

FINANCIAL MARKETS DYNAMICS AND FORECASTING

Foreword

Along with the rapid expansion of financial activities in recent years, financial instruments have become ever more sophisticated and market techniques increasingly complex. At the same time, economic theories have made significant progress as well. The theoretical microeconomic analysis of market operations now provides an effective complement to financial macroeconomic analysis, which, until a few years ago, was the only approach advocated. Meanwhile, statistical methods have become so efficient that we can now make reasonably accurate, easy estimates of the models that were hard to estimate yesterday. Lastly, today's wealth of financial data, available from the highest to the lowest frequencies, paves the way for detailed investigations. In this respect, financial analysis is moving along a path similar to that of applied physics.

These recent developments in financial markets and quantitative analysis have made it useful, indeed necessary, to bring market specialists and players into contact with economists and statisticians from the academic and business worlds. Such was the purpose of the conference on "*Financial Markets Dynamics and Forecasting*" held in Paris on September 2-4, 1993. The event was co-organized by the Department of Economic and Financial Analysis of Caisse des dépôts et consignations and the Groupe de Recherche en Economie Quantitative et Econométrie (GREQE, now Groupe de Recherche en Economie Quantitative d'Aix-Marseille, GREQAM).

To this partnership, we must add the review *Annales d'Economie et de Statistique*, which agreed to publish a gathering of conference papers selected on its own criteria. In its very concept, the event was rich in comparisons and contrasts at several levels. The coverage of financial markets is comprehensive, with papers on money markets, bond markets, currency markets, and derivatives markets. But the centers of interest diverge, as is clear from the types of studies presented. Some papers are explicitly intended to back up forecasts, in particular those prepared by the leading research departments of banks in Paris and other European financial centers. Other papers are more academic in spirit, in the sense that their

prime purpose is to validate or test theoretical results with no initial intent of using these as decision-making tools. Another series of contrasts concerns methodology, with the “ideological” oppositions between “non stationary” econometrics and more “traditional” econometrics, still used occasionally; and between stochastic quantitative analysis and technical (*i.e.* chartist) analysis, still highly popular in trading rooms. Debates also persist over high frequencies versus low frequencies, and over the right methods of model analysis using high-frequency data.

The papers included in this issue of *Annales d'Economie et de Statistique* do not fully describe the successful blending achieved in the conference program. The present selection gives only a glimpse of the abundance of topics and approaches, and of the overlap between the areas of interest to event's organizers and to participants – who included not only academics but corporate and banking professionals. This incompleteness is largely due to the fact that the conference's organizers and its scientific committee have sought consistency with the spirit of the *Annales*. The selection was accordingly restricted to those articles that were judged to be “relevant” and original in terms of theory (economic theory, financial theory, quantitative methods) as well as practice. This criterion explains the deliberate exclusion of papers with a strong emphasis on applied finance, which are not exactly the type of article the regular readers of *Annales d'Economie et de Statistique* expect. Nevertheless, the five articles chosen address a range of topics of concern to decision-makers and academic specialists alike: analysis of the factor structure of interest rates (Frachot and Lesne; Clément, Gouriéroux and Montfort), tests of efficiency and sensitivity hypotheses in models based on mean-variance analysis (Bossaerts and Hillion; Granger and Ding), analysis of hypotheses on asymmetry and dominance in the money markets (Henry and Weidman).

Starting from the assumption that interest rates depend on specific factors (the “factor-structure” hypothesis), Frachot and Lesne examine the consequences of that hypothesis on arbitrage models, in particular when volatilities are stochastic. The authors supplement their initially theoretical approach with a simple estimation methodology, particularly designed for a Gaussian linear model. The paper by Clément, Gouriéroux, and Montfort adopts a similar approach. The three authors also begin by an attempt to determine the interest-rate structure, and conclude by adopting the interest-rate factor-structure hypothesis. But Clément, Gouriéroux, and Montfort point out some technical problems posed by this approach, especially those linked to the no-opportunities constraints. The paper also deals, in theoretical and applied terms, with the statistical problems involved, especially the ones relating to the identification and estimation of the above-mentioned constraints.

Since the pioneering studies by Markowitz, it has become common practice to determine the optimal investment portfolio using the principle known as *mean-variance analysis*. As described in the initial model, the principle is easy to apply: it simply consists in calculating the expected returns on assets and the risk premiums attached to those returns. The actual determination of the optimal portfolio is a more delicate matter. Investor behavior may be biased by a number of factors, including asset heterogeneity, asset-market segmentation, asset distribution laws, or, more

simply, problems in measuring the volatility indicator or the risk premium. These various issues are addressed in the contribution by Bossaerts and Hillion and the study by Granger and Ding.

More specifically, Bossaerts and Hillion test the efficiency of the *mean-variance* hypothesis in a diversified portfolio using detailed, disaggregated data. Their approach consists in establishing links between the basic portfolios obtained in each segment of the financial-assets market and the final aggregated portfolio without introducing biases due to the aggregation procedure. The authors accordingly base their approach on sequences of simple tests yielding a single, normally distributed statistic. The approach is validated by analyzing the test's asymptotic power and comparing the results to those obtained with alternative methods.

For Granger and Ding, the theory of optimal portfolio choice based on location (m) and dispersion (d) parameters depends on the choice of the parameters, especially (d). It can thus be shown that the choice of these parameters determines investor behavior and – possibly – the optimal portfolio. To measure investor sensitivity to the choice of the two parameters, Granger and Ding tested another measure (defined as a moment of order a , with a being a rational number) of the dispersion of the return's absolute deviation from its mean (*i.e.* its location parameter or, more generally, the return's deviation from a given constant). Their article focuses on this new measure of dispersion and analyzes its performance in theoretical and empirical terms.

The final paper in this selection, by Henry and Weidman, analyzes the phenomenon of asymmetry, that is, the identification of the unreciprocated effect of one market on other markets. An example of this is found in EMS money markets. The authors also explore dominance phenomena by searching for the effect of a shock originating in a market outside a given zone and transmitted solely through the zone's leading market. The occurrence of these effects in the European and U.S. money markets is examined with the aid of non-stationary econometrics. Market participants are keenly interested in the asymmetry and dominance effects linked to the definition of a "ranking" among financial markets. In a related development of recent years, the shock of German reunification led observers – naturally enough – to speculate about the repositioning of the central banks, at least those of the European Union. For their analysis, Henry and Weidman have used univariate models and a dynamic approach encompassing the German, French, and U.S. markets. With the aid of recursive analysis, the authors find that German reunification caused a break in the equilibrium relationships. This break makes it possible to distinguish two subperiods since 1983, on either side of the reunification year. By testing three types of causality, the authors validate the dominance and asymmetry hypotheses over the short or long run for each subperiod.

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