

# FMG hold Fourth Empirical Finance Conference

On 30 April to 2 May 2003, the Financial Markets Group hosted its fourth empirical finance conference. This year, the event was split around two themes: foreign exchange market microstructure and advances in empirical finance. The conference brought together leading researchers in these fields from around the world to discuss recent developments at both the theoretical and empirical levels.

In the first session of the conference, chaired by Professor Charles Goodhart, Richard Lyons (University of California, Berkeley and NBER) presented his joint paper with Martin Evans (Georgetown University), 'How is Macro News Transmitted to Exchange Rates?'. This paper tests whether macroeconomic news is transmitted to exchange rates via the transactions process, and if so, what share occurs via transactions versus the traditional direct channel. They identify the link between order flow (signed transaction volume) and macroeconomic news using a heteroskedasticity/variance decomposition approach and find that at both the daily and intra-daily frequencies, order flow varies considerably with macro news flow: at least half of the effect of macro news on exchange rates is transmitted via order flow.

The paper is motivated by recent empirical work that demonstrates a link between order flow and exchange rate changes. However, the question of what actually drives order flow remains unanswered. This paper therefore tries to answer this question by examining whether macroeconomic news might be a determinant of order flow.

Using inter-dealer transaction data for the Deutsche mark – US dollar exchange rate over the period 1 May to 31 August 1996 from the Reuters D2000-1 system, they estimate a trading model that distinguishes three sources of exchange rate variation – a direct, traditional effect of news, an indirect effect induced via order flow and a third source whereby order flow is unrelated to macro news. They find that about two thirds of the effect of macro news on the exchange rate is transmitted via order flow.

The paper extends the literature on exchange rates and news in three ways; firstly, they address the presence and importance of an indirect channel through which news affects exchange rates, secondly, they use a heteroskedasticity-based identification methodology rather than an event study and finally, their approach uses a much wider set of news events.



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The second paper in the morning session, 'Identifying Noise Traders: The Head-and-Shoulders Pattern in U.S. Equities', was presented by Carol Osler (Brandeis University) and represented joint work with Jennifer Chu (Brandeis University).

Examining the 'head-and-shoulders' trading strategy based on a pattern of three peaks in asset prices with the highest in the middle, this paper provides evidence that some technical trading is irrational noise trading. Analysing daily returns and volume data for 98 stocks from the CRSP database between 1962 and 2001, they find three reasons to conclude that head-and-shoulders trading is irrational. First, trades based on the pattern are not profitable; second, the pattern generates a significant increase in trading and finally, spreads narrow when head-and-shoulders traders are active.

They explain this irrationality of traders making predictable mistakes using the concept of 'illusory correlations' from cognitive psychology, the idea that people have a tendency to discover relationships that do not actually exist. Therefore, added to their strong desire to make money, traders might have a tendency to discover patterns of predictability, leading them to believe in connections between past prices and future prices that do not truly exist.

The afternoon session of the first day was chaired by Andrew Patton and started with the presentation by Kathryn M Domínguez (University of Michigan) of the paper 'When Do Central Bank Interventions Influence Intra-Daily and Longer-Term Exchange Rate Movements?'. This paper adopts a market microstructure approach to investigate an old question in international economics: the efficacy of central bank intervention. The author reviewed portfolio balance and signalling approaches to this issue but pointed out that such approaches have difficulties in reconciling the empirical evidence: why intervention sometimes works and why sometimes it does not. Domínguez argued that microstructure theory provides a framework to investigate how interventions can be observed and interpreted by traders and how this process can impact on exchange rate dynamics in an environment with heterogeneous traders. Informative intervention, even misinterpreted by investors in the short run, can produce permanent (longer-run) effects. However, interventions without fundamental information can also produce short-term market impacts if investors cannot interpret them correctly. Using the Reuter's FFX data on DEM/USD and JPY/USD from August 1989 to August 1995, Domínguez found that interventions are consistently associated with the increase of short-term volatility but only part of these interventions can produce longer-term volatility. These results imply that intervention's short-term effects might not be good predictors of their long-term efficacy.

The second speaker, Mark Taylor (University of Warwick), presented the paper 'Can an old lady keep a secret? a microstructure study of monetary policy committee announcements and the foreign exchange market', joint work with Michael Melvin (Arizona State University) and Michael J Sager (JP Morgan). The paper examines how the foreign exchange market reacts to the regular meetings of the Monetary Policy Committee (MPC) of the Bank of England on the first and the second meeting days and also prior to these

meetings. The main evidence presented by Taylor includes, 1) at the daily level, only the second meeting days differ from the others in terms of conditional volatility and the probability of observing extreme returns, 2) at the intra-day level, the probability of remaining in the high volatility state from 12-1pm on the MPC meeting days increases significantly when interest rates are changed (announced at noon) and the probability of remaining in the low volatility state drops at noon on MPC meeting days, 3) there is little evidence of positioning during the morning period prior to the announcements. Taylor claimed the evidence indicates that MPC announcements contain significant news and that the 'old lady' does indeed seem to be able to keep a secret.

Helene Rey (Princeton University) concluded the first day by presenting a paper co-authored with Harald Hau (INSEAD) on 'Exchange Rate, Equity Prices and Capital Flows'. Rey presented a model in which the exchange rates, stock prices and capital flows are simultaneously determined. When the market is complete, foreign exchange risk can be hedged simply by swapping the foreign and domestic investor holdings of risk. However, under market incompleteness, international investors will face exposure to the exchange rate risk and the dynamics of foreign exchange rates and their correlation with foreign equity returns will enter into the investors' decision process in forming the optimal portfolio. The speaker argued that differences in equity market performances will generate foreign exchange order flow, which in turn will drive exchange rate movements. Confronting the model with data, Rey claimed the empirical evidence from 17 OECD countries is largely consistent with the predictions of their theory.

The morning of the second day, chaired by Jon Danielsson, started with a presentation by Dagfinn Rime (Norges Bank and SIFR); 'Dealer Behaviour and Trading Systems in the Foreign Exchange Markets', joint with Geir Bjorndal (SIFR). Their research examines all the transactions for four foreign exchange traders in a number of markets from 2 to 3 March 1998. The real time transactions dataset used contains transactions price and quantity, the trading system employed, counter-party and whether the trader initiated the trade or not. As such, the data can be used to calculate inventory levels and so can be used to analyse both inventory control and information effects of trades and other microstructure aspects of FX trading.

The four dealers considered range from large specialist dealers to smaller traders, each trading one or more currencies from DEM/USD, NOK/DEM and SEK/DEM. When examining whether there exists mean reversion of inventories, the authors find clear evidence to support such effects, with half lives of between 0.7 minutes for volatile markets to 18 minutes for more stable markets such as the NOK/DEM. The authors also examine price effects of trades using the Madhavan and Smidt (1991) model and compare it to the model of Huang and Stoll (1997), which separates out inventory and information effects. Using the Huang and Stoll (HS) model, they find that the inventory and information effects together account for 80 per cent of the spread in the DEM/USD market but only 50 per cent of the NOK/DEM spread. This is possibly due to a larger portion of the spread covering the

fixed costs and rents in the latter market. When splitting the information and inventory effects in the HS model, they only find information effects to be significant. This is in contrast to the results of Lyons (1995) using a Madhavan and Smidt type model, which suggest that both information and inventory effects are important. However, Bjonnes and Rime do find inventory control effects, through mean reversion but this is not through the changing of dealer prices. They also suggest that the Madhavan and Smidt



**Michael Moore**

model is good for modelling the activities of a specialist but the Huang and Stoll model fits electronic broker data better.

The final presentation of the microstructure section was given by Michael Moore (Queens University Belfast) who talked about 'An Information Approach to International Currencies', joint work with Richard Lyons (U.C. Berkely and NBER). The paper considers

the triangle of exchange rates between the dollar, yen and the euro and examines the issue of vehicle currencies, not by looking at international reserves or invoice currencies but rather the use of a third currency when trading from one to another.

The existing literature focuses on market size, international trade in goods, risk aversion and bid-ask spreads (Krugman and Rey approaches) or the microstructure approach (Black and Hartmann approaches) which concentrates on market maker risk and exchange rate volatility. This paper, however, builds an adverse selection/information theoretic model of vehicle currencies, which is asset market driven and concentrates on the price impact of trades. This price impact, Moore argued, was the predominant transaction cost in FX markets rather than the bid-ask spread, which is often minute in FX transaction. The paper essentially builds a benchmark model with no vehicle currency and then introduces the possibility of a vehicle, analysing which route dealers decide to take. The authors show that profit maximising traders will opt to trade both directly and indirectly, ie, using a vehicle, with the share of vehicle currency trading depending on the different price impacts of trades in each FX market.

The first session on 'Advances in Empirical Finance' started on Thursday afternoon and was chaired by Oliver Linton. The first to present was Ron Gallant (Fuqua School of Business, Duke University), who talked about 'Rational Pessimism, Rational Exuberance, and Markets for Macro Risks', a paper co-authored with Ravi Bansal (Fuqua School of Business, Duke University) and George Tauchen (Department of Economics, Duke University). The paper compares two asset pricing models that attempt to

explain features of financial markets such as the size of the equity premium and the volatility of the stock market. The first model, based on the joint work of Ravi Bansal and Amir Yaron, relies on low frequency movements in aggregate consumption growth, cash-flows, and economic uncertainty as the key channels to interpret asset market behaviour. The other, based on work by Campbell and Cochrane on habit formation, relies on time-varying risk aversion and consequently time varying risk-premia as the key channel to interpret asset markets. The models are fitted to data using a simulation-based procedure, and both models are found to fit the data equally well at conventional significance levels. They both also track a new measure of realized annual volatility quite closely. Their economic implications, however, are different in some important respects such as option pricing.

The second paper, presented by Mikhail Chernov (Columbia Business School) and co-authored by Mark Broadie and Michael Johannes (both Columbia Business School), was entitled 'Jumps in Volatility: Evidence of Index Options'. The paper tests for the presence of jumps in volatility and significance of various risk premia using the information contained in option prices. Relying on tick-by-tick data on S&P futures and options from 1986 to 2003, the tests compare the dynamics of options implied spot volatility with the dynamics generated by popular models incorporating stochastic volatility, jumps in returns, and jumps in volatility. Evidence indicates that the extreme skewness and kurtosis of short maturity option implied volatility are inconsistent with both a pure stochastic volatility model and a stochastic volatility model with jumps in returns, so that models with jumps in volatility are proposed and estimated. The results favour the latter specification, and the richness of the dataset enables the authors to consider risk premia specifications more general than those previously considered in the literature. It also allows tests of out-of-sample forecasting performance.

The final day of the conference began with a session chaired by Bob Nobay, which focussed on papers dealing with the modelling of economic/financial variables in dynamic frameworks.

Lars Hansen (University of Chicago) presented 'A Quartet of Semi-Groups for Model Specification, Detection, Robustness, and the Price of Risk', which demonstrates the consequences of agents/decision makers participating in an economy while not knowing the true underlying dynamics, but instead having to make approximations. This was done in the framework of a class of continuous time Markov processes, which were assumed to govern the



**Bob Nobay**



economic dynamics. Each of the four problems in the title of the talk, which are all related to the aforementioned departure from the rational expectations hypothesis, were shown to be associated with a so-called semi-group, a mathematical operator. As a main result, the analysis showed that the model uncertainty faced by the agents introduces an additional price of risk.

In his talk, 'The Term Structure of Real Rates and Expected Returns', Andrew Ang (Columbia University) introduced a new model for the nominal yield curve. In the theoretical part, a no-arbitrage three-factor model of the term structure was developed, where the factors included observed inflation. In addition to this, an important feature of the model was to allow for Markov switching, which when fitted to US-data was found to be present and that the switching appears to be associated with the business cycle. Moreover, the real interest rate and the expected inflation were extracted from the fitted model and analysed.

The last session of the conference, chaired by Francisco Penaranda, began with a presentation of a paper by Andrew Patton (LSE), joint work with Alan Timmerman (UCSD). In the paper, 'Properties of Optimal Forecasts', the authors examine point forecasts under different loss functions. In classical theory, forecasts are derived almost exclusively by minimising mean squared error. Different point forecasts can be derived for alternative loss functions, and what are thought of as standard properties of forecast errors in classical theory do not in general carry over to those for forecasts derived from other (in particular asymmetric) loss functions for non-linear data generating processes. For example, in classical theory, one-step-ahead point forecasts will be unbiased, the unconditional variance of forecast errors is non-decreasing in the forecast horizon, and forecast errors will be serially uncorrelated. The authors show with a simple example that none of these properties need hold in the general case. It is possible to generalise the notion of a forecast error, and show that these properties hold for generalised forecast errors.

Alternatively, the authors show that a change of measure similar to the move from real-world to risk-neutral probabilities in finance theory can produce a probability measure under which non-generalised forecast errors retain properties such as being unbiased and serially uncorrelated. The authors conclude that many of the results of the empirical literature concerning the sub-optimality of forecasts, eg, biased analysts' forecasts, could be premature.

The second presentation of the session and the last presentation of the conference was given by Frank Diebold (University of Pennsylvania), on joint work with Torben Andersen (Northwestern University), Tim Bollerslev (Duke University) and Ginger Wu (University of Pennsylvania). Drawing on earlier work on modelling the time series properties of volatility, he discussed the behaviour of 'Realized Beta'. When looking at realised volatility, eg, quarterly volatility computed from daily stock returns, it appears that a simple fractionally integrated process with an integration parameter of about 0.4 seems to model the dynamics well for most returns data (this is in spite of the fact that this kind of process allows for negative variances). The authors demonstrate this for data on the 25 stocks of the surviving members of the Dow Jones 30 index. They calculate the market return as the equal weighted average of the stock returns, and compute covariances with this market return. The volatility and covariance processes seem to be described well by a long-memory process. When calculating the realised beta as the ratio of the realised covariance to the realised variance, however, it turns out that these are much less persistent. Furthermore, Diebold presented some plots which seemed to suggest that betas are in fact constant, but conceded that proper tests are still necessary to provide evidence either for or against this hypothesis. He pointed out that not rejecting the hypothesis that betas are constant would contrast with the emerging consensus in the existing literature that betas are in fact time-varying and that a conditional version of the CAPM is necessary.

# Robert Shiller Book Launch

**On the 3 of April 2003 the Financial Markets Group hosted a book launch for 'The New Financial Order: Risk in the 21st Century' by Robert Shiller (Yale University). To mark the occasion, Professor Shiller gave a seminar on the ideas raised in the book, followed by a book signing in Waterstones Bookshop, LSE Campus.**

Robert Shiller's new book provides his views on the largest economic risks that will face us in the 21st century. In particular, increasing inequality and the democratisation of finance: the idea that financial services once offered only to the wealthy will become widely available due to the introduction of online brokerages and auctions and personal finance sites. Shiller proposes six new financial ideas and a radical new model of financial innovation.

He started his presentation by reviewing the advances made in the theory of diversification and pooling of risks, of derivatives pricing, of moral hazard, and in behavioural finance, which draws on insights from the field of psychology, where investors' decisions are analysed based on the perception of gains and losses. He asserted that improvements in information technology, such as improved database technology, and more sophisticated identification and encryption devices, have led to a decline in the underground economy and an increase in the complexity and enforceability of contracts.

Shiller stressed the lack of public appreciation of long-term economic risks and as an example of this behaviour pointed out that there is little talk of long-term risks to standards of living. He also suggested that advanced information technology may make certain occupations redundant, for example, spreadsheets could replace accountants, online and distance learning could replace the academic profession.

In spite of increased globalisation; cheaper and faster communications technology, multinational corporations, widespread use of the English language, etc, there is an astonishing level of inequality across nations. The extent of future inequality is unknown, and the fact that inequality has not sharply worsened so far is not proof that it will not happen in this century. However Shiller believed that these risks are insurable and presented ideas for a new financial order that could accommodate such risks.



1. Insurance on livelihoods and home equity will replace life insurance in dealing with the largest risks we face. For example, livelihood insurance could be based on occupational indexes.
2. Citing the case of Bulgaria, governments and nations could insure themselves against adverse GDP outcomes by using instruments such as GDP warrants.
3. Income-linked loans based on income indices to avoid moral hazard.
4. A redefinition of the progressive tax system by fixing the after-tax Lorenz curve, with respect to inequality insurance. This is possibly of great importance should inequality deteriorate due to the introduction of new technology.
5. Social security should share risks between generations. The present system indexes retirees' benefits to CPI, thereby pushing all risks to the working young. National income could be divided between generations in such a way that retirees who contributed more receive more.
6. International agencies such as the World Bank might arrange very-long-term swaps among countries for GDP risks and include long-term risk management as a part of the language and agenda of international agreements.

Finally, Shiller outlined his ideas for a model of radical financial innovation. He suggested that since the public does not focus enough attention on large risks, then governments must direct attention to risks, that data must be refined and delivered to measure risks better, that marketing campaigns focus on risks and that existing institutions should be involved in promoting such changes.

# Discussion papers



DP 412

## Market Timing and Return Predictability under Model Instability

M Hashem Pesaran and Allan Timmermann

This paper stresses the importance of taking into account parameter instability when studying or exploiting the predictability of stock returns. Specifically, the focus of the paper is the problem of breaks in the relationship between stock returns and their predictors when the goal is forecasting those returns in real time.

The authors propose a new methodology to deal with that instability after reviewing the existing approaches in the literature. Their methodology is composed of two stages. In the first stage, a reversed ordered Cusum procedure is used to detect the most recent break in the parameters and the second stage computes the return forecast from post-break data. The closest existing procedure is the Bai-Perron method, which is also based on a conditional window size determination, but is more difficult to implement. The window size can also be determined unconditionally by means of a rolling or an expanding window. Other commented methods are a time-varying parameter model and exponential smoothing.

Finally, they compare the performance of the different methods in an out-of-sample check. The authors use US monthly data from January 1954 to December 1997 and the data used for the out-of-sample experiment starts in January 1970. The excess stock return, which is the variable to forecast, is computed from an NYSE index and the one-month T-bill rate. Using the

dividend-price ratio, the one-month T-bill rate and the default premium to forecast the excess returns, their method identifies three major breaks in the model, around 1969, 1974 and 1990. They also find that their model performs better than the rest of the forecasting procedures in terms of correct predicted signs, around 65 per cent, and a market timing test.

DP 413

## Dividend and Equity Prices: The Variance Trade Off

Margaret Bray and Giovanni Marseguerra

This paper combines several strands of the literature on dividends by merging a model of the dividend process with a model of a firm's capital structure. In a simple stochastic model, in which asset values are given by expected present discounted values and in which the Modigliani-Miller theorem holds, the authors analyse the implications of net dividends on the stochastic processes governing earnings, equity values and debt.

At the core of the analysis is the insight that any past earnings innovations that are not reflected in share prices must, by necessity, be reflected in net dividends. The authors show that when earnings innovations, share prices and dividends are stationary, after detrending, this implies the possibility of trading off the variance of dividends against the variance of equity prices.

In particular, this result allows the reconciliation of the apparent paradox that share prices are volatile while dividends are smooth, although intuition would dictate that share prices are the

expected discounted sum of future dividend payments and should thus be similarly smooth. The authors simply argue that firms do not immediately adjust dividends to transitory and permanent earnings innovation, thus rendering share prices more volatile than need be.

The authors continue to consider a general dividend process, solve the stochastic model and derive conditions under which its solution is stable. While the stipulated dividend process encompasses both Lintner's partial adjustment process as well as the alternative permanent earnings hypothesis, the authors show that the two hypotheses are observationally equivalent once dividend smoothing is introduced. This casts doubt on empirical attempts at distinguishing between the two.

Furthermore, the authors argue that even when transitory changes in earnings do not affect dividends, they nevertheless impact on a firm's debt and thus on its earnings after interest. As a result, transitory earnings innovations have long-term effects on dividends and share prices and earnings after interest may turn out to be a non-stationary process, an observation strongly supported by existing evidence.



DP 414

## Rational Asset Pricing Implications from Realistic Trading Frictions

Jean-Pierre Zigrand

Recent work on behavioural finance has emphasized a number of stylised facts that asset prices and asset volumes seem to obey, but appear to be incompatible with standard asset pricing models. Such puzzles include short-run mispricings (such as perceived arbitrage opportunities across asset classes), informational inefficiencies (such as non-Bayesian information aggregation and, overreactions to news) and excessive trading; standard models predict very little trading, not least in view of the no-trade results à la Milgrom-Stokey.

The model presented in this paper shows how the current observed microstructure of markets naturally gives rise to exactly those stylised facts. The model does not require any bounded rationality or behavioural biases. All that is needed is the dropping of two (counterfactual) assumptions of the standard frictionless model. First, people are not allowed to observe the transaction prices at which their complete orders get executed. This is obvious in auction markets, as well as in dealer markets where quotes need to be fixed only for a certain depth. Second, investors are not allowed to submit orders for one asset that are made contingent on the behaviour of any other asset price. Just as in the real world, demands (or more specifically market or limit orders) need to be asset-specific.

Not only does the model show that the above puzzles come out naturally when the market microstructure is taken more seriously, it also shows how the trading firm becomes endogenously segmented and decentralized into distinct 'trading desks'. The trading environment predicted by the model is therefore one where knowledge is distributed, and where coordination problems arise from the limited communication that follows from the relaxation of those two microstructure assumptions.

This is consistent with the large literature on the behaviour of the firm as an information processing entity.

DP 415

## Hedging Housing Risk in London

Matteo Iacoviello and  
François Ortalo-Magné

This paper investigates the benefits of allowing homeowners to rebalance their exposure to housing risk through investments in financial instruments.

Focusing on the London housing market since the mid-Seventies, the authors start by showing that housing returns have been strong yet very volatile and, as a consequence, homeowners have been holding a very risky portfolio, in particular those with heavily leveraged positions, such as young first-time buyers.

They then analyse the impact of derivatives linked to the housing market, such as the spread bets recently made available in the UK and show how these financial instruments can help homeowners decrease their exposure to housing risk. A second type of potential beneficiaries of housing price index derivatives is also identified: those looking for housing returns without the drawbacks of direct housing transactions and cost of property management.

The study is performed by computing portfolio weights and the mean-variance frontier under various combinations of assets using two types of housing investments: a UK based and a London based portfolio. They also add four investment alternatives: general stocks, real estate stocks and both long and short-term bonds.

The authors conclude that consuming housing without access to housing price index instruments leads to a risky minimum variance portfolio, in particular for poorer households. They also argue that although spread bets on offer at the moment may have little appeal to poor households looking for insurance, they seem to

be a useful instrument for investors pursuing high risk-high return strategies. Real estate stocks seem to be a poor substitute for exposure to the housing market for high risk-high return portfolios and finally, the extent to which London housing investment is a redundant asset depends on the time horizon of the investor.

DP 416

## Speculative Attacks and Financial Architecture: Experimental Analysis of Coordination Games with Public and Private Information.

Frank Heinemann, Rosemarie Nagel and  
Peter Ockenfels

This paper discusses an experimental analysis of coordination games with public and private information. In particular, they present an experiment that imitates the game structure of models on speculative attacks by Obstfeld (1996) and Morris and Shin (1998). They compare sessions with public and private information where subjects use threshold strategies, ie, attack whenever the fundamental state or the signal is beyond some critical value. That critical value appears to be surprisingly stable within a session and its variance across sessions is the same under both information structures. They find evidence that there is no difference in predictability that could be related to self-fulfilling features of the game with public information. Moreover, the interpretation of multiple equilibria as an indication of a destabilizing effect of public information is not warranted.

They also use the same experiment to test the predictive power of various refinement concepts. In the game with public information, different refinement criteria select different critical states (thresholds) beyond which attacks occur. In all sessions with public information, subjects coordinate on thresholds somewhere between

## Discussion Papers

those of the payoff dominant equilibrium and the solution of the global game. They observe that those thresholds depend on the parameters of the payoff function, which is consistent with comparative static analysis of the risk dominant equilibrium and the theory of global games. In sessions with public information, observed strategies can be explained by independent beliefs on other subjects attacking with a given (estimated) probability.

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DP 417

### How deep was the September 2001 Stock Market Crisis? Putting Recent Events on the American and French Markets into Perspective with an Index of Market Shocks

Bertrand Maillat and Thierry Michel

Geophysicists are accustomed to the use of the Richter scale (1953) to determine the magnitude of earthquakes around the Earth. But how can we quantify the impact of a major shock on financial markets? True, the literature on risk management has focused on providing a set of risk measures, among others: the maximum drawdown (the maximum loss an investor can suffer), realized volatility, squared returns and VaR (value at risk). They are all part of the battery of tools used nowadays by risk managers. However, Maillat and Michel provide in this paper an absolute measure that is easy to quantify, making the analogy with the much-celebrated Richter scale. Their Index of Market Shocks (IMS) makes use of a vector of volatilities at all scales and is computed at different frequencies. Using principal component analysis, it is easy to derive an IMS with a limited number of factors. Indeed, the IMS encompasses traditional measures of risk such as those detailed above.

Relative to historical data, choosing a minimal threshold of 3, over which an event is considered dangerous, they apply the IMS to the CAC40 and the Dow Jones Index over daily and monthly frequencies, respectively. For the former market, September 11th is an event of magnitude 15.3; this is much higher than the Asian and Russian crises. The crisis also had a two-week impact on the Paris Stock Exchange. On the other hand, for the US Stock market, the terrorist attacks had a less important effect, ranked as the 28th biggest shock since 1896. Hence, encompassing many traditional measures of risk, including the much-used VaR suggests the IMS has a promising future in the risk management industry.

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DP 418

### 'You Might as Well be Hung for a Sheep as a Lamb': The Loss Function of an Agent

Margaret Bray and Charles Goodhart

Most of those who make macro and monetary policy decisions are agents, not themselves principals. The government is an agent of the electorate for example. The worst penalty that can be applied to them is to sack them if they are perceived to have failed. To be publicly sacked as a failure is painful, often severely, but the pain is finite. Agents thus have loss functions, which are bounded above, in contrast to the unbounded quadratic loss functions that are usually assumed for policy analysis. In this paper the authors define a convenient mathematical form for such a loss function, which they call a bell loss function. The authors compare the policy-making behaviour of agents with a bell loss function and a conventional quadratic loss function in three settings. Firstly they consider an agent seeking to reach multiple targets subject to linear constraints. Secondly they analyse a simple dynamic model of inflation with additive uncertainty. In both of these

settings, the most important difference is that certainty equivalence no longer holds with a bell loss function, even with additive uncertainty. Thirdly, the authors consider a model with one target and multiplicative (Brainard) uncertainty. Here certainty equivalence breaks down for both loss functions. Brainard uncertainty makes for a conservative policy, although not as conservative as with a quadratic loss function.



# Special papers

SP 139

## Banking Regulation and Supervision in Japan: Some Issues and Concerns

Maximilian J B Hall

In this paper, the author focuses on the institutional framework governing the regulation and supervision of Japanese banks. Despite significant changes, a number of serious doubts remain concerning the cost-effectiveness of this regulation and these problems are highlighted by the author, focussing on failure resolution policy and the authorities' handling of the banks' bad debt problems. In Particular, the paper suggests that a more transparent approach to the calculation of the banking industry's bad debts should be adopted. A more realistic assessment of the repayment prospects of those who have borrowed from the bank should be made, taking account of the recent dramatic downturns in the regional, national, and international economies. A better assessment of the value of the collateral backing the banks' bad loans should also be undertaken, reflecting the latest falls in asset prices experienced in Japan. Additional provisions should be set aside by banks to reflect the new balance sheet realities revealed by the above actions. Banks rendered insolvent by the adoption of the above measures should be liquidated, using the full resources available to the Deposit Insurance Corporation (DIC) created in Japan, while banks temporarily weakened by the adoption of these measures but which remain solvent and are thought likely to survive and return to soundness in the long term, should receive capital injections from the Early

Strengthening Account at the DIC. However, appropriate action should be taken to discipline the management and shareholders responsible for allowing the situation to develop and to ensure an appropriate restructuring of the banks. Through these actions, the credibility and cost-effectiveness of the supervisory process should be enhanced.

SP 140

## Competition and Stability: What's Special about Banking?

Elena Carletti and Philipp Hartmann

This paper discusses the institutional structure of competition policies, focussing in particular on bank merger reviews. The authors examine which government agencies are in charge of these reviews in different countries and ask what are the roles played by antitrust authorities and prudential supervisors. The paper finds that there is a huge variety of responsibilities and national approaches regarding the institutional structure of bank merger reviews, with countries like France and Italy giving the responsibility of merger reviews to supervisory authorities, while other European Union countries, including the UK, give these duties to competition authorities. However, whereas the EU Commission's approach is very competition oriented, the Second Banking Directive preserves a relatively large degree of discretion to national supervisory authorities to block bank mergers. There is also considerable variety in the legal basis for bank merger review procedures; some countries

dealing with the issue in competition law and others in banking law.

The authors explain that a consensus view on the relationship between competition and stability does not exist in the literature and suggest that the relationship depends on the case in question. However the idea that competition is dangerous in the banking sector is not correct. The paper concludes that competition aspects need to be carefully considered and suggests that the delegation of responsibilities for the competition and supervisory authorities should be well defined. Countries with weak roles for competition authorities should also ensure that competition concerns are not neglected.

### SP 141

## Money Laundering: A View from North America

John Moscow

John Moscow is Assistant District Attorney in Manhattan, and has been prosecuting economic crimes since 1977. In this special paper, Moscow gives his view on the fight against money laundering, which he defines as 'the evasion of responsibility for the ownership, origin or use of money'. New York is necessarily a focal point of such efforts, since two thirds of the world's trade is conducted in dollars, and more than 99per cent of international dollar transactions clear through New York.

Moscow's main message is that the battle against money laundering cannot be won unless the legal principles of banking and corporate secrecy are abolished. In his opinion, these principles are outdated in an age where vast sums of money can be made anonymous at the click of a button, and where only criminals stand to gain from keeping them.

Although many attempts to close the 'loopholes' have been thwarted by powerful and well-funded lobbyists, Moscow points to two recent legislative changes that are relevant to money laundering. A New York state law effective in 2000 prohibits

laundering the proceeds of criminal conduct regardless of whether the crime took place in New York. Parts of the USA Patriot law enacted after the September 2001 terrorist attacks are also relevant to money laundering, in that it increases the responsibility of banks to keep themselves informed about their customers' financial transactions.

However, international co-operation is vital. According to Moscow, certain countries' entire existence is based on profiteering from money laundering while hiding behind the principles of bank and corporate secrecy. He claims that in an age where money can be transferred to the Grand Cayman and back within seconds, being able to trace funds across the globe is in the interest of long-term economic growth.

### SP 142

## Self versus Public Discipline in the Financial Field

Tommaso Padoa-Schioppa

This paper is a summary of the third of Mr Padoa-Schioppa's lectures on financial regulation and supervision. Whereas the first two lectures focussed on who should regulate and what should be regulated, this paper concentrates on the question of how one should regulate. In the opinion of the author, this question has not attracted enough attention. He points out the increasing use of financial standards as a more industry-friendly regulatory framework, but warns of the risk of delegating self-regulatory power to financial institutions without maintaining public control, using the Enron case to show the dangers of such a strategy.

When discussing the self disciplining regulatory mechanisms, Mr Padoa-Schioppa points out the importance of free competition in the financial system, which is needed to guarantee its smooth running. He also suggests that the emergence of international listings and cross-border investments has made self-regulation more compatible with free competition. He then goes on to discuss one

of the most topical areas in the same field of securities markets: accounting and disclosure requirements. The Enron case has weakened confidence in financial markets since it has shown how easy it is to use tricks, such as unconsolidated special-purpose vehicles and off-balance sheet derivatives, to hide the real state of a business.

The paper then discusses international regulatory structures, which, for the majority, face the problems associated with being set on a voluntary basis. On this issue the paper proposes two solutions. First, a publishable independent assessment of compliance, such as that currently being done by the International Monetary Fund and the World Bank. Second, verification by self-control and peer pressure: for example the peer review used by the Financial Action Task Force on Money Laundering (FATF) when dealing with anti-money laundering recommendations.

The final section of the paper is dedicated to the role of effective public discipline. The evolution of the financial system towards process-oriented regulation and standards implies a delegation of power to financial institutions. This gives rise to two problems that need to be addressed. The first is negative externalities, since single institutions do not take into account systematic risk and the impact of their actions on economic growth. Second is 'regulatory capture', defined as 'designing and implementing regulatory requirements for the private benefit of the firms being regulated'.



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