance is less than that experienced by its US counterpart. Second, pension funds' performances tend to cluster around the median manager, with very little dispersion in the cross-section of returns. Furthermore fund size appears to be the only variable accounting for this variation, since large funds are characterized by poorer performances. These findings suggest that UK pension fund managers have not exploited the investment freedoms given by pension plan trustees. The authors point at the fee structure and

performance evaluation criteria as key variables behind these regularities. The fee structure does not provide incentives to add value, and relative – rather than absolute – performance evaluation forces pension funds to avoid underperforming the median fund manager. Finally, both the high level of concentration in the UK pension fund industry and the low turnover of fund managers might have played a role in determining the documented performance clustering.

DP 426

Returns from Active Management in International Equity Markets; Evidence from a Panel of UK Pension Funds

Allan Timmermann and David Blake

This paper focuses on the performance of several UK pension funds and provides new empirical evidence on the investors' reluctance to invest in foreign markets (home country bias). Most of the existing studies have analysed aggregated country holdings of foreign assets over time. At that level of aggregation, the sources determining changes in portfolio weights are heavily influenced by changes in the investors' composition over time. Given its unique data set consisting of 247 UK pension funds' foreign equity holdings over the period 1991 to 1997, this paper is in the perfect position to study the home country bias within a specific group of institutional investors. The authors use several performance decomposition techniques in order to assess the pension funds' active management skills in four regional areas (Japan, North America, Europe excluding UK, and Asia-Pacific excluding Japan). The authors find that pension funds underperformed substantially relative to the relevant foreign benchmarks, mainly due to unsuccessful changes in portfolio composition across international areas. This evidence is partially consistent with an explanation for the

home country bias based on informational asymmetries. Domestic investors may be better informed – relative to their foreign counterparts – on the country-specific factors affecting returns, but may be at an informational disadvantage with respect to identifying global factors that affect national markets. Underperformance would therefore result from the former asymmetry, while the large international bets taken by UK pension funds arise from the latter.

DP 427

Dealer Liquidity in an Auction Market: Evidence from the London Stock Exchange

Sylvain Friederich and Richard Payne

This paper studies hybrid trading systems (which typically include limit order trading and broker-dealer services) for very liquid stocks, where suppliers compete on and off the order book. They analyse the nature of order flow and the stock characteristics that lead to the dominance of one or other mode of trading. The authors examine these issues using an intra-day sampling frequency and two months of London Stock Exchange (LSE) recorded data for the FT-30 stocks at the end of 1999. The LSE comprises a central limit order book and a network of broker-dealers who supply quotes on a bilateral basis.

The authors focus on characterising the determinants of the fractions of trading activity sent on and off the central limit order book in terms of stock-specific and market-level information. They demonstrate that the market share of the order book tends to be low if traded volume is extremely high, if mean transaction size is high and if trade imbalance (excess of buys over sells or vice-versa) is large. Furthermore, when the terms of trade on the order book are poor (spreads are high or depth is low), order flow migrates to the dealer segment of the market.

Additionally, they uncover evidence that the proportion of order flow executed on and off book is also correlated across stocks. Friederich and Payne show that when market-level trading activity is particularly high or order flow tends to be one-sided, then activity for individual stocks migrates from the electronic order book to the dealer segment of the market. These results demonstrate the importance of market-wide liquidity and information shocks in the determination of stock-level activity and order flow distribution.

To summarize, their analysis sheds some light on why real-world market structures are hybrid and what underlies the demand for dealership services in a hybrid-trading environment. Based on their evidence, they do not support the view that there is a need for designated intermediaries who must be granted privileges to compensate for supplying liquidity.

DP 428

Internal ratings, the business cycle and capital requirements: some evidence from an emerging market economy

Miguel Segoviano and Philip Lowe

Basel 2, the new proposed regulatory framework for banking has tried to introduce risk based capital requirements, a concept that, at least theoretically, enjoys widespread support. However, effective implementation of such a concept requires that risk be measured accurately both across borrowers in a given point in time and across time. Under the New Capital Accord, the cornerstone of this risk measurement process is the rating of the borrower. In this paper, the authors use the ratings assigned by individual Mexican banks to their portfolios in order to examine how measured credit risk for these banks has changed since the financial crisis in

1994. They then examine the implications of these changes in risk for regulatory capital under the proposed changes to the Basel Capital Accord, assuming that the capital accord was in place in Mexico at the time of the crisis. They provide evidence that measured risk increased after the crisis and then fell as the recovery took hold. Despite the limitations of the data, they find that the proposed internal ratings-based approach would have generated large swings in regulatory capital requirements over the second half of the 1990s, with required capital increasing significantly in the aftermath of the crisis, and then falling as the economy recovered. Looking forward, if movements in actual bank capital were to show this same cyclical variation, then business cycle fluctuations might be amplified by developments in the banking industry, since banks would be required to hold more regulatory capital at the time when such capital might be more scarce, given the state of the business cycle.

DP 429

The Impact of Wealth on Consumption and Retirement Behaviour in the UK

David Blake

In this paper David Blake discusses the impact of wealth on consumption and retirement behaviour in the UK. He finds evidence that housing and pension wealth are important determinants of personal consumption and of the retirement behaviour in the UK. In particular, he shows that housing and state-pension wealth have positive impacts on consumption, while wealth from private pensions promotes higher savings. His results differ markedly from those of other studies on UK time series, but are broadly consistent with those from cross-sectional studies. In particular, both types of studies find evidence that social security and housing wealth

reduce personal savings, private pension wealth increases personal savings, occupational pensions help to induce retirement and personal pensions tend to delay retirement. Yet, Blake's results do not appear to be consistent with the life-cycle hypothesis. In particular, he does not find evidence that the savings propensity tends to fall as people get older.

There are a number of important policy implications that emerge from Blake's study. First, if governments wish to increase national savings or delay retirement, they should consider establishing individual retirement accounts for state pension schemes. Second, as capital market imperfections are increasingly eliminated, consumers may find that they can borrow against their illiquid pension assets in a similar way as they could borrow against their housing assets since the beginning of the 1980s. This could even offset the positive savings effect from private, funded pension schemes and could make it much more difficult for the authorities to influence consumption through conventional policy tools.



Special papers

SP 143

Financial Supervision: Which Model for Europe?

Peter Wierts and Dirk Schoenmaker

In this paper, the authors argue that increasing integration within the European Union (EU) gives rise to cross-border spillover effects or externalities and that the present national based system of financial supervision does not incorporate these externalities. Assessing the degree of integration, Wierts and Schoenmaker find that the EU has not yet achieved a fully integrated financial market. However, they suggest that when the process of integration is nearing completion, policy-makers will need to consider moving to Europe-wide solutions.

The paper then discusses how one should choose an appropriate supervisory model for Europe. Responding to the trend of cross-sector integration, two main models have emerged: a functional model (separate supervisors for prudential supervision and conduct of business) and an integrated model (a single supervisor). The jury is still out on which model performs better (eg in weathering a financial crisis). The authors then suggest introducing some degree of model competition to help discover the best model.

The authors conclude by exploring the question of the appropriate policy stance for financial supervision in Europe. They point out that the challenge is to choose regulations and supervisory practices that contribute to efficiency and stability. They mention that tentative results suggest that supervisory skills, market discipline and private sector control are key elements. The authors also argue that supervisory standards in Europe could be further developed by

benchmarking based on best practices as recommended in a similar context by the Lamfalussy (2001) framework. This would also promote the establishment of a level playing field across Europe.

SP 144

Market Regulation in a Dynamic Environment

John Board, Charles Sutcliffe and
Stephen Wells

The paper analyses the factors that permit regulation without compromising the ability of markets to innovate. Since the future structure of financial markets is uncertain, it is important that any new arrangements not be biased towards or based on a particular view of one organization of the market. Any static view of the market is likely either to be proved wrong, or to introduce the possibility of regulatory arbitrage by participants between regulated segments. This suggests that regulation should be structured flexibly so as to allow maximum oversight, while not inhibiting the evolution of the market being regulated.

The authors argue that the present profile of market regulation will have to change if it is to continue to operate successfully with the emerging trading structures. In particular, it is argued that a 'light touch' is needed in which the regulators allow markets to develop, fragment and consolidate as freely as possible. Within this, the regulator needs to ensure:

(i) competition – allowing new venues to open (and close) as smoothly as possible. Also, the regulator needs to prevent existing venues from

using their position to prevent such changes. This will allow the emergence of efficient trading mechanisms.

(ii) transparency – the visibility of activities taking place in different venues. This needs to be the case both *ex ante*, to allow appropriate selection of the trading venue, and *ex post*, to judge best execution. The data should be made available at appropriate cost to traders, potential traders and competitors.

(iii) best execution – the ability for traders to judge the quality of their trading.

Forthcoming Discussion and Special Papers

Discussion Papers

DP 430

'Revisited Multi-Model Approximate Option'

Emmanuel Jurczenko, Bertrand Maillet and Bogdan Negra

DP 431

'On the Out-Of-Sample Importance of Skewness and Asymmetric Dependence for Asset Allocation (IAM Series 1)'

Andrew Patton

DP 432

'Homeownership: Low Household Mobility, Volatile Housing Prices, High Income Dispersion'

Sven Rady and Francois Ortalo-Magne

DP 433

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Pojanart Sunirand

DP 434

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Andrea Caggese

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SP 146

'Reflections on the 10 years since Britain's ERM Departure'

Lord Lamont of Lerwick

SP 147

'German and British Monetary Policy in the Age of Maastricht: What Have we Learned in the 10 Years Since Black Wednesday?'

Helmut Schlesinger

SP 148

'Economic Policy and Exchange Rate Regimes: What Have we Learned in the 10 Years Since Black Wednesday?'

Edwin Truman

Capital Markets Workshop

The Capital Markets Workshop meets regularly throughout the academic year at 5pm on Wednesdays in room R405, Lionel Robbins Building, LSE. Please see the schedule below for any different times/locations.

Lent Term 2004

14 January	Job Market Seminar*
21 January	Job Market Seminar*
28 January	Job Market Seminar*
04 February	Job Market Seminar*
11 February	Job Market Seminar*
18 February	Douglas Gale (NYU) TBC
25 February	Kevin James (Bank of England/FMG) TBC
03 March	Franklin Allen (Wharton School, University of Pennsylvania) TBC
10 March	Dirk Kruger (Stanford University) TBC
17 March	Alexander Ljungqvist (Stern School of Business) TBC

* These seminars are reserved for recruitment purposes and details will be posted at the FMG website nearer the date

DC Webb

Revisions to the programme may take place, these will be identified through the website at:<http://fmg.lse.ac.uk>



FMG Review

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