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POLITIQUE MONÉTAIRE, CYCLE ÉCONOMIQUE

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ET DYNAMIQUE FINANCIÈRE

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*MONETARY POLICY, ECONOMIC CYCLE AND FINANCIAL DYNAMICS*

*March 2003*



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## **THE CONTRIBUTORS**

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## About the contributors

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*Head of Economic Research, CDC-Ixis*

Mr Artus is Head of Economic Research at *CDC-Ixis*, where he is responsible for market research. He has been a member of the French Council of Economic Analysis (*Conseil d'analyse économique* – CAE) since 1997 and a member of the *Commission économique de la Nation* since 1998.

Mr Artus is a graduate of the *École polytechnique* (class of 1970), of the *Institut d'études politiques de Paris* (1975) and of the *École nationale de la statistique et de l'administration économique* – ENSAE (1975).

After having been an administrator at INSEE, the French national statistical office, from 1975 to 1980, Mr Artus worked as an economist at the OECD, where he was in charge of issues related to inflation, wage and interest rate setting, and investment (1980-1982). He was the Head of Research at ENSAE from 1982 to 1985 and held the post of Special Advisor at the Directorate General Research of the *Banque de France* (1985-1988). He joined the *Caisse des dépôts et consignations* in 1988. He successively held the posts of Head of the Economic and Financial Research Division, then Head of Asset and Liability Management and was finally appointed Head of Economic Research, in charge of market research, in 1993. Mr Artus was Professor at the Universities of Lausanne and Paris-Dauphine. Since 1996, he has been associate professor at the University Paris I and professor of international economics at the *École polytechnique*. From 1993-1995, he was Vice-President, then President of the *Association française des sciences économiques*. He has also been associate publisher of several journals.

Mr Artus is the author of a number of scientific books and articles. His most recent publications are: “*Le choix du système de retraites*”, with F. Legros (1999); “*Crises des pays émergents*” (2000); “*L'euro et la Banque centrale européenne*” (2001); “*La nouvelle économie*” (2001); “*Politique monétaire*” (2001).

### **Barrell Raymond**

*Professor, National Institute of Economic and Social Research (NIESR)*

Mr Barrell has been a Senior Research Fellow at the National Institute of Economic and Social Research (United Kingdom), since 1990. He is director of research on macroeconomic analysis of World Economy, director of research programme into Trade and Investment.

Mr Barrell holds a B. Sc. and M. Sc. in economics (London School of Economics). Between 1976 and 1984, Mr Barrell was lecturer at Sussex, Stirling, Brunel and Southampton Universities, before serving as Economic Adviser at Her Majesty's Treasury (1984-1987). He joined the NIESR as Senior Research Officer (1988-1990), before becoming Senior Research Fellow (1990). Research interests

include the study of economic integration in Europe, the economic analysis of the location decision and the implications for the growth process, the analysis of capital markets, and the analysis of labour markets.

Mr Barrell's publications include edited books and regular contributions to the forecast chapters in the *National Institute Economic Review*. A number of papers have addressed issues concerning globalisation and the factors affecting the location of economic activity, as well as structural change in European labour markets, the process of monetary integration in Europe and the effects of the process of increasing European economic integration. Recent books include: "Economic convergence and monetary union" (1992); "Macroeconomic policy co-ordination in Europe: the ERM and monetary union", with J. Whitley (1992); "the UK labour market" (1994); "Capital market liberalisation in Europe", *et al.* (1997); "Modern budgeting in the public sector", *et al.* (1999); "Investment, innovation and the diffusion of technology in Europe", with N. Pain (1999); "Productivity, innovation and economic performance", *et al.* (2000).

### **Blanchard Olivier Jean**

*Professeur, Massachusetts Institute of Technology (MIT)*

Mr Blanchard is the Class of 1941 Professor of Economics and past Chair of the Economics Department at the Massachusetts Institute of Technology – MIT– (United States).

A citizen of France, he was educated at the University of Paris and the Massachusetts Institute of Technology where he earned a Ph. D. in economics in 1977.

Mr Blanchard taught at Harvard University as Assistant Professor (1977-1981), then Associate Professor (1981-1983), returning to MIT in 1983 as Associate Professor (1983-1985), then Professor (1985-). He is a fellow and Council Member of the Econometric Society, a past vice president of the American Economic Association, a member of the American Academy of Sciences, and a member of the French Economic Advisory Council to the French Prime Minister.

He is the author and co-author of many books and articles, including two textbooks in macroeconomics, one at the graduate level ("Lectures on Macroeconomics", with S. Fisher, 1989), one at the undergraduate level. He recently published "Reform in Eastern Europe" (1991); "Pour l'emploi et la cohésion sociale" (1994); "Spanish unemployment: is there a solution?" (1995); "The economics of post-communist transition" (1997); "Macroeconomics" (1997, 2000, 2003); "Macroeconomic policy in the first year of Euroland", with D. Gros *et al.* (1998); "Monitoring the ECB", with A. Alesina *et al.* (2001); "The consequences of saying no", with D. Begg *et al.* (2003); "La protection de l'emploi", with J. Tirole (2003).

### **Caruana Jaime**

*Governor of the Banco de España*

Mr Caruana is the Governor of the *Banco de España* and a member of the Governing Council of the European Central Bank, since 2000. In 2003 he was appointed Chairman of the Basel Committee on Banking Supervision.

He is a Telecommunications Engineer from the *Universidad Complutense de Madrid* (1974).

Mr Caruana joined the Spanish Ministry of Trade, where he occupied various posts in the Directorate General for Imports, and in the Spanish Foreign Trade Institute, between 1979 and 1984. He was commercial *attaché* to the Spanish Commercial Office in New York (1984-1987), Managing Director and chief Executive Officer of Renta 4 (1987-1991), then President of Renta 4, from 1991 to 1996. Between 1996 and 1999, Mr Caruana was General Director of the Treasury and Financial Policy, member of the Board of the SEPI (State Holding Company) and the representative for Spain at the Monetary Committee of the European Union. President of the SETE (Euro state company) between 1997 and 1999, Mr Caruana served as General Director for Supervision at the *Banco de España* (1999-2000), before becoming Governor.

### **Cotis Jean-Philippe**

*Head of the Economics Department, OECD*

Mr Cotis is Head of the Economics Department and Chief Economist at the Organisation for Economic Co-operation and Development (OECD).

He is a graduate of the *École supérieure des sciences économiques et commerciales* – ESSEC and of the *École nationale d'administration* – ENA (1980-1982).

From 1982 to 1986, Mr Cotis was a civil servant in the Forecasting Directorate at the Ministry of the Economy and Finance and economics professor at ESSEC. He was subsequently appointed economist in the European Department of the International Monetary Fund (1986-1988). He successively held the positions of Head of the Economic Policy Division (1989-1990) and Head of the General Economic Forecasts Division (1990-1993) at the Forecasting Directorate, while teaching economics at the *École des Mines* (1989-1992) and Harvard (1992). He was also in charge of economics tuition at the ENA (1992-2002).

He was technical adviser in charge of macroeconomic issues and public finances at the Office of the Minister of the Economy and Finance from 1993 to 1994. He then held the position of Deputy Director for macroeconomic and financial analysis at the Forecasting Directorate (1994-1997), before being appointed Head of Forecasting (1997-2002).

Mr Cotis also chaired the *Centre d'Études de l'emploi* at the Ministry for Employment (1994-2002), the working group on Employment, Innovation, and Productivity (1995) and Working Party n° 1 on policy aspects of macroeconomic and structural problems (1997-2002) at the OECD, and the EU's Economic Policy Committee (2001-2002).

### **Crockett Andrew**

*General Manager of the Bank for International Settlements (1994-2003)*

Mr Crockett was General Manager of the Bank for International Settlements from 1 January 1994 to March 2003 and Chairman of the Financial Stability Forum from April 1999 to March 2003. He took up his current position of President, JP Morgan Chase International in October 2003. He is a member of the Group of Thirty.

Mr Crockett was educated at Queens' College, Cambridge (1962-1965) and Yale University (1965-1966).

He served at the Bank of England (1966-1972) in the Economic Intelligence Department, and from 1972 to 1989 he was a staff member of the International Monetary Fund. From 1989 to 1993, Mr Crockett was an Executive Director of the Bank of England responsible for International Affairs. In the latter capacity, he was a member of the Monetary Committee of the European Union, Alternate Governor of the International Monetary Fund for the United Kingdom, and a member (subsequently Chairman) of Working Party 3 of the OECD.

### **Cumming Christine**

*Executive Vice President of the Federal Reserve Bank of New York*

Ms Cumming is Executive Vice President and Director of Research at the Federal Reserve Bank of New York with responsibility for the Research and Markets Analysis Group since September 1999.

She holds both a B.S. and Ph.D. in economics from the University of Minnesota.

Ms Cumming joined the Bank's staff in September 1979 as an economist in the International Research Department, and spent several years leading units in research which covered the industrial countries and the international financial markets. Later, while in the Bank's International Capital Markets staff, she worked on topics such as the liquidity of banks and securities firms, the international competitiveness of US financial institutions, and the implications of financial innovation. In January 1992, Ms Cumming was appointed Vice President and assigned to Domestic Bank Department in Bank Supervision. A major focus of Ms Cumming's work in supervision involved capital markets issues. While in supervision, she was also active in the work of the Basel Committee, including participation in the development of the market risk amendment to the Basel Accord and co-chairing the Risk Management Group for two and a half years. She chaired task forces on supervisory matters for the *Joint Forum*, made up of banking, securities and insurance regulators. Prior to being named Director of Research, she had been Senior Vice President responsible for the Bank Analysis and Advisory and Technical Services Functions in the Bank Supervision Group.

### **Fischer Stanley**

*Vice Chairman, Citigroup Inc.*

Mr Fischer has been Vice Chairman of Citigroup since February 2002. He is also President of Citigroup International and Head of the Public Sector Client Group.

He took the B.Sc (1965) and M.Sc. (1966) in Economics at the London School of Economics and obtained his Ph.D. in Economics at the Massachusetts Institute of Technology (MIT) in 1969.

Mr Fischer was Assistant Professor of Economics at the University of Chicago until 1973, when he returned to the MIT Department of Economics as an Associate Professor, and then became Professor of Economics (1977-1999). He has held visiting positions at the Hebrew University, Jerusalem, and at the Hoover Institution at Stanford. He was the Killian Professor and Head of the Department of Economics at MIT. He has held consulting appointments with the US State Department, the US Treasury, and the Bank of Israel. From January 1998 to August 1990, he was Vice President, Development Economics and Chief Economist at the World Bank. Mr Fischer was the First Deputy Managing Director



of the International Monetary Fund, from September 1994 until the end of August 2001.

Mr Fischer is the author of “Macroeconomics”, with R. Dornbusch and R. Startz (9<sup>th</sup> edition, 2004); “IMF Essays from a Time of Crisis” (2004); “Lectures in Macroeconomics”, with O.J. Blanchard (1989), “Economics”, with R. Dornbusch and R. Schmalensee (2<sup>nd</sup> edition, 1988); and “Indexing, Inflation, and Economic Policy” (1986). He is also the editor of other books, among them “Securing Peace in the Middle East” (1994). From 1986 to 1994 he was editor of the NBER Macroeconomics Annual; he has also served as Associate Editor of other economics journals. He has published extensively in the professional journals.

Mr Fischer is a Fellow of the Econometric Society and the American Academy of Arts and Sciences, a member of the Council on Foreign Relations, the G-30, a Guggenheim Fellow, and a Research Associate of the National Bureau of Economic Research. He is also a member of the Board of directors of the Institute for International Economics and of Womens’s World Banking respectively.

### **Greenspan Alan**

*Chairman of the Board of Governors of the Federal Reserve System*

Dr Greenspan took office June 20, 2000, as Chairman of the Board of Governors of the Federal Reserve System for a fourth four-year term ending June 20, 2004. He also serves as Chairman of the Federal Open Market Committee. He originally took office as Chairman and to fill an unexpired term as a member of the Board on August 11, 1987. Dr Greenspan was reappointed to the Board to a full fourteen-year term, which began February 1, 1992. He has been designated Chairman by Presidents Reagan, Bush, and Clinton.

Dr Greenspan received a B.S. (1948), an M.A. (1950), and a Ph.D. (1977) in Economics, all from New York University. He also has performed advanced graduate study at Columbia University.

Dr Greenspan was Chairman and President of Townsend-Greenspan & Co., Inc., an economic consulting firm in New York City, from 1954 to 1987, except from 1974 to 1977 when he served as chairman of the President’s Council of Economic Advisers under President Ford. He was Chairman of the National Commission on Social Security Reform (1981-1983). He has also served as a member of President Reagan’s Economic Policy Advisory Board, a member of Time magazine’s Board of Economists, a senior adviser to the Brookings Panel on Economic Activity, and a consultant to the Congressional Budget Office. Dr Greenspan has served as Chairman of the Conference of Business Economists, President and Fellow of the National Association of Business Economists, and Director of the National Economists Club.

Dr Greenspan has received honorary degrees from Harvard, Yale, Pennsylvania, Leuven (Belgium), Notre Dame, Wake Forest and Colgate Universities.

**Hardouvelis Gikas**

*Chief Economic Adviser of the Prime Minister, Greece*

Mr Hardouvelis is Director and Chief Economic Adviser at the Economic Office of the Prime Minister of Greece and Professor at the Department of Banking and Financial Management at the University of Piraeus.

He holds a Ph.D. in Economics from University of California, Berkeley (1983) and a M.Sc and B.A., in Applied Mathematics, from Harvard University (1978).

After having taught as Assistant Professor at Barnard College (Columbia University) between 1983 and 1989, Mr Hardouvelis was Professor at Rutgers University (1989-1996). He worked at the Federal Bank of New York as a research adviser and economist (1987-1993), and then, in 1994-1995, at the European Monetary Institute as adviser and second alternate to the Governor of Bank of Greece. Member of the Board of Directors of the Athens Derivatives Exchange (1998-2000) and of the National Securities Co (1995-2000), Mr Hardouvelis was also Chief Economist and Director of Strategic Planning and Research at the National Bank of Greece between 1996 and 2000.

Mr Hardouvelis has published numerous articles in international academic journals and books. He is Research fellow of the Center for Economic Policy Research (CEPR, London), Editor of the “Multinational Finance Journal” and member of the Academic Council of the Hellenic Bankers Association.

**Häusler Gerd**

*Counsellor and Director, International Capital Markets Department, IMF*

Mr Häusler is Counsellor and Director of the International Capital Markets Department, International Monetary Fund, since August 2001.

Mr Häusler studied Law and Economics at the University of Frankfurt where he earned a State Examination in Law at the Law School.

Between 1981 and 1983, he worked at the Deutsche Bundesbank in the Department of International Monetary Questions, Organisations and Agreements focused on the European Monetary System. In 1983, Mr Häusler joined the Bank of International Settlements (Basel) where he served as private Secretary to the General Manager. He came back to the Deutsche Bundesbank as Head of the Office of the President (1984-1988), then as Head of the Division of Money and Capital Markets Abroad, International Financial Markets, and Foreign DM-Bond Issues (1988-1990), and Head of the Credit Department (1990-1994). He was member of the Directorate and member of the Central Bank Council between 1994 and 1996. In December 1996, he joined the Dresdner Bank AG as member of the Board of Managing Directors, responsible for the bank’s treasury business, as well as for its operations in the Asia-Pacific region, USA and UK, and became Chairman of Dresdner Kleinwort Benson based in London, assuming responsibility for Dresdner Bank Group’s investment banking business, until May 2000. Between January and July 2001, he was Senior Advisor at the Deutsche Börse (Frankfurt) before joining the IMF.

**Hénin Pierre-Yves**

*Professor at the University of Paris I*

Mr Hénin holds the post of Professor at the University of Panthéon-Sorbonne. He is also the Director of the *Centre d'études prospectives d'économie mathématique appliquées à la planification (Cepremap)* and Joint Head of Research at the University of Paris I.

In 1970 and 1971 respectively, Mr Hénin obtained a doctorate and an *agrégation* from the University of Paris I.

Following a period (1968-1971) as a researcher at the ISEA and the *Centre national de la recherche scientifique (CNRS)*, Mr Hénin went on to lecture at the University of Orléans (1972-1975), before taking up a post at the University of Paris I. He has held various consulting positions at the Economic and Social Committee of the European Communities (1978-1981) and at the Ministry of Research (1986-1987).

Mr Hénin was chairman of the *Association française des sciences économiques* and a member of the Council of the European Economic Association. He is the author of 9 books and 70 other publications, articles and reports including: "Macrodynamics: Fluctuations and growth" (1986, reprinted in 2003) and co-wrote: "Advances in equilibrium business cycles research" (1995); "Should we rebuild built-in stabilizers?" (1997); "Balancing budget through tax increases or expenditure cuts: Is it neutral?", with S. Garcia, (1999); "Assessing effective sustainability of fiscal policy within the G7: New results using more powerful test statistics", with P. Fève, (2000); "Testing for hysteresis: Unemployment persistence and wage adjustment", with P. Fève and Ph. Jolivaldt (to be published).

**King Mervyn**

*Deputy Governor of the Bank of England*

Mr King is Deputy Governor of the Bank of England responsible for monetary policy, and a member of the Monetary Policy Committee. He will take over as Governor of the Bank on 1 July 2003 on the retirement of Sir Edward George. Mr King is a member of the Group of Thirty and a former Board Member of the Securities Association. He is also chairman of the OECD's WP3 (Working Party 3) Committee.

Mr King taught at Cambridge and Birmingham Universities before spells as Visiting Professor at both Harvard University and Massachusetts Institute of Technology (MIT). From October 1984 he was Professor of economics at the London School of Economics. He was appointed the Bank of England's Chief Economist and Executive Director since joining the Bank in March 1991. He was a non-executive director of the Bank from 1990 to 1991. He was appointed Deputy Governor in 1997 and took up his position on 1 June 1998.

**Lagayette Philippe**

*Chief Executive Officer of JP Morgan (France)*

Mr Lagayette has been at the head of JP Morgan and Cie S.A., the French subsidiary of JP Morgan Chase, since 20 July 1998. He is also the president of the *Institut des hautes études scientifiques*, an institute specialised in mathematical and theoretical physics research.

Mr Lagayette holds an engineering degree from the *École polytechnique* and is a graduate of the *École nationale d'administration*.

Mr Lagayette began his career as a member of the *Inspection générale des Finances* in 1970. In 1974, he joined the Treasury Department at the French Ministry of the Economy and Finance, and in 1980, he was appointed Assistant Director. In 1981, he became the Director of the Private Office of the Minister for the Economy and Finance and joined the *Banque de France* as Deputy Governor in 1984. In 1992, he was appointed Director General of the *Caisse des Dépôts et Consignations*, a position that he held until December 1997.

He is an *Officier de la Légion d'Honneur* and an *Officier de l'Ordre national du Mérite*.

**Lamfalussy Alexandre**

*Professor, Catholic University of Louvain*

Mr Lamfalussy has been teaching and doing research at the “Institut d'études européennes” of the Catholic University of Louvain, since 1997.

He studied at the Catholic University of Louvain in Belgium. Then, he spent two years on post-graduate studies at Nuffield College, Oxford, where he obtained a doctorate (Ph. D.) in economics. He was visiting lecturer at Yale University in 1961 and 1962.

From 1955 to 1975, Mr Lamfalussy worked with Banque de Bruxelles, initially as an economist and then as an economic adviser. From 1965 to 1975 he served first as Executive Director of Banque de Bruxelles and later as Chairman of the Executive Board. In 1975 he became Executive Director of Banque Bruxelles Lambert.

Mr Lamfalussy joined the Bank for International Settlements (BIS) in Basle in 1976 as Economic Adviser and Head of the Monetary and Economic Department. Between 1981 and 1985 he served as Assistant General Manager of the BIS before being appointed General Manager in May 1985. He held this post until the end of 1993. From 1 January 1994 until 30 June 1997, Mr. Lamfalussy was President of the European Monetary Institute in Frankfurt. He was Chairman of the Committee of Wise Men on the Regulation of European Securities Markets set up by the European Council. The Committee released its first report on 9 November 2000, and its final report on 15 February 2001. The recommendations of the Committee are now being implemented.

In August 2000 he published a book on “Financial Crises in Emerging Markets – An Essay on Financial Globalisation and Fragility” (Yale University Press, New Haven and London).

### **Ortiz Guillermo**

*Governor of the Banco de México*

Mr Ortiz serves as Governor of Mexico's Central Bank (*Banco de México*) since 1 January 1998. He currently is a member of the Group of Thirty.

He earned a Bachelor of Arts degree in Economics from National Autonomous University of Mexico (*Universidad Nacional Autónoma de México*), and later a Masters in Economics and a Ph.D. in Monetary Theory, International Economics and Econometrics from Stanford University in Palo Alto, California.

From December 1994 to December 1997, Mr Ortiz served as Secretary of Finance and Public Credit in the Mexican Federal Government. Prior to heading the Finance Ministry, known as "Hacienda", he served briefly as Secretary of Telecommunications and Transportation at the outset of the Zedillo Administration. Mr Ortiz's past professional experience also includes having served as Under-Secretary of Finance and Public Credit from December 1988 to November 1994. Before that position, he was Executive Director at the International Monetary Fund (1984-1988) and Manager, as well as Deputy Manager in the Economic Research Bureau of *Banco de México* (1977-1984), and an Economist in the Ministry of the Presidency of Mexico (1971-1972). Mr Ortiz has also taught at universities in Mexico and the United States. From 1975-1976 he was a Professor at Stanford University. Between the years of 1977 and 1983 he was a Professor at the Autonomous Technological Institute of Mexico (*Instituto Tecnológico Autónomo de México ITAM*). In 1983 he was Professor at *El Colegio de México*. He has published extensively on monetary and fiscal policy, stabilization issues, and problems related to the international financial system.

### **Papademos Lucas**

*Vice-President of the European Central Bank*

Mr Papademos has been Vice-President of the European Central Bank since June 2002. He has been a member of the ECB Governing Council since January 2001 and a member of the ECB General Council since January 1999.

Mr Papademos obtained a B.S. in physics (1970) and a M.S. in electrical engineering (1972) from the Massachusetts Institute of Technology (MIT). He holds a Ph.D. in economics from MIT (1977).

Mr Papademos was research assistant and teaching fellow at MIT from 1973 to 1975. He was then lecturer (1975-1977), assistant and associate professor of economics (1977-1984) at Columbia University in New York. He has worked as a Senior Economist at the Federal Reserve Bank of Boston and taught economics at the Athens School of Economics and Business. He has been a professor of economics at the University of Athens since 1988. He held the position of Economic Counsellor (Chief Economist) at the Bank of Greece from 1985 to 1993 and was Head of the Economic Research Department from 1988 to 1993. He was Deputy Governor of the Bank of Greece between 1993 and 1994, and Governor between 1994 and 2002.

Mr Papademos has published numerous articles and essays. The most recent ones are: "Why price stability?" in Herrero (A. G.) *et al.* (eds.); "Why price stability?", proceedings of the First ECB Central Banking Conference, European Central Bank, Frankfurt, November 2000; "The euro, the Greek economy and the banking system", Bulletin of the Hellenic Banking Association, volume 24, 2001; "The Greek economy: Performance and policy challenges", in Bryant (R. C.) *et al.* (eds.), "Greece's economic performance and prospects", Bank of Greece and the

Brookings Institution, 2001, “The contribution of monetary policy to economic growth”, in *Bank-Archiv Journal of Banking and Financial Research*, volume 52, 2004.

**Trichet Jean-Claude**

*Governor of the Banque de France*

Mr Trichet has been the governor of the Banque de France since 1993. He chairs the Monetary Policy Council of the Banque de France and is a member of the Governing Council of the European Central Bank. He is also Alternate Governor of the International Monetary Fund and sits on the Board of Directors of the Bank for International Settlements.

Mr Trichet is an Ingénieur civil des Mines, a graduate of the *Institut d'études politiques* of Paris and holds a Master's degree in Economics. From 1966 to 1968 he was a research engineer and gained admission to the *École nationale d'administration* in 1969.

Mr Trichet was appointed Inspector of Finance in 1971. From 1974 to 1976, he held various special advisory posts at the Ministry of Finance, in the General Inspectorate of Finance and in the Treasury Department, where, in 1976, he was appointed Secretary General of the *Comité interministériel pour l'aménagement des structures industrielles* (CIASI). Mr Trichet was made an adviser at the Private Office of the Minister for Economic Affairs in 1978, then to the President of the Republic on industry, research and microeconomics (1978-1981). He subsequently became Head of Official Development Assistance, then Deputy Head of Bilateral Affairs at the Treasury from 1981 to 1984. He was appointed Head of International Affairs at the Treasury in 1985 and was Chairman of the Paris Club from 1985 to 1993. In 1986, he directed the Private Office of the Minister for Economic Affairs, Finance and Privatisation, and in 1987 he became Head of the Treasury.

**Von Hagen Jürgen**

*Professor, Center for European Integration Studies (ZEI), Bonn*

Mr von Hagen is currently professor of Economics and director of the Center for European Integration Studies at the University of Bonn.

He earned his Ph.D. in Economics at the University of Bonn in 1986.

He taught economics at the Kelley School of Business, Indiana University, between 1987 and 1992, and at the University of Mannheim, (1992-1996). Mr von Hagen has been a consultant to the IMF, the European Commission, the Federal Reserve Board, the Interamerican Development Bank, and the World Bank.

First winner of the *Gossen Prize* of the German Economics Association, he is a research fellow of CEPR, member of the Council of the European Economic Association, the Council of the German Economic Association, the French National Economic Committee, and the Academic Advisory Council of the German Federal Ministry of Economics.

His publications include over sixty articles on monetary, international, and public economics in international, refereed academic journals and over eighty contributions to other journals and books and twenty published or edited monographs.

**Welteke Ernst**

*President of the Deutsche Bundesbank*

Mr Welteke took office on 1 September 1999 as President of the Deutsche Bundesbank and Member of the Governing Council of the European Central Bank. Mr Welteke graduated in economics (Universities of Marburg and Frankfurt am Main). Apprenticed as an agricultural machine mechanic from 1959 to 1962 he obtained the school-leaving examination (*Abitur*) at the Hessenkolleg Wiesbaden in 1965.

Since 1995 he has served as President of the Land Central Bank in Hessen and member of the Central Bank Council of the Deutsche Bundesbank. Previously Mr Welteke was employed in the office of the Prime Minister of Hessen (1972-1974) and was member of the Hessian Land Parliament (1974-1995). From 1984 to 1991 he was Chairman of the parliamentary group of the Social Democratic Party in the Hessian Land Parliament, except for the period from April 1987 to February 1988. He was Hessian Minister of Economics, Transport and Technology from 1991 to 1994 and Hessian Minister of Finance from 1994 to 1995.

**Yamaguchi Yutaka**

*Deputy Governor of the Bank of Japan*

Mr Yamaguchi has been Deputy Governor and Policy Board Member of the Bank of Japan since April 1998. He chairs the Committee on the Global Financial System at the Bank of International Settlements and he is a member of the Group of Thirty.

Mr Yamaguchi holds a BA in economics from the University of Tokyo.

He joined the Bank of Japan in 1964. He worked as Chief Manager of the Policy Planning Department in 1983, and General Manager of the Yokohama Branch in 1985. In 1989, he became the Bank of Japan's Chief representative in the Americas in New York. Mr Yamaguchi served as Director of the Research and Statistics Department from 1991 to 1992, Director of the Policy Planning department from 1992 to 1996, and subsequently, Executive Director from 1996 to 1998.

## Symposium Summary

*On 7 March 2003, the Banque de France held an international symposium on “Monetary policy, the economic cycle and financial dynamics”. This symposium brought together 245 participants including 68 Governors, Deputy-Governors and high-ranking central bankers, 34 leading academics and economists, and 55 representatives of major financial institutions and international organisations.*

*After the introductory remarks by the Governor of the Banque de France, Jean-Claude Trichet, three sessions were conducted:*

- “Business and financial cycles: Stylised facts”, chaired by Olivier-Jean Blanchard, Professor at the Massachusetts Institute of Technology;*
- “Changes in market structures and behaviour patterns”, chaired by Alexandre Lamfalussy, Professor at the Catholic University of Louvain;*
- “Cyclicalities and monetary policy”, chaired by Ernst Welteke, President of the Deutsche Bundesbank.*

*As well as these sessions, Alan Greenspan, Chairman of the Board of Governors of the Federal Reserve System, presented via videoconference an analysis of the relationship between globalisation and international finance. In a round table debate, chaired by Jaime Caruana, Governor of the Banco de España, “Cyclicalities and international financial stability” was discussed. The symposium was brought to a close by some concluding remarks from Andrew Crockett, General Manager of the Bank for International Settlements (BIS) and Chairman of the Financial Stability Forum (FSF).*

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NB: This summary was drafted by Sanvi Avouyi-Dovi, Economic Analysis and Research Division, Research Centre.



Jean-Claude Trichet, after thanking the participants, observed that the symposium provided an opportunity to bring together a large number of central bank Governors, leading academics and economists, and representatives of major financial institutions and international organisations. He then briefly presented the programme that comprised three sessions, that was to be followed by a speech by Alan Greenspan, a round table debate on the day's topics and some concluding remarks. He recalled the creation of the new Euro Area Business Cycle Network, common to Eurosystem central banks, and the Centre for Economic Policy Research, focused on the analysis of cycles in Europe. He concluded his remarks by a number of observations relating to the topic of the symposium.

Governor Trichet stated that it was important to define the concept of cycles: sceptics, such as Irwin Fisher in 1925, asked themselves whether cycles did really exist or whether the term simply referred to variables fluctuating around their average. By adopting the approach put forward, in particular in the United States, by Westley Mitchell in 1927 or by Arthur Burns and Westley Mitchell in 1946, it is possible to define a cycle, for example, as a succession of episodes of boom and bust. Jean-Claude Trichet stressed particular tribute should be paid to a whole generation of researchers from the National Bureau of Economic Research (NBER), who laid the foundations of the research in this area in the 1940s and 1950s. He went on to emphasise that the characteristics of cycles (length, amplitude, asymmetry of different phases, etc.) are still being fiercely debated. He drew participants' attention to the fact that a key aspect to the study of cycles was the analysis of shocks and their propagation mechanisms, as Robert Frisch and Evgeny Slutsky demonstrated in 1933 and 1937 respectively.

He concluded with a number of questions: the synchronisation of cycles is currently a fairly well-documented concept, but remains open to debate. How can we measure the degree of synchronisation or co-movement of variables? What are the relative contributions of internal, real or monetary shocks, and external shocks to the synchronisation of cycles? Lastly, Governor Trichet asked a question concerning all monetary areas and in particular, at present, euro area countries: to what extent are cycles of member States or regions synchronised?

## 1. Real and financial cycles: Stylised facts (session 1)

Chaired by: Olivier-Jean Blanchard (Professor, Massachusetts Institute of Technology)

Speaker and discussants:

Ray Barrell (Senior Research Fellow, National Institute for Social and Economic Research – NIESR), Jean-Philippe Cotis (Chief Economist and Head of the Economics Department at the Organisation for Economic Cooperation and Development, OECD), Christine Cumming (Executive Vice-President, Federal Reserve Bank of New York), Pierre-Yves Hénin (Professor, *Université de Paris I*, Director of the *Centre d'études prospectives d'économie mathématique appliquées à la planification*, Cepremap)

Ray Barrell centred his speech on the analysis of the link between cyclicity and international financial developments. He conjectured that globalisation has increased the interdependence of economies by contributing to both enhanced risk sharing at the international level and to increased potential for shock contagion. This can be seen through analysing the nature of cycles.

He highlighted three factors affecting cycles: shocks impacting the structural relationships in an economy, the responses of economies to shocks and the reactions of the policy authorities to correct the effects of shocks. Once cycles have been measured, several questions may arise: What role has economic policy played in absorbing or propagating shocks? Have cycles thus become more damped and less frequent? Have globalisation and risk sharing resulted in shocks being more easily absorbed or have they contributed to propagating them? And lastly, was the latest cycle different from previous ones?

Several methods may be used to measure cycles, but results may differ as they are sensitive to how the model is parameterised. However, consensus has emerged, according to Ray Barrell, on the fact that cycles have become more damped, and thus more similar, particularly in the euro area, which is characterised by the emergence of a common cycle.

Three reasons may be put forward to explain this recent phenomenon: policy authorities and in particular monetary authorities have become more efficient and have constructed frameworks to absorb shocks more effectively; the private sector has also contributed to absorb shocks, thanks to market reforms and the beneficial effects of globalisation; recent shocks affecting economies appear to be more benign.

Several indicators of market openness indicate that globalisation is playing an increasing role in spreading shocks: foreign trade to GDP ratios, cross-holdings of assets, and foreign direct investment to GDP ratios have all increased over the past 20 years. These factors have contributed to better risk sharing while enhancing the sensitivity of economies to external shocks. Ray Barrell also observed that, overall, the damping of cycles may be attributed to fortuitous circumstances.

In conclusion, markets seem to have become more flexible over the past decade; financial market liberalisation has resulted in improved risk sharing and has allowed agents to smooth consumption. However, not all capital flows arising from globalisation can be seen as driven by genuine economic fundamentals. And, in so much as the damping of cycles may be partly due to coincidental events, there is no reason to assume that this phenomenon will continue.

Christine Cumming pointed out that economists at the Federal Reserve Bank of New York have also concluded that volatility in US GDP cycle had diminished over the past few years. This trend is partly ascribed to the improvement in inventory management techniques. Christine Cumming believes that international cycles have become more synchronous because of the financial boom, globalisation and growth in international trade.

Jean-Philippe Cotis shared the view that volatility in industrial economies had decreased over the past few years<sup>1</sup>. He expressed reservations about the ability of large-scale econometric models to capture the shocks underlying the business cycle for two main reasons: an important common information is lost by estimating separately the equations, and the residuals of the model may reflect the poor quality of estimations rather than underlying shocks. He felt a small structural VAR model may do a better job than the type of large-scale macroeconomic model used by Ray Barrel. At the other end of the methodological spectrum, he also felt that using bilateral stochastic filters to delimit business cycles could prove very dangerous, maybe not so much for the kind of historical analysis undertaken by Ray Barrel but at decision time for policy purposes, such as the conduct of fiscal policy.

Pierre-Yves Hénin agreed that there were a number of ways to define and measure cycles. He pointed out that the decline in the volatility of economies is well established in the literature. On the basis of his work, he deemed the latest cycle to be exceptional and thus believed that it should not be considered a “stylised fact” as it does not exhibit statistical regularity. He expressed doubts as to whether Ray Barrell’s approach took account of the fact that monetary policy may be far more effective at smoothing out the impact of financial shocks on consumption than diminishing the reaction of investment to these shocks.

Before bringing the session to a close, Olivier-Jean Blanchard added that volatility had decline everywhere except in Japan. He asserted that this decline in volatility seemed to be more attributable to luck than to an improvement in the conduct of economic policy.

## 2. Changes in market structures and behaviour patterns (session 2)

Chaired by: Alexandre Lamfalussy (Professor, Catholic University of Louvain)

Speaker and discussant:

Patrick Artus (Chief Economist and Head of Research, CDC-Ixis),  
Mervyn King (Deputy-Governor, Bank of England)

Alexandre Lamfalussy recalled that the topic chosen – renamed “the link between asset price volatility and monetary policy” – has been the subject of many studies over the past few decades, but was still just as relevant today.

Patrick Artus introduced two *caveats* at the start of his speech regarding the link between asset price volatility and monetary policy. The first concerned the “quality” of volatility, which is not always deleterious, in particular when it stems from a market reaction to fresh news. The second related to the need to distinguish between short-term volatility and long-term valuation cycles.

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<sup>1</sup> Recent work from the OECD ascribed this phenomenon to: a reduced volatility of inventories, associated with tighter inventory management; the decreasing weight of the manufacturing sector; more stable consumption, linked maybe to the relaxation of liquidity constraints; a more countercyclical role of net exports, in a context of increasing trade openness. It was less obvious, however, that fiscal policies contributed to reduce the cyclical of OECD economies.

Patrick Artus observed that, since 1998, there had been a sharp rise in short-term volatility on most financial asset prices (stock markets, long-term interest rates, etc.), except on exchange rates and credit spreads. He attributed this to several factors: the variability of risk aversion, and the loss of liquidity on financial markets due to the lack of turnover and bank credit rationing. The latter leads to a fall-off in demand for certain assets, *e.g.* the plunge in net corporate bond issuance in the United States and Europe in 2002.

Central banks reacted to this liquidity loss by increasing the money supply (at a faster rate than GDP), making it possible to inject liquidity in order to boost demand for assets. The key interest rate cut also made it possible to prevent a rise in the cost of capital by offsetting the effects of high risk premia. Patrick Artus did however suggest additional measures (less frequent release of corporate earnings data, limiting use of marking-to-market, etc.) for curbing excess volatility.

As regards long-term valuation cycles, the speaker cited the emergence of bubbles on the Japanese stock markets towards the end of the 1980s and in the United States at the end of the 1990s, and the collapse, by almost 75%, of real estate prices in Japan at the end of the 1980s. He considers that similar dynamics can be discerned for Tobin's  $q$  in United States or for the ratio of rental/real estate prices in the United Kingdom in the 1990s. He identified four factors at the root of these bubbles: the fact that analysts were unable to assess the macroeconomic relevance of microeconomic-based valuations, the magnitude of herd behaviour, which increased asset price volatility, the implementation of expansionary monetary policy (particularly in Spain, with a sharp reduction in interest rates since 1996) and the lack of reaction of some central banks when financial bubbles started to form. He believes that the Bank of England, for example, did not react appropriately to the rise in real estate prices.

Patrick Artus then outlined four reasons why central banks do not intervene in asset prices: there is no stable relationship between asset prices and inflation, central banks do not have a comparative advantage over the market in terms of collecting and processing data, there would be a risk of moral hazard if the markets expected the support of the monetary authority, and problems of controllability and transparency may thwart central banks' intentions to intervene in financial markets. However, Patrick Artus refuted these arguments, especially that relating to controllability, stating that monetary policy has a greater influence on asset prices than on goods prices in modern economies. He therefore deems it legitimate to consider asset prices as an ultimate goal of monetary policy. In particular, he advocates using bank credit as an intermediary objective for fighting bubbles as soon as they emerge.

In response to Patrick Artus' speech, Mervyn King drew a distinction between short-term volatility and long-term valuation cycles. He believed that recent rise in the short-term volatility of financial assets should be put into perspective. He remarked that, since 1997, for hourly data in the United States and United Kingdom, volatility had increased and had not fallen back since, but pointed out that these rises were less apparent for monthly data. Consequently, he questioned the usefulness of information relating to short-term volatility, in particular for the conduct of monetary policy. Moreover, after recalling that it is very difficult to define an *equilibrium* level for stock market P/Es, he posited that it was no doubt more fruitful to study the consequences of their movements.

As regards long-term valuation cycles, Mervyn King evoked the difficulty in detecting financial bubbles, which are often defined *ex-post*, given that asset price movements may be reversed over a longer horizon. As the equilibrium level of asset prices is not known, it appears tricky to establish a link between them and monetary policy. He stressed the need to view asset price developments over the longest horizon possible. Lastly, he affirmed that the primary objective of central banks is to maintain price stability, even though the impact of asset price variations on the banking system should be closely monitored.

### 3. Cyclicity and monetary policy (session 3)

Chaired by: Ernst Welteke (President, *Deutsche Bundesbank*)

Speaker and discussants:

Lucas Papademos (Vice-President, European Central Bank), Stanley Fischer (President of Citigroup International, Vice-Chairman of Citigroup), Jürgen von Hagen (Professor, *Center for European Integration Studies – ZEI*), Yutaka Yamaguchi (Deputy-Governor, Bank of Japan)

Ernst Welteke, after commenting on the relevance of the day's debate, opened the session by briefly summarising the topics of the various speakers.

Lucas Papademos started with a review of theoretical propositions and supporting empirical evidence regarding the links between economic cycles and monetary policy, highlighting the alternative views about the necessity, feasibility and desirability of a counter-cyclical monetary policy. These alternative views reflected different assessments about certain key structural and behavioural features of markets, the nature of agents' expectations and the types of shocks that generate cycles. Despite these differences, views on the role of monetary policy and approaches to the analysis of economic cycles have converged significantly over the last twenty years. Models employed by central banks, including the ECB, reflect a "new consensus", a growing acceptance of a new conceptual framework which combines both neoclassical features (optimal inter-temporal behaviour of agents, rational expectations and the absence of a long-term relationship between inflation and output) and new keynesian characteristics (nominal rigidities and imperfect information).

Subsequently, Lucas Papademos focused on the available evidence on the monetary policy transmission mechanism especially in the euro area. A good understanding of this mechanism is necessary for assessing the role and effectiveness of monetary policy in dealing with economic cycles. Drawing upon recent research by ECB and Eurosystem economists, he pointed to several conclusions for the conduct of monetary policy. First, there are important similarities in the cyclical behaviour of the euro area and the US economies as well as in their responses to monetary policy. In the euro area, a change in official interest rates leads to an adjustment in output which peaks within one to two years, while the response of the price level is typically estimated to be much more gradual, but long-lasting. Second, there is considerable uncertainty about the exact time profile of the output and price responses. Overall, the time-lags in the effect of monetary policy are "long and variable" also in the euro area. Third, with regard to the transmission channels, the

available evidence suggests that the “interest rate channel” is sufficient to explain the response of aggregate demand to a policy change. Other channels, notably “the credit channel”, seem to play a role in several euro area countries. Fourth, the available empirical evidence also suggests that the effects of monetary policy on output and the price level are not the same regardless of the cyclical condition of the economy, the initial level of interest rates and the direction of change in the policy stance. For example, in the euro area countries, the response of output to changes in official interest rates is stronger in recessions than in booms, as is the case in the United States.

Addressing the general policy implications of what theory and evidence revealed, Lucas Papademos emphasised that the emerging theoretical consensus and the balance of the empirical evidence provided strong support for the ECB’s mandate and monetary policy strategy. Specifically, monetary policy should primarily aim at maintaining price stability and it should be formulated and implemented in a forward-looking manner with a medium-term orientation. He explained why, under “normal circumstances”, an activist counter-cyclical monetary policy aimed at fine-tuning the economy should be avoided. However, in case of “particular circumstances”, *e.g.* large output fluctuations generated by severe shocks, monetary policy can play an output-stabilising role consistent with its commitment to price stability. That said, the appropriate policy response depends on the type of shocks. In the case of supply-side or asset-price shocks, however, the response may not be straightforward. In conclusion, Lucas Papademos stressed that the ECB’s monetary policy strategy combined a strong commitment to price stability, on which the ECB’s credibility rests, with flexibility in the implementation of policy reflecting its medium-term orientation. This combination allows for some “constrained discretion” in dealing with severe cyclical output fluctuations consistent with the preservation of price stability.

Yutaka Yamaguchi praised the quality of the Lucas Papademos’ theoretical summary, before expressing his point of view about the Japanese case. He questioned the effectiveness of monetary policy in an economy which, like Japan in the 1990s, experienced an unforeseen slowdown in potential output growth. If asset prices persistently adjust to the downward drift in potential growth, it could be a strong offset to monetary stimulus. Attempts to address such a situation mainly by monetary policy could lead to a zero interest rate. While he thinks it important to take asset prices into account in monetary policy strategy, so as to stabilise goods and services prices over time, he acknowledged that doubts still existed as to the robustness of the relationship between asset prices and goods and services prices. He believed that in Japan structural policy to enhance potential output growth is very important.

Stanley Fischer questioned the notion of the two pillars used by the ECB in its monetary policy strategy and proposed a debate between pillars and inflation targeting. He speculated that central banks adopting an inflation targeting regime allow their economies to develop self-stabilising properties. This stabilisation seems to result, *inter alia*, from the strong credibility acquired by the central bank among other agents or sectors.

Jürgen von Hagen wondered why central banks were currently so concerned about equity prices. He conjectured that a purely financial bubble was less harmful than a real estate bubble, and pointed out that real estate prices were currently rising in many countries. In fact, he argued, it would be a good idea to monitor real estate

prices, which are extremely useful for constructing inflation forecasts and appear highly correlated to business cycles. He believed that Lucas Papademos overestimated the credibility of the ECB, especially after three years of inflation well above two percent annually. The relatively aggressive wage demands in Germany and other countries did not confirm the credibility of the ECB's low-inflation policy. Jürgen von Hagen warned that the concept of constrained discretion proposed by Lucas Papademos was just a new word for monetary activism, which has only led to inflation in the past.

#### 4. Global finance: Is it slowing? (videoconference)

Chaired by: Jean-Claude Trichet (Governor, *Banque de France*)

Speaker: Alan Greenspan (Chairman of the Board of Governors, Federal Reserve System)

Alan Greenspan started by saying that globalisation has been rapidly advancing over the past 20 years (emergence of new products, sharp growth in international capital flows, etc.). However, he believed that globalisation will reach maturity when risks can be transferred efficiently and/or institutional and legal impediments to cross-border capital flows are removed.

Alan Greenspan noted that growth in transactions on new product markets (credit derivatives, for example) has not shown signs of easing in recent years. Firms' use of these markets to hedge risks could increase further, as a recent study of US non-financial corporations showed. The situation in the banking sector seems more mixed: the 50 largest US banks use derivative products, while smaller banking institutions hardly use these instruments at all. He thus concluded that the potential for financial innovation to broaden appeared considerable.

Direct barriers to capital flows (such as restrictions on foreign purchases of domestic assets and limitations on the ability of domestic residents to invest abroad) have been mitigated over the past decades. The same is true of indirect barriers, such as high transaction costs. However, exchange-rate risk, the cost of hedging that risk, and the fact that people prefer to invest in familiar local businesses continue to constitute barriers to the free circulation of capital. Furthermore, investors direct too much of their savings domestically, which may result in sub-optimal allocation of capital. To the extent that globalisation reduces home bias, savings will be better directed to the most promising investments in the world, increasing global economic growth. In the United States, Europe and Japan, investors have broadened their foreign opportunities over the past two decades; international diversification has increased, but shares of foreign assets in US residents' portfolios seem to have reached a plateau. Indirect obstacles, such as differences in corporate governance, remain in place. Therefore, financial integration does not appear complete.

Alan Greenspan stressed that, aside from the positive impact of savings being more efficiently directed, globalisation should lead to the enrichment and sustained growth of emerging and developing economies. Furthermore, financial globalisation could result in increasingly large current account imbalances, as countries exporting capital run current account surpluses and countries receiving capital run current account deficits. He believed that these imbalances would not necessarily result in

systemic problems, but may be a sign that the global economy is becoming more efficient. Moreover, the recent Asian and Russian crises reminded foreign investors of the indirect barriers that continue to exist, especially in the developing world. These factors resulted in a sharp decline in capital flows directed to emerging economies.

He concluded his speech by stressing that:

- globalisation will not, in itself, draw ever-increasing amounts of capital to the industrial world. It should, however, be beneficial for financial stability and economic growth;
- portfolio adjustments should ameliorate imbalances, particularly as international accounting and reporting standards are enhanced with a view to improving market transparency;
- the risks affecting cross-border investment should subside as adequate disclosure rules, institutions that reduce corruption, and improved corporate governance become more widespread;
- the process of financial market integration is far from complete.

Following his conference, Alan Greenspan answered a number of questions from the participants.

The first question, from Francesco Papadia of the ECB, related to the damping of the business cycle and the closer correlation between cycles in different countries on the one hand and the exceptional development of international financial investment on the other.

Alan Greenspan considered that changes to the business cycle in industrialised countries could be largely imputed to globalisation and to the internationalisation of finance.

Charles Goodhart, professor at the London School of Economics, asked whether Alan Greenspan was content with the present level of transparency on derivatives markets, and if not, what might be done about it.

Alan Greenspan replied that transparency by definition did not exist on the over-the-counter derivatives market as data on transactions were not regularly collected. He added that, in the United States, for example, the regulatory authorities did however make detailed analyses of transaction information of individual financial institutions. He believed that there was a general presumption that transparency on these markets is good, but nevertheless full disclosure might not be the best alternative as it could lessen the incentive for innovations that ultimately improve the efficiency of the markets. Furthermore, while agreeing on the need to enhance their transparency, he was not in favour of excessive regulation of these markets.

The final question, from Jean-François Boulier, of Crédit Lyonnais Asset Management, related to the importance of innovations in asset management.



Alan Greenspan recalled that the basic purpose of all financial transactions is to try to shift risk towards those most willing and able to hold it and to deal with it. Consequently, he considered that the different forms of financial innovation (new products, new analysis tools, and even new institutions) have a significant impact on asset management and, in turn, on successful performance of the real economy.

## 5. Cyclicity and international financial stability (Round table)

Chaired by: Jaime Caruana (Governor, *Banco de España*)

Panelists: Gikas Hardouvelis (Professor at the University of Piraeus, Director and Chief Economic Advisor to the Prime Minister of Greece), Gerd Häusler (Director of International Capital Markets Department, IMF), Philippe Lagayette (Chairman of JP Morgan France), Guillermo Ortiz (Governor, Bank of Mexico)

Jaime Caruana observed that some elements of the topic of the round table had already been presented in the previous sessions, such as the extent to which the financial sector contributes to swings in real activity or the feedback effects between credit growth and rises in assets. He stressed that these issues were even more complex when considered at the global level.

Gikas Hardouvelis explained that margin requirements were official restrictions on the amount of credit investors can receive from brokers in order to buy or short-sell stocks. And that a margin policy of leaning against the wind of stock price fluctuations was stabilising both in the short- and long-run. Higher margins reduce both short-run stock price volatility and the possibility of a bubble unfolding. They may therefore have a significant impact on both the short- and long-term stability of financial markets. Moreover, lower margin requirements soften a sudden fall in stock prices without resulting in higher short-run volatility; a decrease in margins improves liquidity, calms the market and softens a crash.

Gerd Häusler recalled that the IMF had to deal with international financial stability on a day-to-day basis, in both its lending and surveillance efforts. And that, more broadly, the maintenance of financial stability had become a “high growth industry”. He demonstrated the importance of financial and money market transparency in the analysis of international financial stability.

Philippe Lagayette acknowledged that the real economy had become more stable but was not sure that the same could be said of the financial economy or the financial world. Therefore, the responses to the question “Why has the world become more stable?” had to be put into perspective. Furthermore, he believed that the structural transformations in the financial world in recent years had changed the volatility trend, not only in the short-term but also in the medium-term, which is considered here to be a bubble. He posited that the latter was dangerous, in particular for financial stability, and that, consequently, monetary and prudential authorities should focus on this issue.

Guillermo Ortiz believed that fears of contagion with globalisation were a little bit exaggerated. He justified this remark by a brief analysis of the emerging market

bond index, during the Asian crisis, and by recent examples of decreased contagion between Mexico and countries such as Brazil and Argentina. He believed that the risk of contagion had partly declined for the reasons mentioned in the previous sessions of the symposium: greater market transparency, more discrimination among investors, efforts by both countries and the IMF to improve information and transparency, stronger economic fundamentals, etc.

As regards the link between cycles and systematic risk, Guillermo Ortiz drew on the experience of Mexico in the mid-1990s to illustrate this point. After highlighting the fact that financial liberalisation had become a permanent feature in the conduct of economic policy (complete elimination of restrictions on interest rate ceilings and reserve requirements, etc.), he recalled that the banking system had been privatised and that the financial markets had been opened to foreign investors. This led to an explosion in bank credit from about 15% of GDP to 45% in about five years. The result was a bubble fuelled by very intense short-term capital inflows, explaining the 1995 crisis.

Furthermore, Guillermo Ortiz stressed the high correlation between Mexican cycles and US industrial production. The current strong resilience of the Mexican economy are ascribable to the growing consensus about the need for economic stability (for example, the need for fiscal discipline is acknowledged), the independence of the central bank and its clear mandate to reduce inflation, the vast improvement in the credibility of institutions (*e.g.* the Supreme Court) and the existence of the North American Free Trade Association (NAFTA), which has changed the behaviour of economic agents. These factors have enabled Mexico to prevent further financial crises and to experience a “normal” recession for the first time in a number of decades.

Jaime Caruana praised the richness and diversity of the contributions and made three brief remarks:

- from the point of view of financial institutions, he believed that some kind of pro-cyclicality was necessary. Furthermore, panelists seemed to concur that there was a role for regulation in combating bubbles, but stressed the fact that if the financial system is sound, regulation ceases to be an issue;
- regulation can provide the right incentives for the use of long-term strategies;
- transparency and good governance seemed to constitute the third set of factors to be enforced.

## 6. Concluding remarks

Speaker: Andrew Crockett (General Manager of the Bank for International Settlements, Chairman of the Financial Stability Forum)

Andrew Crockett thanked the different speakers for the quality of their contributions. He appreciated the diversity of opinions, which contributed to the richness and success of the symposium. He praised the structure of the sessions, and drew from the first session at least one hopeful sign and one cautionary note.

The hopeful sign was that the evidence in Ray Barrell's presentation demonstrated that cycles in recent years had shown less amplitude than previous ones. Andrew Crockett reiterated the arguments for this: better economic policies, in particular monetary policies, reactions within the economy, especially within the private sector, which damped shocks, and luck.

The implementation of appropriate economic policies, certainly in the area of monetary policy – through inflation targeting and a better understanding of the monetary policy mechanism – has been successful. This was also remarked upon by Lucas Papademos. From Christine Cumming's speech, Andrew Crockett recapped on the impact of the improvement in management techniques on recent changes in cycles. He stressed the importance of the effect of the luck factor, evoked by Ray Barrell and Olivier-Jean Blanchard. Lastly, he mentioned the limitations of statistical models in describing complex phenomena, discussed in particular by Jean-Philippe Cotis and Pierre-Yves Hénin.

The cautionary note concerned countries such as Japan, which had experienced crises in recent years. In this respect, Andrew Crockett cited Yutaka Yamaguchi on the causes and effects of the bubble in the Japanese financial sector and housing market.

Andrew Crockett found the distinctions made by Patrick Artus and Mervyn King regarding the “quality” of financial asset price volatility (good, bad, and “ugly”) interesting and important. Good volatility reflects expectations about trends in economic fundamentals; bad volatility constitutes excess movements of the same factors; and “ugly” volatility was not defined but he understood it to mean something self-propagating and destabilising, which does not reflect fundamentals.

Moreover, some speakers elucidated the differences between short-term volatility (day-to-day, according to Patrick Artus, or intraday, according to Mervyn King) and long-term volatility, *i.e.* that observed over cycles. Andrew Crockett stated that the latter seemed more relevant to him. He reiterated a number of factors that may cause long-term volatility, discussed by Patrick Artus and also mentioned by Philippe Lagayette: loss of liquidity, globalisation, and the use of similar models by different market participants. He then wondered whether the world was not becoming more monopolistic. He also recalled a number of other factors relating to long-term volatility including ratings agencies, concentration of risks, and in particular short-termism, which was also cited by Mervyn King.

This list of factors raises a number of questions, not least, what monetary policy should do when faced with what is considered to be a bubble?

Andrew Crockett noted, first of all, that asset prices were not necessarily an advanced indicator of what was going to happen in the real economy. Furthermore, in terms of financial asset markets, central banks do not have a comparative advantage over other market participants. He stressed the importance of the arguments relating to transparency and the existence of links between different financial asset markets. He stated that he believed in financial market dynamics and it was therefore appropriate for monetary authorities to take them into account in their analysis of stability.

As regards the third session and, more specifically, Lucas Papademos' speech, Andrew Crockett focused on the ECB's short-term or longer-term intentions for its

policy or policy framework. He noted that although Lucas Papademos had been fairly inscrutable, both Stanley Fischer and Jürgen von Hagen had gleaned some hints of changes. He wondered if Lucas Papademos was not essentially asking whether, as cycles had become more damped, it was still necessary to conduct an activist monetary policy.

He then recalled that Stanley Fischer questioned how “fine tuning” and “activism” should be defined with regard to the ECB’s monetary policy strategy. Andrew Crockett explained that there was a degree of tuning that one expects from monetary policy that is somewhere between doing nothing and reacting on a daily basis. Moreover, he said that he was not sure if Lucas Papademos was referring to a reaction to asset prices or to threats of deflation. He reminded the participants that Jürgen von Hagen was concerned that central bankers might take too many opportunities to declare the circumstances to be unusual and therefore to be activist. But, on the basis of his own experience, he did not think that this was the greatest risk.

As regards the round table discussion, he noted that several important questions still remained unanswered. The fundamental problem for him was what he called the feast-famine syndrome of capital flows, *i.e.* successive periods of abundance and scarcity of capital flows in a given country. He commented that debates on the Sovereign Debt Restructuring Mechanism were only a small subset of a broader question, and hoped that they would give rise to more far-reaching discussions in future. Moreover, these debates, as Guillermo Ortiz pointed out, are not easy to organise because of the difficulties in bringing together the positions of borrowers and lenders.

## Opening Speech

### Jean-Claude Trichet

*Governor*

*Banque de France*

The Banque de France's international symposia are organised with a view to addressing topical issues and promoting regular and fruitful exchanges of views between policy makers and academics.

This symposium, entitled "Monetary policy, the economic cycle and financial dynamics", gives us an opportunity to bring together a large number of central bank governors, leading academics and economists and representatives of major financial institutions and international organisations.

Our symposium will comprise three sessions:

- "Business and financial cycles: stylised facts", chaired by Professor Olivier-Jean Blanchard;
- "Changes in market structures and behaviour patterns", chaired by Professor Alexandre Lamfalussy;
- "Cyclicality and monetary policy", chaired by President Ernst Welteke.

We will then have the privilege of listening to Chairman Alan Greenspan present from Washington an analysis of the relationship between globalisation and international finance.

A round table debate, chaired by Governor Jaime Caruana, will be devoted to "Cyclicality and international financial stability". Andrew Crockett will then take on the very demanding task – which he masters perfectly given his in-depth knowledge of the issues covered – of closing the symposium with some concluding remarks.

I would like to make a few preliminary observations and remarks:

- My colleagues from the European System of Central Banks and myself have asked our staff to lead the new *Euro Area Business Cycle Network* on the analysis of cycles in Europe, together with the *Centre for Economic Policy Research* (CEPR). This project, which is still in its infancy, has already given rise to several seminars. The latest one took place last week at the *Banco de España*. At the Banque de France, the study of business and financial cycles and their synchronisation is a priority in our work programme.
- It seems that it is important to define the concept of cycles. Sceptics may ask themselves, as Irving Fisher did in 1925, whether cycles really exist or whether the term simply refers to variables fluctuating around their average. In a more positive spirit, and by adopting the approach put forward, in particular in the United States, by Mitchell in 1927, or Burns and Mitchell in 1946, it is possible to define the cycle in a less simplistic manner, *i.e.* as a succession of episodes of boom and bust.

Tribute should be paid to a whole generation of researchers from the *National Bureau of Economic Research* (NBER), who laid the foundations of the research in this area in the 1940s and 1950s, building on the work of Burns and Mitchell, which, to this day, is still used as a yardstick. The characteristics of cycles (length, amplitude, asymmetry of different phases, etc.) are still being widely debated.

- Another controversial issue is the choice of one or several reference variables to define the cycle. Several options have been put forward. A cycle is generally defined either using a given aggregate, in general output, or several aggregates, as is the case in Burns and Mitchell's work. The latter chose this second approach in order to make the most of richer information.
- It is also worth pointing out that the interest of the study of cycles also lies in the analysis of shocks and their propagation mechanisms, as Frisch (1933) and Slutsky (1937) demonstrated. This issue is addressed by the recent real business cycle models, which analyse the various shocks and channels through which shocks are transmitted throughout the economy or the market. Under this approach, transmission mechanisms are not necessarily stable over time or linear.
- The synchronisation of cycles, currently a fairly well-documented concept, remains open to debate. For the sake of simplicity, we can say that two variables are synchronised when their turning points coincide or are close to each other, and when they display similar movements (expansion or recession). Several questions come to mind:
  - first, how can we measure the degree of synchronisation or co-movement of variables? Current economic literature proposes various indicators, such as coincident indicators or dynamic correlations, but the debate is not closed?
  - what are the relative contributions of internal, real or monetary shocks, and external shocks to the synchronisation of cycles;
  - lastly – a question which concerns all monetary areas and in particular, at present, euro area countries – to what extent are cycles of participating countries or regions synchronised?
- Synchronised cycles can, in some respects, reflect herd behaviour on the part of market players. This is a notable characteristic of financial markets. It is then necessary to identify this type of behaviour and the distortions that it is likely to generate, in order to assess the consequences, both in terms of monetary policy and the definition of accounting rules and prudential policies. In this respect, two questions are particularly relevant:
  - how can we define the role played by international financial institutions in regulating markets, and more generally, in maintaining financial stability;
  - to which extent monetary policy can and must take into account real and potential asset price fluctuations of a big magnitude.
- An in-depth analysis of cycles obviously relies on efficient statistical tools. Owing to the progress made, both in terms of statistical analysis and computational capacities, we now have a wide range of assessment tools at our disposal. These would have been unthinkable in the early days of research in this area in the 1930s or 1940s.

# **BUSINESS AND FINANCIAL CYCLES : STYLISTED FACTS**

Olivier Jean Blanchard  
*Chairman*

Ray Barrell

Jean-Philippe Cotis

Christine Cumming

Pierre-Yves Hénin

*According to their order of presentation*

# Cyclicality and International Financial Developments

## Cycles and systemic risks, contagion and globalisation and institutions and financial stability

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The nature of the cycle, its length and amplitude, depends upon the responses of both the economy and the reactions of the policy authorities to shocks. We look at how we might measure cycles and ask whether they have become more damped over time. We find evidence that cycles have had declining amplitudes, and we discuss some reasons for this. In particular we ask whether the policy authorities have become more effective or whether the private sector has better shock absorbers in place. These could come from reforms to labour and product markets or from better risk sharing in more efficient and globalised markets with fewer liquidity constrained consumers. It could also be the case that the shocks facing the global economy over the last few years have been benign in their nature or their impact and if they were removed from the account the current cycle would have looked much like others of the last thirty years. We argue that all these factors have been at work, and that we should not expect the future to continue to be as benign as the recent past.

### 1. Introduction

It is our contention that a good proportion of the fluctuations in output we observe are the result of economies taking time to return to equilibrium once they have departed from it. Some proportion of fluctuations in the short term are the result of changes in equilibrium output, but economies cycle around their equilibrium because market mechanisms work slowly and at different speeds in different countries. Cycles are the result of the reaction of the economy to sequences of shocks, and it is possible that a sequence of small but very frequent random, independent shocks could generate them. Shocks may be real or financial, and they can be autonomous, but policy makers can also be a source of shocks. The nature of the cycle, its length and amplitude, will depend upon the responses of both the economy and the reactions of the policy authorities to shocks. It should be possible to reform market based private sector institutions to help dampen cycles, and this has been an objective of policy for some time. Policy responses can also be changed, and frameworks can be constructed that both absorb shocks more effectively and assure market based agents that volatility will be lower. This will help change their actions and further help dampen cycles.

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<sup>1</sup> This written version, provided after the symposium, is co-authored by James Mitchell (NIESR)

<sup>2</sup> We would like to thank our colleagues Martin Weale, Stephen Hall and Philip Davis, the session chair Olivier Jean Blanchard, the discussants Christine Cumming, Jean-Philippe Cotis and Pierre-Yves Hénin for their comments. We have also received useful comments from Julian Morgan from the European Central Bank (ECB). The views and errors in this paper represent those of the authors, and not of the Banque de France or any other participant at the Symposium.



In this paper we wish to discuss how we might measure cycles and find evidence that they have become more damped over time, and we discuss some reasons for this. In particular we ask whether one of three things might be different in the most recent cycle:

- The policy authorities have become more effective, either because their understanding has improved or because frameworks have been put in place that are more effective shock absorbers.
- The private sector has better shock absorbers in place that reduce the impact of shocks because of reforms to labour and product markets and because we have more efficient and globalised markets removing liquidity constraints and increasing the sharing risks over time and space.
- The shocks facing the global economy over the last few years have become smaller or been benign in their nature or their impact.

We argue that each of these factors has been at work. We look at the nature of structural shocks to the economy, and conclude that there is some evidence that they have become smaller. We also suggest that policy has changed to ensure stability. This reflects both improved monetary policy frameworks and reforms to private sector institutions that have helped dampen cycles. Reforms to financial institutions have helped reduce real volatility but they may have increased financial volatility. Increased real and financial integration of the world economy may have been an important factor in helping dampen cycles. Globalisation increases the interdependence of economies by increasing cross holdings of assets and by enlarging the role of trade. It shifts portfolios away from strong home biases and hence leads to welfare enhancing risk sharing. However, this can also increase the potential for shock contagion within the global economy.

In the next section of the paper we discuss methods of measuring the cycle, and choose a representative measure in order to discuss stylised facts. In the third section we go on to decompose the factors affecting the cycle and argue that all of them have potentially been making it more damped. In the fourth section we discuss reasons for assuming that the cycles of the 1990s have also been damped by a fortuitous combination of circumstances.

## **2. Methods of measuring the cycle**

It is always difficult to judge the current state of the cycle in economic activity, but it is important that we find ways of doing so. There are many ways to extract cycles, and all of them have their relative theoretical advantages and disadvantages. We first compare some commonly used methods and discuss their properties. We find that one particular measure of the cycle is, in a loose sense, an average of the other measures. Quarterly data for the log-level of gross domestic product (GDP), augmented with data from the National Institute forecast after 2002 (Q4), are then de-trended by this measure to provide what we call “the NIESR output gap indicator”. However, we should not forget that, although useful, this indicator is only an estimate of the “true” output gap and it is impossible to quantify how good the estimate may be except in the context of some theoretical model.

Economists find it useful to describe the supply side of the economy using the concept of the production function, which relates inputs of capital and labour to the level of output. A production function based measure of the output gap, such as that discussed in Cotis (2003), compares actual inputs of labour and capital to potential equilibrium levels, and calculates a gap between them on this basis. Although academically appealing, this approach is fraught with problems. In particular, it is very difficult to assess the equilibrium level of labour supply and unemployment. The most common way to model the evolving labour market equilibrium, or the non accelerating-inflation rate of employment (NAIRU), is to utilise time dependent intercepts reflecting the changing nature of these markets<sup>3</sup>. Production function based methods of measuring output gaps commonly model these evolving intercepts as unobserved components and extract them *via* the Kalman filter, for instance. Considerable judgement is required in specifying the appropriate unobserved components model that is to be used in the construction of the production function measure of equilibrium output. We may describe these techniques as filtering prior to the use of the production function, as opposed to those we describe below which filter after the use of a production function in the forecast.

### ***Statistical techniques for measuring cycles***

There is a wide range of more statistical techniques used to measure the output gap, and they are surveyed in Massmann, Mitchell and Weale (2003). Our focus in this paper is on growth cycles measures<sup>4</sup> which filter or smooth the underlying data using either parametric or non-parametric methods. Specifically, we compare Unobserved Components (UC) methods, Hodrick-Prescott (HP) filters, Baxter-King (BK) filters and a filter based on the difference between two Hodrick-Prescott filters, which we call the “Approximate Band Pass” (ABP) filter. These four measures of the growth cycle are representative of the univariate methods commonly used in the business cycle literature. They fall in both the parametric class of measures (*i.e.* the unobserved components measure), and the non-parametric class (the remaining three measures)<sup>5</sup>.

- *Unobserved Components*. We estimate a “smooth trend” unobserved components model where the cyclical component is determined by a trigonometric function and the trend is extracted using the Kalman smoother. Koopman, Harvey, Doornik and Shephard (1999) give details.
- *Hodrick-Prescott*. This is probably the most commonly used filter in the literature, and it is a simple infinite band pass filter. In order to control the smoothness of the trend component in the Hodrick-Prescott filter we set the smoothing parameter equal to 1600, a value commonly employed for quarterly data. Ravn and Uhlig (2002) give details.

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<sup>3</sup> See Boone (2000) for a description of some OECD techniques and results.

<sup>4</sup> There are also NBER-type classical cycle techniques discussed by Harding and Pagan (2002) and Artis (2003) amongst others. Although these are of great interest they do not deliver an immediately obvious measure of the output gap, and hence we do not discuss them further.

<sup>5</sup> However, the distinction between parametric and non-parametric de-trending methods, that reflects a long standing methodological debate, is less acute than often appreciated. It should be noted that non-parametric methods can be rationalised as parametric ones. In particular the Hodrick-Prescott and ideal band pass filters (such as the Baxter-King filter) can be motivated within an unobserved components framework; see Harvey and Jaeger (1993) and Harvey and Trimbur (2002). Furthermore, the parametric methods, like the non-parametric ones, are “simply” taking weighted averages of the data; see Harvey and Koopman (2000).

- *Ideal (Baxter-King) Band Pass.* The Baxter-King (1999) filter is an “ideal band pass” filter. It isolates the components of a time series that lie within a given range of frequencies. Economic theory plays a role in defining these frequencies. In particular, given our interest in extracting the periodic components of an economic time series that can be associated with the business cycle, the bands are chosen consistent with priors about the duration of the business cycle. Since it is widely believed that a business cycle lasts between one and a half and eight years, the lower band is set at six quarters and the upper band at thirty-two quarters<sup>6</sup>. Following Baxter and King (1999), three years of data are used to approximate the moving average. Given this, the Baxter-King filter requires a number of lead and lag observations. This means end of sample estimates are unavailable unless a forecast is used.
- *Approximate Band Pass.* To avoid this end-point problem, like Artis *et alii* (2003), we consider an approximation to the band pass filter based on the difference between two Hodrick-Prescott, or low-pass (Butterworth), filters. Massmann, Mitchell and Weale (2003) give details. We follow both common practice with using Baxter-King filters and the findings of Burns and Mitchell at the National Bureau of Economic Research (NBER) and set the smoothing parameter in each Hodrick-Prescott filter to be consistent with our priors of how long a business cycle lasts, namely between six and thirty-two quarters.

### *Estimates of the cycle*

It is well known that estimates of the cycle clearly depend on the length of the time series under consideration<sup>7</sup>. Due to the two-sided nature of our cyclical estimators it is unavoidable that while we may assume the cyclical estimators for the central periods are final, the estimators for more recent years will be revised. Alternatives based on a one-sided filter are not attractive, however, since they induce phase shift that can distort the timing of events.

To reduce revisions for recent periods, and improve inference at the end of the series, the observed series can be extended with forecasts, and backcasts (Kaiser and Maravall, 2001). This is the approach we adopt. We extract estimates of the business cycle from quarterly data for the log-level of GDP from 1970(Q1), augmented from 2002 (Q4) with our forecasts. These forecast data are produced with a structural model with a production function, and hence all the labour market judgements and assumptions about technology trends, that are essential to producing production function based output gap estimates, are embedded in our forecasts<sup>8</sup>.

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<sup>6</sup> Agresti and Mojon (2001) argue that eight years is too low for the upper band; they argue that business cycles in Europe tend to last longer. Our results do not support such an argument; see Massmann and Mitchell (2003). In any case, results using the Baxter-King filter were robust to increasing the upper band to ten years.

<sup>7</sup> The cyclical estimator for the last observed period  $T$  can be denoted  $c_{\pi T}$ , where the first sub-index refers to the period under estimation, and the second to the last observed period. When one more observation at time  $(T+1)$  is observed, a new estimator for the cycle at time  $T$  is obtained,  $c_{\pi T+1}$ . As more observations are added the estimator is revised. For large enough  $k$ ,  $c_{\pi T+k}$  will converge to a final estimator.

<sup>8</sup> We use the forecasts published in the January 2003 *National Institute Economic Review*. See Barrell *et alii* (2003a and b) for the UK and the world economy forecasts, respectively.

Chart 1 plots business cycle estimates for the United States (US)<sup>9</sup>, and there appears to be a consistent pattern emerging across the measures of the cycle, and the amplitude clearly declines over time, although there is considerable disparity between measures around turning points. Using this graph alone it would appear that it is not too important, from an empirical view at least, how we choose to measure the cycle.

Chart 1  
**Cycle estimates for the USA (output gaps)**  
 (1970-Q1 / 2005-Q4)

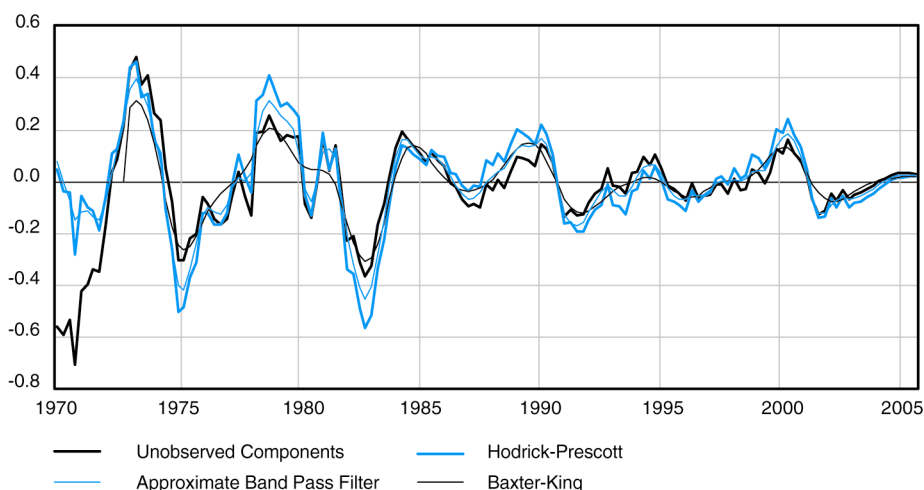
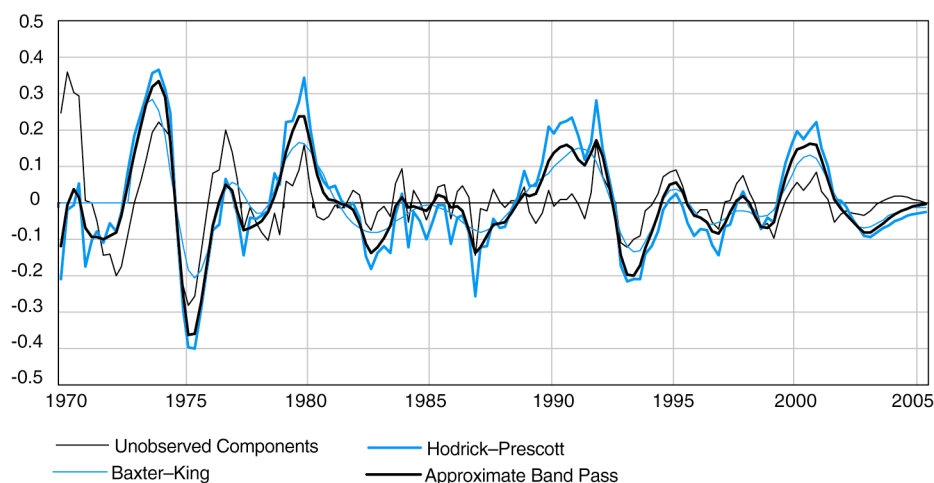


Chart 2 plots estimates for the euro area, and it is clear that the concordance across measures of the business cycle present for the US, is not present. In particular, the UC series offers a relatively volatile estimate of the business cycle. As UC cycles are model based, the cycle identified and estimated is naturally sensitive to how the model is parameterised. Volatile cyclical estimates are known to occur if the trend component is allowed to capture most of the movement in the underlying series. Further restrictions undoubtedly could be imposed on the model to obtain a less volatile cyclical estimate, but to facilitate comparison we restrict attention here to a common specification across countries. It should be clear from this comparison that generalisations about the US business cycle are not necessarily useful when assessing events in Europe.

Given the differences between the measures of the cycle in chart 2, it is useful to settle on one measure of the cycle alone that is, in some sense, representative of the other measures. We “prefer” the ABP filter as it appears to provide some sort of average across the other filters and is relatively smooth given that it removes both high frequency noise and low frequency components. Furthermore, it is instructive to recall that theoretically we can interpret the ABP filter within a parametric framework (see Harvey and Trimbur, 2002).

<sup>9</sup> We utilise data from 1970 onwards as we wish to make direct comparisons with the euro area, and it is not clear that it is wise to use area data before that date as the economies were very disparate. Blanchard and Simon (2001) utilise much longer runs of US data and produce similar conclusions.

Chart 2  
**Cycle estimates for the euro area (output gaps)**  
 (1970-Q1 / 2005-Q4)



***Declining and converging cycles***

If we look in charts 3 and 4 at output gap estimates for the US, United Kingdom (UK), the euro area and for Germany, France and Italy, the most recent cycle seems to be significantly damped in comparison to cycles over the last thirty years or so<sup>10</sup>. These figures indicate that these economies were operating well above full capacity in 2000, but suffered a sharp deterioration in 2001. The US cycle began an upturn in early 2002, while the euro area was still operating at about 0.5 percentage points below full capacity at the end of 2002. However, at 0.5% the output gap is small relative to levels seen during the recessions of the 1980s and 1990s, suggesting that the required correction to the capital stock is smaller than in previous downturns. The most recent cycle clearly looks more damped than the last two cycles, with lower volatility. To summarise these broad developments we list the mean absolute output gap in table 1 for each of the three decades we are considering. This indicator has fallen markedly in the US over the whole period, and it fell markedly between the 1970s and the 1980s in all other countries in the table. In the 1990s this indicator of cyclical volatility continued to fall in the UK and Italy, and to a lesser degree in Germany, but rose slightly in France.

**Table 1: Average absolute output gaps as a percentage of GDP**

	United States	United Kingdom	Germany	France	Italy
1970 (Q1)-1979 (Q4)	1.77	1.11	1.91	1.34	2.78
1980 (Q1)-1989 (Q4)	1.21	0.79	1.22	0.88	1.13
1990 (Q1)-1999 (Q4)	0.61	0.58	1.16	0.99	1.05

<sup>10</sup> The charts plot NIESR estimates of output gap with data beyond 2002 (Q4) obtained from the Institute output forecast. For further details see Massmann, Mitchell and Weale (2003).

Chart 3  
Output gaps in the euro area, the UK and the US

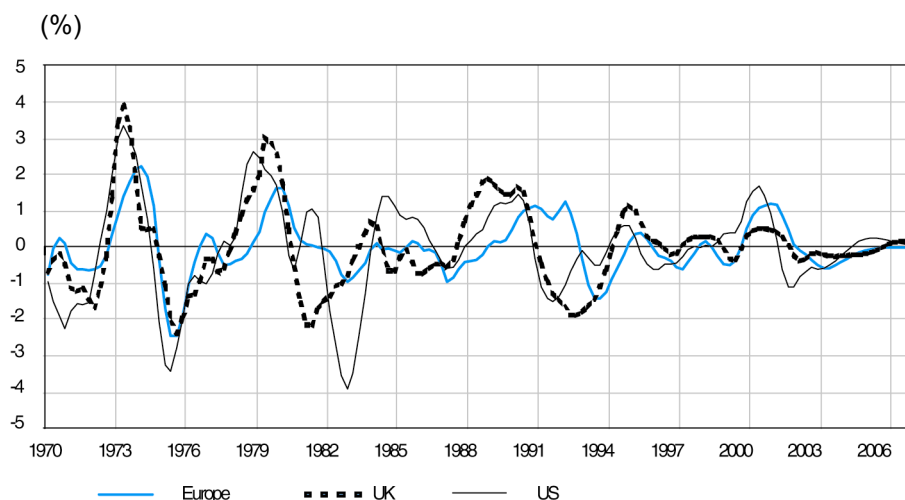
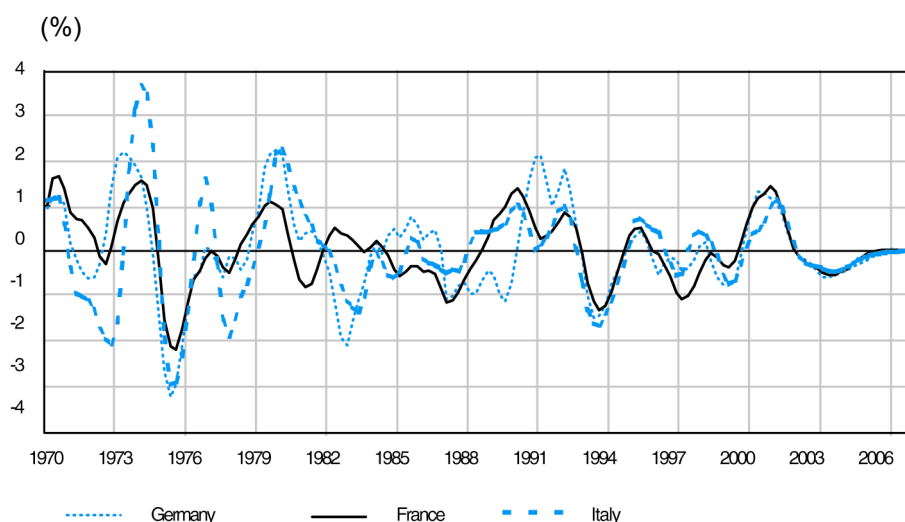


Chart 4  
Output gaps in Germany, France and Italy

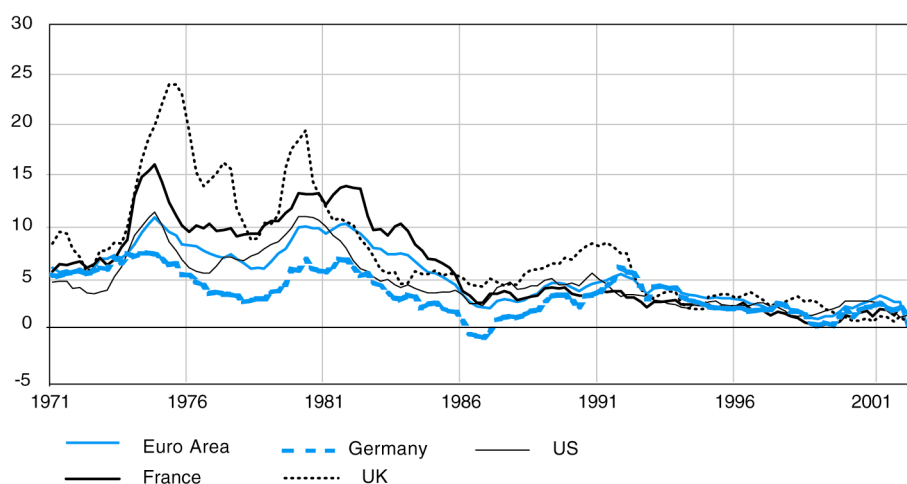


In addition, as we can see from chart 5, the level of inflation and its volatility also appear to be lower now than in the past; indeed inflationary concerns in the mid 1990s have been replaced by fears of deflation in 2002 or so. Lower inflation should have beneficial effects in stabilising financial markets and reducing the level and volatility of interest rates. However, recent exchange rate developments have probably reduced fears of deflation, except of course in Japan.

Chart 5

**Inflation in the major economies**

Annual % change in consumer prices (1971-Q4 / 2002-Q3)

***The euro area output gap***

It appears that business cycles in the euro area, Germany, France, the US and the UK are becoming “closer”. The absolute size of the cyclical disparity between the business cycles of these countries is at historically low levels. This finding is consistent with previous research for the euro area that has examined the relation between the business cycles of the euro area, and the euro area and the UK in Mitchell and Mouratidis (2002) and Massmann and Mitchell (2002), respectively. This work considers a range of measures of both the growth and classical business cycles, and although inference about individual business cycles is found to be sensitive to measurement, these results about the euro area as a whole are largely insensitive to how the cycle is measured.

It should be noted that while Massmann and Mitchell (2002) found evidence that the business cycles of the euro area and the UK are becoming “closer”, this increased closeness, due to less pronounced cyclical movements than seen historically, has not been accompanied by increased correlation<sup>11</sup>. There is no reason why we should expect closer business cycles also to be more correlated. Indeed, there remains a controversy about whether euro area business cycles have “converged”, in the sense that they have become increasingly correlated. While Artis and Zhang (1999) found evidence of increased convergence post 1979, Inklaar and de Haan (2001) did not. Using rolling rather than fixed windows, Massmann and Mitchell (2003) find evidence for increased correlation between the twelve euro area countries from the late 1990s. This is based on a size-weighted average of the bivariate correlations between the twelve euro area countries. Historically, however, there has been considerable volatility in this size-weighted average correlation coefficient. Looking at the distribution of bivariate correlation coefficients they identify periods of convergence and periods of divergence, and find that the euro area has “switched” between these two “regimes” frequently in the last forty years. There is also

<sup>11</sup> There is some evidence that the UK may have become more correlated with the euro area since 1997, however. It should be noted that Massmann and Mitchell (2002) also find that the UK exhibits similar behaviour relative to the US.

evidence for an emerging “common” euro area cycle, distinct from the US and correlation amongst the Euro Area countries is higher against Germany than the US<sup>12</sup>.

Hall and Yhap (2003) also use time varying estimators to see if they can identify a common cycle in Europe. They consider the symmetry of inflation and GDP shocks between the UK and the three major European Monetary Union (EMU) countries, applying the orthogonal GARCH model, which allows them to calculate a complete time varying correlation matrix for these four countries. They examine the way the conditional correlation of shocks between the UK and the other European countries has evolved over time and conclude that the shocks that hit the UK are now broadly symmetrical with those facing France and Italy but that German seems to exhibit very low correlation with the other three countries.

### 3. Why have cycles become more damped?

There are many reasons why we might expect cycles to have become more damped and more coherent. Structural shocks, as measured by the unexplained component in the structural relationship determining behaviour, may have got smaller over time<sup>13</sup>. The responses of the private sector may have changed and as a result the cycle may be more damped. This could be the result of changes in technologies and structures that are outside the control of policy authorities. It could also be the unintended result of reforms to the economic system, such as the impact on the cycle of the removal of barriers to trade, or it could be the intended result of reforms such as the liberalisation of domestic and international capital markets. In addition macroeconomic policy makers may have become more effective at stabilising their economies as they learn more about the tools available to them and the nature of the world they are attempting to control.

We may make a simple variance decomposition if we write a simple stylised model for output ( $Y_t$ ) in terms of predetermined variables ( $Z_t$ ) and simultaneously determined variables ( $V_t$ ). The predetermined variables are driven by a random innovation and past values of  $Y$  that represent the inertia in the system. If the feedback coefficient becomes smaller the inertia in the system reduces. The simultaneously determined variables depend upon a random innovation and current income as well as an intercept. We may write the system as:

$$Y_t = Z_t + V_t \quad (1)$$

$$Z_t = \lambda Y_{t-1} + \omega_t \quad (2)$$

$$V_t = \alpha + \beta Y_t + \varepsilon_t \quad (3)$$

The short and long run volatility of  $Y$  will depend on the variance of the two shocks, the simultaneity parameter and on inertia in the system. The cyclicity of output will depend on the serial correlation in the shocks, the degree of simultaneity in the economy and the inertia in the economic system. We may see this by substituting (2) and (3) into (1):

$$Y_t = (\lambda/(1 - \beta)) Y_{t-1} + (1/(1 - \beta))(\alpha + \varepsilon_t + \omega_t) \quad (4)$$

<sup>12</sup> See Mitchell and Mouratidis (2002).

<sup>13</sup> It may be difficult for us to look at these unobserved components as we may not be able to uncover the true structural relationship, but they could still be the cause of damping cycles.



We first look at the nature of the structural shocks, then at the factors that might affect the simultaneity of the economy, and finally at those that might affect the inertia in the economic system.

### Structural shocks

As we define structural shocks as the unexplained component in our economic relationships they must include factors such as large movements in oil prices, and these have clearly declined in size over the last three decades and they have also become less important as oil dependence declines. However, there are many other sources of structural shocks and we can address their changing nature by looking at a selected set of structural equation shocks from our model NiGEM<sup>14</sup>. We first look at consumption, compensation (wage equation), employment and equity price residuals for the period 1991 (Q1) to 1999 (Q4) to see if there are noticeable correlations across countries<sup>15</sup>. The consumption relations are based on an Euler equation for a consumer who is not liquidity constrained. The Euler equation embeds an optimising error correction on the long run, preference driven, consumption, income and wealth relationship. The long run parameters have been calibrated from Barrell, Byrne and Dury (2003) and adjustments speeds are estimated in a panel context. We may write the change in the log of consumption,  $C$ , as depending on the equilibrium correction between logs of consumption, incomes (RPDI) and real net wealth (RNW), and delta is the discount factor in the consumer's utility function:

$$\Delta C_t = \lambda [C_{t-1} - a \cdot \text{RPDI}_{t-1} - (1-a) \cdot \text{RNW}_{t-1}] + \delta \Delta C_{t+1} + \text{error}_t \quad (5)$$

The compensation equations are discussed at some length in Barrell and Dury (2003) and all these equations are dynamically homogenous with forward looking expectations, and they are based on a bargaining framework. We assume that in the long run the real wage is given by the level of productivity moderated by equilibrium unemployment. The equations were estimated in an «Equilibrium Correction» format with dynamics estimated round the long run. The general specification of the wage equations, where  $W$  is the nominal wage,  $P$  is a measure of producer prices,  $Prod$  is trend output per person hour and  $U^e$  is the long run sustainable level of unemployment, is given by the dynamic adjustment equation:

$$\begin{aligned} \Delta \ln \left( \frac{W}{P} \right)_t = & \alpha + \sum_{i=0}^4 \beta_i \Delta \ln CED_{t-i} + \sum_{i=1}^4 \gamma_i \Delta \ln \left( \frac{W}{P} \right)_{t-i} \\ & + (1 - \sum_{i=0}^4 \beta_i - \sum_{i=1}^4 \gamma_i) \Delta \ln CED_{t+1} + \vartheta (U_{t-1}^e - U_{t-1}) \quad (6) \\ & + \varepsilon \left[ \ln \left( \frac{W}{P} \right) - \ln(Prod) \right]_{t-1} + \text{error}_t \end{aligned}$$

<sup>14</sup> See NIESR (2003) for a description of the model, and Barrell, Hurst and Kirsanova (2003) for a brief description. There are a large number of equations we could choose to analyse, but we have taken countries and variables where the first author has estimated or calibrated the equations, and hence is able to examine the nature of their residuals.

<sup>15</sup> See Barrell, Becker, Byrne, Gottschalk and van Welsum (2003) for a discussion of these equations and of model properties.

where  $U$  is the level of unemployment and  $CED$  is the consumer price deflator. Shift terms for structural change were included where necessary.

The employment equations are based on the approach to labour demand in Barrell and Pain (1997) and (1999) using a CES production function with an elasticity of substitution  $\sigma$  and a technical progress parameter  $\lambda$ . If  $L$  is total employment,  $Q$  is output,  $w/p$  is the real wage and  $t$  is technical progress we can write the relationship:

$$\ln(L) = \alpha + \ln(Q) - (1 - \sigma) \lambda t - \sigma \ln(w/p) + \text{dynamics} + \text{error}_t \quad (7)$$

The equations were estimated in equilibrium correction form, and include dynamics of adjustment, as in the Barrell and Pain papers (1997, 1999).

The equity price equations are calibrated from 1990s data using the arbitrage relationship between current and future equity prices. Current equity prices are assumed to depend upon the discounted future value of profits. The discount rate includes an estimate of the equity premium over this period, and parameters were derived using panel data techniques.

Table 2 takes shocks for these equations for the 1990s (the draw period for the stochastic simulations discussed in Barrell, Hurst and Kirsanova (2003)). Some of these shocks are correlated over space, but this is not generally the case. The equity market shocks are the only shocks that exhibit noticeable correlation over space, and this is reflected in the contagion amongst equity price movements discussed in Barrell and Davis (2003). The lack of correlation of shocks to consumption does not mean that consumption movements are not correlated across space, as consumption depends on wealth and hence equity prices and their shocks are correlated.

**Table 2: Correlations across structural shocks 1991 (Q1) to 1999 (Q4)**

	<i>(percent residuals)</i>			
	Germany	United Kingdom	United States	Japan
<b>Consumption</b>				
France	0.225	-0.179	0.121	0.047
Germany		-0.190	0.048	0.130
United Kingdom			-0.499	-0.107
United States				-0.072
<b>Compensation</b>				
France	-0.053	-0.155	0.454	-0.234
Germany		-0.028	-0.189	0.304
United Kingdom			0.241	-0.186
United States				-0.307
<b>Employment</b>				
France	0.083	0.087	0.152	0.046
Germany		0.072	0.121	-0.161
United Kingdom			0.358	-0.269
United States				-0.145
<b>Equity Prices</b>				
France	0.817	0.707	0.513	0.045
Germany		0.554	0.334	0.083
United Kingdom			0.646	0.091
United States				-0.098

We can also look at the changes in the ratio of the variance of the shocks in the 1990s as compared to the 1980s for three of these equations and four countries in table 3<sup>16</sup>. The UK looks noticeably more stable in terms of structural shocks in the 1990s, as does France although to a lesser extent. In the US the shocks to consumption and compensation are smaller in the 1990s, but those for employment are larger. For Japan all structural shocks appear larger in the 1990s. Hence we would conclude that for some countries the shocks may be smaller, but we would not expect the decline in volatility we have seen to be the result of these relatively small changes. It is possible that the decline in the volatility of structural shocks is part of an explanation, but not the whole story; there are other factors in the economy that have been at work.

**Table 3: The 1990s compared with the 1980s**

Standard deviations of structural shocks from the 1990s divided by 1980s

	<i>(percent residuals)</i>			
	United States	Japan	United Kingdom	France
Consumption	0.64	1.20	0.60	0.95
Compensation	0.82	1.15	0.26	0.53
Employment	1.10	1.22	0.62	0.94

***Services, stocks and imports***

Three major factors have been considered by others that might have also reduced the volatility of output. The increasing role of services in the economy, improved management of stocks and better policy design may have all made a contribution<sup>17</sup>. The first two may all be represented as changes in the simultaneous nature of the system, as can the other factors discussed in this section. All of these factors may have played a role in reducing volatility, and we survey the evidence before discussing other factors that may have contributed to greater cyclical stability.

In general capital goods production and use is more cyclical than other components of GDP, and the services sector produces many fewer capital goods, and uses fewer capital goods, than manufacturing per unit of output. For this reason alone we would expect the decline in the production of goods in the US, from 50% of GDP in 1974 to 38% in 2000, would reduce the volatility of output around trend. McConnell and Perez-Quiros (2000) stress the role of the better management of inventories in the decline in the volatility of US output, and over the last fifteen years inventories appear to have even become countercyclical in the US (Blanchard and Simon (2001)). In addition the removal of barriers to trade (financial and physical) mean imports can be used as an alternative to stocks especially within firms that have production plants in more than one country.

The substitution of imports for stocks may be only one part of the impact of a globalising economy on the volatility of the economic cycle. As we can see from chart 6, trade to GDP ratios have been rising in all major countries. Increasing the propensity to import increases the impact of demand shocks in the home country on

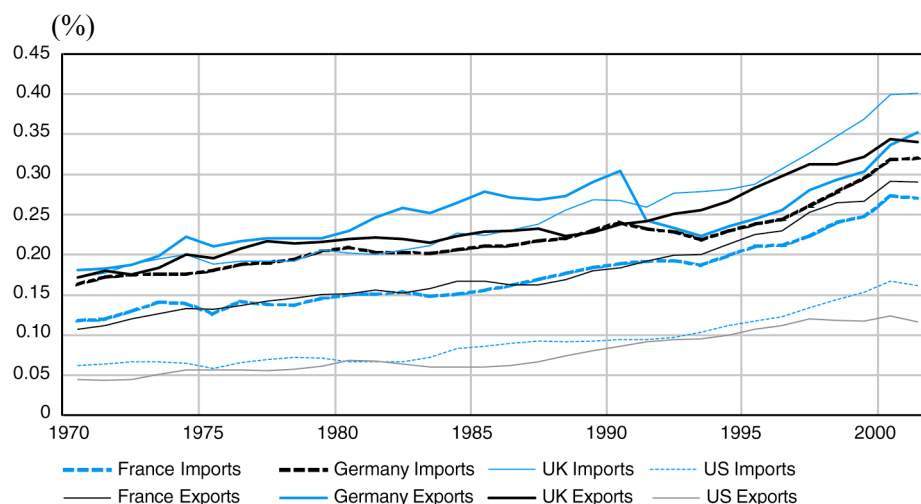
<sup>16</sup> The equity price equations were only estimated/calibrated on 1990s data, whilst German unification makes the use of German residuals over time problematic. The other equations used the full data set.

<sup>17</sup> Papademos (2003) surveys this literature and concludes that changes in policy regimes have been an important factor in increasing stability.

other countries, and reduces the multiplier effects of any shock that comes along. The rise in import penetration in the US from 7% in 1980 to 17% in 2000 will have reduced the classical multiplier markedly<sup>18</sup>. If the classical multiplier were to fall 10% and shocks were unchanged then the volatility of output over the cycle would fall by 10% over the last twenty years. Although increasing openness and other factors reduce the classical multiplier they do not make policy easier in the sense that the multiplier effect of any countercyclical policy also will be reduced.

Chart 6  
Imports and exports of goods and services as a percentage of GDP

Volumes



### *Economic policy*

Our cycle indicators might suggest that economic policy has been successful over the last decade or so in establishing a stability oriented framework for growth. Monetary authorities in the US and Europe may have learnt from the mistakes of the 1970s and 1980s; they have adopted a clearer framework that may keep inflation under control through the use of more explicit rule based approaches to setting monetary policy. Even in the US there may have been a move away from nominal aggregate targeting to the use of a Taylor Rule with an output gap indicator in it. However, the US authorities have not been particularly explicit about their objectives.

The UK is the best example of such a framework change, as monetary policy was given some independence in 1993, and the Bank was made independent in 1997. Barrell, Hurst and Kirsanova (2003) use stochastic simulation techniques on NiGEM to investigate the stabilising properties of different policy rules. They suggest that a move from nominal aggregate targeting to the use of a Taylor Rule with an output gap in it would increase the stability of UK output, as measured by the output gap, by 20%. Barrell and Weale (2003) suggest that gains of this magnitude may have been made in the 1990s.<sup>19</sup>

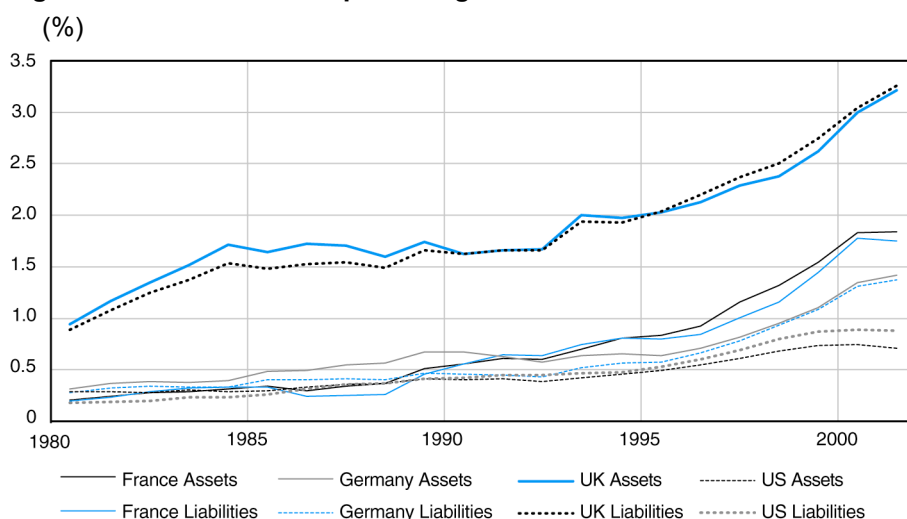
<sup>18</sup> If the marginal and average import propensities were the same and the keynesian multiplier were 1.1 in 1980, it would fall to 1.0 in 2000, all else equal, because of the increase in import penetration.

<sup>19</sup> Papademos (2003) discusses the ECB framework from a similar perspective.

### International financial market liberalisation

Globalisation may have led to the increased ability to spread shocks across countries and hence limit their impact through risk sharing. This should help reduce the simultaneity in the system by enabling agents to smooth out their consumption over time. We can judge the degree of globalisation by looking at some indicators of financial market openness. Both gross foreign assets and liabilities have been increasing as a share of GDP, especially in the European Union<sup>20</sup>, as can be seen from chart 7. Increased cross holdings of assets mean that risks are shared but shocks are propagated. With cross holdings of equities significantly higher now than they were in 1975 a fall in equity prices, especially in the US, affects all countries. However, this phenomenon is not universal, as Germany, for instance, has low levels of overall equity holdings in wealth and low levels of financial wealth relative to consumption<sup>21</sup>.

Chart 7  
Foreign assets liabilities as a percentage of GDP



### Factors affecting inertia

Domestic private sector market based shock absorbers may also have improved. Labour markets may work better than in 1970s and wages and prices may adjust more quickly as a result of the labour market reforms we have seen in both the US and to a much lesser extent in Europe over the last thirty years. In addition domestic financial liberalisation throughout the OECD means risks can be more easily transferred over time by individuals. In particular the reduction in liquidity constraints on consumers allows them to distribute shocks to their income over a number of time periods, and this should reduce the volatility of consumption and hence output for a given set of structural shocks.

<sup>20</sup> Risk sharing is increased by the scale of foreign assets, but not so much by increases in deposits inside the banking sector. We have to factor out the scale of the international banking sector in the UK. By 2000 foreign deposits and loans in banks in the UK covered 150% of GDP, compared to 30% in France and Germany. If we remove the difference the UK and the other Europeans look similar.

<sup>21</sup> These issues are discussed at length in Barrell and Davis (2003).

### ***Taking all factors together***

All these factors appear to have contributed to the increasing stability of the cycle over the last two decades. Markets may have been reassured by the gradual change in monetary and fiscal policy from continual re-optimisation (and political opportunism) through the development of rule guided monetary behaviour based on optimal frameworks and the construction of independent monetary institutions. Markets may have also become more efficient at managing risks, and spreading them over time and space with more efficient stock management, fewer borrowing constraints and more globalised portfolios. However, there may still be a major element of luck in the increased stability, and in the last cycle we can identify events that may have helped smooth the cycle, albeit temporarily.

## **4. Has the world become more stable?**

Cycles have been more damped and output less volatile in the last decade than in the previous two. This could be because the world has changed, and structural reforms, increased openness, financial liberalisation and globalisation have led to increased risk sharing and a greater capacity to absorb shocks. A sequence of fortuitous events may also have helped to stabilise the major economies. We would argue that this has been the case and that capital inflows into the US in the mid 1990s helped stabilise world output and reduce inflation.

In 1996 we and others were worried about the strength of US domestic demand, and were expecting inflationary pressures to emerge, but the appreciation of the dollar in subsequent years held down inflation. Large scale capital inflows into the US from 1996 onward developed as foreign investment in East Asia, and subsequently Latin America, began to unwind. These flows helped to support the dollar and were a major factor behind the strength of the US equity market. Real long-term interest rates were reduced markedly by the change in the pattern of flows and this will have boosted the level of investment in the US and elsewhere<sup>22</sup>. Growth in the US remained strong as domestic demand increased, supported by the equity market and strong investment. The US current account of the balance of payments was in increasing deficit, but this was financed easily by supporting capital inflows drawn in by high expected profits in US equity markets. The strong dollar was matched by a depreciation of the euro which increased inflation and raised output in the euro area. However, Europe is more inertial than the US, and inflation in the euro area rose less rapidly than it fell in the US. We would argue that the structure of capital flows reduced aggregate inflation and raised the level of output within the OECD.

The structure of capital flows we observed from 1996 has had a major impact. In the 1990s the cycle in output looked more damped than it would otherwise have done, and world inflation did not rise as rapidly as it might have otherwise done, and the world economy appeared stable. The development of major imbalances in patterns of saving and investment was worrying. The imbalances signalled future inflationary problems, and needed dealing with, but there was no immediate policy reaction as inflation and output looked stable. There may have been too much emphasis on stabilising short-term volatility, and we believe we should look at longer-term instabilities as well.

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<sup>22</sup> Barrell *et alii* (1998) and Barrell and Pain (1998) discuss the implications of these capital flows.

Flows into the US still have to match the current account deficit, but the nature of flows appears to have changed in 2002 or so, and they may be more accommodating rather than structural. Bureau of Economic Analysis (BEA) data for 2002 suggest that Foreign Direct Investment (FDI) inflows are noticeably lower than they were in 2001. There have been events that have affected the external view of the veracity and quality of US company accounts, and the reversal of the structural capital flows that has followed from this has been a major factor pushing the dollar down, and the benign impact of its strength may now unwind.

Markets have become more flexible over the last decade, and international financial liberalisation has increased risk pooling and helped individuals smooth consumption. However, the scale of potential capital flows has also increased, and not all of the resulting movements of capital can be seen as driven by genuine fundamentals. As a result, we would judge that wise changes to frameworks and advisable improvements in markets have been augmented by coincidental fortuitous events that helped the world economy to be stable and prosperous in the late 1990s. We would not expect this benign environment to continue.

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## **Jean-Philippe Cotis**

*Chief Economist*

*Organisation for Economic Co-operation and Development (OECD)*

Ray Barrell made a very useful and thorough presentation. I will be much briefer.

I will make a few comments on the description and measurement of cycles and on the analysis of shocks.

Ray Barrell emphasised three points relating to the description of cycles: their amplitude has declined over time; they are hardly asymmetric and have become more synchronised across countries. I will essentially focus on the amplitude and synchronisation of cycles.

The amplitude of cycles has declined over time: this result is perfectly robust. We came to a similar conclusion in our recent work at the OECD. We focused on the cyclical behaviour of the different components of demand, and analysed the mechanisms that underlie the smaller amplitude of cycles. As previously mentioned, the contribution of inventories to output volatility has dropped considerably over time. This results, among other factors, from the move to a service-based economy, improvements in inventory-management techniques and the shift of industrial activities to emerging countries, given that inventory volatility is higher in industry. Consumption has also stabilised, not only because macroeconomic policies have had a more stabilising effect, but also due to households' increased ability to smooth out their consumption probably on account of lower liquidity constraints in a context of financial market liberalisation and easier access to credit. We have also noted that net exports had a counter-cyclical effect – which is relatively obvious – but maybe also public spending. However, saying that public spending may contribute to reducing the amplitude of business cycles does not imply that fiscal policies are counter-cyclical. For the past 15 years, fiscal policies in Europe have been largely pro-cyclical: they have been expansionary during economic booms, but turned out to be almost pro-cyclical in economic downturns, for lack of buffer reserves accumulated during periods of strong growth. The improved functioning of markets may also have contributed to lessening the amplitude of cycles. This move towards lower cyclical amplitudes remains to be confirmed in the light of the recent developments in OECD countries. It is not certain, for example, that the performance of Continental Europe, characterised by a low degree of resilience, still follows such a pattern.

I would now like to raise the question of the methods used for measuring cycles. Ray Barrell uses purely statistical methods to estimate potential output and growth. These methods are certainly very useful for conducting historical analyses. But they can turn out to be very dangerous when making decisions, and in particular with the commonly used Hodrick-Prescott filters. For example, if potential output is calculated in real time by means of these filters, it is necessary to forecast, or estimate from scratch, the next four to five years in order to have a number of full cycles and make accurate calculations. However, when the economy reaches a peak, experts who operate these filters will spontaneously make relatively optimistic growth forecasts for the following four to five years. They will systematically obtain favourable potential growth figures, which may pave the way for lax monetary and fiscal policies. Indeed, big fiscal policy errors are often made during periods of sustained growth. Using a production function instead of a simple statistical method to calculate potential output

poses a number of methodological problems. But the likelihood of making incorrect economic policy decisions is much lower.

Lastly, I would like to make a few comments on shock analysis. Ray Barrell uses a structural macroeconomic model, *i.e.* a large model with a large number of equations. Although it provides some interesting results, I am not convinced that it is the best-suited instrument to measure shocks, and in particular to model cycles. Shocks are identified using the estimated residuals of the model's equations. Of course, these residuals "capture" the shocks, but may also result from an inadequate estimation of coefficients. It is therefore difficult to distinguish to what extent these residuals can be attributed to the model's failures or to the shocks themselves. Another aspect is problematic: these macro-models are, in general, estimated equation by equation. Therefore, when a global shock occurs, part of the information is lost. I believe it is more appropriate to measure cycles using smaller models, in which all behaviours are estimated simultaneously. This can be done using structural VAR models or small macroeconomic models.

Consequently, I am not convinced that these large models are the most appropriate, but I could be wrong.

**Christine Cumming**  
*Executive Vice-President*  
*New York Federal Reserve Bank*

I would first like to express my appreciation to Ray Barrell for writing a paper that very succinctly lays out a wide range of issues for us to discuss. I also want to emphasise that these comments are my own and do not represent those of the Federal Reserve System. I would like to react to a few points raised by Ray Barrell, and in some cases offer a somewhat different interpretation, obviously from a US point of view.

The first point I would like to discuss is the key question which Ray Barrell raises at the outset of his paper. He notes the reduced volatility in GDP and inflation in the 1990s and analyses whether this development is the result of policy, change in the private sector or luck. This issue has also concerned us.

Economists at the New York Fed, James Kahn and Meg Mc Connell, together with Gabriel Pérez-Quiros from the Bank of Spain, have examined the question of why the US economy appears to be more stable. They predominantly ascribed this reduced volatility to a change in private sector behaviour and, in particular, to the inventory behaviour of firms, particularly in the consumer durable sectors. By analysing the time series behaviour of GDP accounts, they established that roughly two thirds of the reduced volatility in US GDP resulted from changed behaviour in inventory-building in the durable sector. They ascribed this change in behaviour to improved information flows. Those of us who live in the United States have tangible evidence of this changed behaviour in our daily lives: the whole retail distribution sector has moved towards much more just-in-time inventory management. That, in turn, spills over into the production processes, which have been adjusted to operate according to just-in-time principles as well.

Now, there is an interesting side to this work as we look at the most recent period. We would ascribe the reduction in volatility to somewhere in the mid-1980s – 1984 according to Kahn *et al.* The two recessions that we have had since then have looked milder in terms of output gaps – as Ray Barrell’s paper also discusses – but in this particular cycle, we have been surprised by sharp reduction in inventories. These reductions appear inconsistent with our explanation for the reduction in output volatility. For example, Kahn *et al.* refer to a long-run trend decline in the inventory-to-sales ratio. They expected, in this particular recession, that the trend decline would continue throughout the recession but, in fact, the ratio dropped well below the expected trend, reflecting an unusually sharp reduction in inventories.

We see a similarly unusual development in the US labour market, when we are experiencing a jobless recovery as we did in the early 1990s. Comparing the development of employment since the trough of the recession with the recovery in 1991, it does appear that employment is weaker in this particular cycle.

The sharp reduction in inventories and the weakness in employment point to the distinct possibility that there is much more endogeneity in firms’ response to the business cycle, *i.e.* firms may be becoming more aggressive in the way they manage through the down part of the cycle. A well-known feature of recessions is that business and financial stressed separate the strong firms from the weak, promote

structural adjustment by many firms and forces exit by the weakest. That is the so-called cleansing nature of recessions. One possibility is that firms are approaching the adjustment process with much greater aggressiveness than in the past. In a very rapidly, structurally changing economy, recessions could be playing a bigger role in promoting that structural adjustment than in the past. Whether firm behaviour has changed and whether that change is stabilising will take additional experience and analysis to determine.

The second point I would like to discuss is Ray Barrell's gloomy assessment of the prospects for adjustment of international imbalances, and in particular the very large and growing US current account deficit.

I note, in particular, that Ray Barrell's paper associates adjustment through a fall in the exchange value of the US dollar with a slowdown in world growth. His assessment raises two important questions: what caused the rise in the US current account deficit and the rise in the dollar, and how can other major countries respond to the dollar's recent fall, if, as Ray Barrell suspects, the fall continues? The key issue in both cases is productivity growth.

Our work at the New York Fed suggests that growth differentials are the main drivers of the current account deficit. One widely-discussed topic in academic and central bank circles is why the United States has been able to grow so robustly in recent years relative to other countries. Productivity growth in the United States has often been pinpointed as the major reason why we have been able to grow rapidly without significant inflationary pressures and faster than most of our G10 trading partners where productivity growth has been slower.

That same productivity growth may have also contributed to the rise in the dollar. Cedric Tille of the New York Fed and Nicholas Stoffels of the Swiss National Bank have looked at how productivity gains, particularly in the traded goods sector relative to the rest of the economy, have strengthened the dollar over the course of the 1990s. Their work suggests that a major reason why capital flowed into the United States was to take advantage of the *ex ante* higher real returns to capital in the United States. We would agree with Ray Barrell that the Asian crisis also promoted "flight-to-liquidity" capital inflows into the United States, giving a further impetus to the dollar's rise and perhaps easing US financial conditions, but would ascribe that factor a secondary role.

On the second question of what options countries have in shaping the adjustment process, I do believe that our fate is in our hands. The model-based simulations in Ray Barrell's paper have the feature of all such simulations: past behaviour extrapolated to the future. Given the intense global competition that has developed in markets for goods and, increasing, for services, an important question is of whether Europe and other parts of the world will need to respond to competitive pressure with the kind of productivity enhancements we have seen in the United States. That competitive pressure and the incentive for productivity-enhancing change would be all the greater in an environment in which other currencies are strengthening *vis-à-vis* the dollar. Throughout the 1990s, and as the dollar strengthened, we heard from US firms that the lack of pricing power spurred improvements both on the product-side, *i.e.* the revenue-side, and on the cost-side in order to make US firms more competitive *vis-à-vis* each other and *vis-à-vis* their foreign competitors.

Lastly, I would like to briefly examine the question of cyclical synchrony and Ray Barrell's very interesting comment "there is more symmetry here than meets the eye". At the present time, as he mentioned, there is a lot of research interest in the asymmetry of cycles.

I was struck by his comment, and by those of the Governor at the beginning of this conference. Both in effect noted that we continue to be surprised *ex post*, more surprised perhaps than we would like to be, at how business cycles unfold. In addition to the anomalous behaviour of inventories and employment I noted, two other surprises deserve mention.

The first surprise is that it now appears that a global investment boom in the late 1990s accounts for a large part of the synchronous behaviour of world economies in this cycle. As we observed the global *financial* boom developing, particularly in high-tech and related stocks in markets around the world, many realised that the financial boom was potentially a bubble. But I think – I speak for myself – that we were much slower to become aware of the extent of the *real investment* bubble developing at the same time. That boom created substantial over-capacity in the high-tech industries, not just in the United States but in many countries.

The second surprise is the way the post-bubble reversal of the financial and real investments boom has rippled through the economy, especially the length of time it has taken to unwind the investment boom's effects. Initially the focus of macroeconomists was on the impact of lower equity prices on consumer wealth and therefore consumption. As the fall in equity prices extended past an initial break in 2000, it appears that a wealth effect developed in the high-tech corporate sector, the result of write-downs of cross-holdings of stock, credit extensions and goodwill from acquisitions. Only in the course of 2002 and early 2003 have been seen the full impact of the reversal of the boom in the non-profit sector, as endowments have declined in value and gifts have slowed, and in the government sector, as tax revenues have declined. Thus, it appears that the repair and recovery phase of the cycle may be proving to be much longer than what we have been used to.

Ray Barrell also alluded to the role of back-and-forth trade in increasing the synchrony of the business. Kei-mu Yi of the New York Fed has researched the growing globalisation of production and its important impact on trade. The evidence so far in this cycle suggests that the back-and-forth trade behaves similarly to trade in general, *i.e.* it does not appear to be a source of additional synchronous behaviour, but the full business cycle is not yet complete. Clearly this is an area of considerable research interest.

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## Pierre-Yves Hénin

Professor

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I would first like to thank Ray Barrell for providing a wide range of new empirical elements to business cycle analysis and policy simulations. Having prepared the main part of my speech on the basis of a provisional and incomplete version of his document, I would like to apologise for not being able to give a proper account of its richness.

My comments shall essentially focus on methodology, like those of Jean-Philippe Cotis, which I will endeavour not to repeat.

My first remark concerns business cycle analysis: Ray Barrell emphasised the techniques for extracting the cyclical component of time series. Downstream of this phase, it is necessary to distinguish between two approaches: first, in the footsteps of Mitchell and Burns of the *National Bureau of Economic Research* (NBER), constructing a historical typology of cycles by dating turning points; second, in line with Lucas (1977) and the real cycle theory, measuring business cycles in terms of second-order moments, relative variances and co-variances. The contributions of these two approaches may not coincide on all points.

Ray Barrell suggests that cycles have become more damped in the last decade. This argument has been extensively discussed, by De Long and Summers (1986) or Zarnowitz (1992) for the United States, by Blackburn and Ravn (1992) for the United Kingdom, in Spain, in Sweden, in France and at a global level by Backus and Kehoe (1992).

As Ray Barrell showed in his paper, this argument is regularly called into question when a major recession arises. On this point, I will refer to a personal experience. Bertrand Candelon and I had set out to answer the following question: “Was the recession of the 1990s exceptional?” (Candelon and Hénin, 1996). In this study, we measured the probability of occurrence of various characteristics of the 1990-1993 recession with regard to the distribution of these characteristics simulated by the “bootstrap” technique. We rejected the assumption that the characteristics in the last business cycle (*i.e.* between 1985 and 1993) were normal in the case of Germany, and for one characteristic in the case of the United Kingdom. Instead, we adopted the alternative hypothesis of exceptional features, focusing on the length of the cycle and not its unusual amplitude.

As regards the factors which contributed to the damping of cycles, a number of them have been examined in the following studies: “Is economic openness stabilising” (Razin and Rose, 1993), “Do flexible exchange rates reduce fluctuations?” (Baxter and Stockman, 1989), “Does the size of the budget stabilise the cycle?” (Gali, 1994). All these factors share the particularity of introducing both a stabilising mechanism and a new source of shocks, such that their overall effect is in theory uncertain. A pertinent approach therefore consists in distinguishing, on the basis of a “stabilisation equation”, between a  $\beta$ -stabilisation test or presence of a damping effect on shocks, and a  $\sigma$ -stabilisation test or net reduction in volatility, which requires that the damping effect exceeds the impact of new shocks.

Bertrand Candelon (1998) showed that these tests confirmed the fact that economic openness was stabilising.

As regards financial shocks, and more particularly asset prices, one important aspect appears to be the discrepancy between the relative effectiveness of monetary policy in damping the effect of financial shocks on consumption, and its much more limited capacity to lessen swings in investment. On this point, I am not convinced that the simulations presented by Ray Barrell with the NiGEM model are very enlightening, because the model's investment function does not integrate certain important mechanisms, such as Tobin's  $q$  or the value of collateral for accessing credit.

Like Jean-Philippe Cotis, I am slightly sceptical about the possibility of assessing shocks using the estimated residuals of the model's equations. Is it really possible to infer that the German and Japanese activity shocks are larger because the standard deviation of the estimation errors of the model's equations is greater?

However, I find this approach, which follows on from the famous article by Frank and Irman Adelman (1959), probably one of the most important in the literature on cycles, interesting. We now know more about the validity conditions of this approach, in terms of identification, exogeneity and predetermination, thanks in particular to Sims' critique (1980). My critique is nevertheless constructive as it results in a solution, which is, despite being harder to implement, feasible. In order to measure activity shocks with a model such as NiGEM, one-step forecasting errors obtained by dynamic simulation should be used instead of the residuals of the estimated equations. This ensures that the shocks are indeed orthogonal with regard to past data, as required by the theoretical representation.

As regards the practical implementation of this approach, unfortunately I have little time and lack competence to comment on the specific case of the United Kingdom with respect to the euro area business cycles. Instead, I would like to refer to a recent development, which could alter the outlook for European cycles. It is well known that international business cycle models are hardly able to reproduce, in the absence of *ad hoc* restrictions on capital mobility, the Feldstein and Horioka paradox of a strong correlation between investment and domestic saving. Recent work by Blanchard and Giavazzi (2002) and Rossini and Zanghieri (2002) has shown that the deeply entrenched current account deficits in the latest EU member countries at the time, *i.e.* Greece and Portugal, may have heralded the end of the Feldstein and Horioka paradox, by decoupling saving and domestic investment. If the same phenomenon occurs and intensifies in the case of the new EU members, we run the risk of experiencing a further decoupling as the euro area expands. Indeed, euro area savings rates shall rise either as a result of the ageing of the population or, *a priori*, pension reforms introducing elements of a funded system or at least a reserve fund, or of a precautionary behaviour should the reforms fail. Owing to labour cost differentials, investment opportunities will be greater in the accession countries. This prospect will alter the international business cycle's characteristics and require acceding countries to conduct active policies, in particular fiscal and exchange rate policies, and, of course, monetary policy coordination.

This prospect seems to illustrate the need to pay particular attention, not only to the "stylised facts", but also to the failures which could challenge these facts and invalidate the policies that tend to rely too much on such statistical regularity.

# **CHANGES IN MARKET STRUCTURES AND BEHAVIOUR PATTERNS**

Alexandre Lamfalussy  
*Chairman*

Patrick Artus

Mervyn King

*According to their order of presentation*

# Asset price volatility and monetary policy

**Patrick Artus**

*Head of Economic Research  
CDC Ixis*

We will examine the causes of short-term asset price volatility and long valuation cycles of these prices. We will compare the reactions that are welcome, in our opinion, by central banks to such changes and how central banks actually react.

## **1. Definitions: short-term volatility and long-term valuation cycles**

Volatility is not always bad. The fact that market prices react to new information improves well-being. As is well known, efficiency is compatible with major volatility. The phrase “excessive volatility” must therefore be used cautiously. Moreover, one has to draw a distinction, when focusing on the effects of monetary policy, between short-term volatility, *i.e.* fluctuations in asset prices over short periods, and the long-term valuation cycles, as the latter give rise to the question of speculative bubbles.

We will examine successively both types of volatility. Excess short-term volatility reduces well-being because of risk aversion among investors – all the more so as the latter use Value-At-Risk (VaR) models: Artus (2002), Leibowitz and Kogelman (1991), Sentana (2001), and Dowd (1999) – and the well-being of borrowers. Lasting valuation excess eventually leads to bubbles bursting and banking crises.

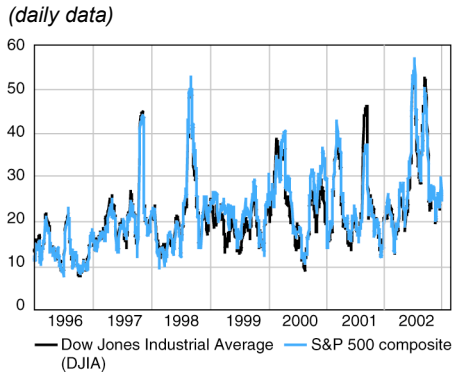
## **2. Short-term volatility**

### **2.1. A widespread rise**

Short-term stock market volatility has been increasing for several years, in the United States as well as Europe (Charts 1a and 1b), this rise in volatility began in 1997, before the beginning of the bubble, and has persisted throughout the slump in stock market prices (Charts 2a and 2b).

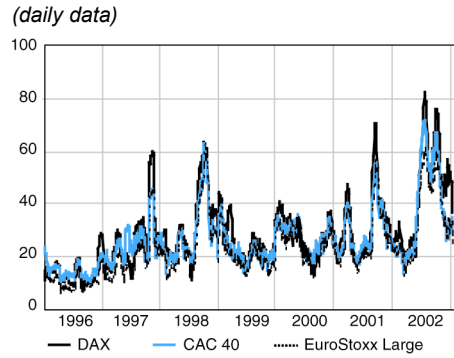
An identical rise has been witnessed in long-term interest rates volatility since the Long Term Capital Management – LTCM – crisis (Chart 3), but there has not been any such increase with regard to exchange rates (Chart 4a) – a fact that runs contrary to the intuitive forecast when inflation is under control, Gali and Monacelli (2000), – except during the banking crisis of 1998 in Japan. The crisis resulted in a pronounced depreciation followed by a subsequent appreciation in the yen (Chart 4b). Credit spreads, lastly, have also displayed far greater variability since the emerging-country crisis of late 1997 (Chart 5).

**Chart 1a**  
**Volatility of stock market prices**



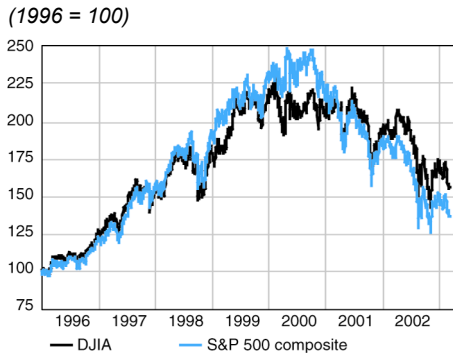
Sources: Datastream, CDC Ixis

**Chart 1b**  
**Volatility of stock market prices**



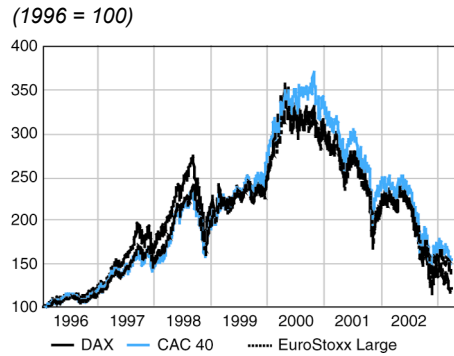
Sources: Datastream, CDC Ixis

**Chart 2a**  
**Stock market prices**



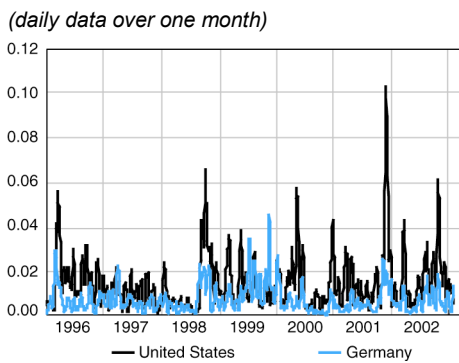
Source: Datastream

**Chart 2b**  
**Stock market prices**



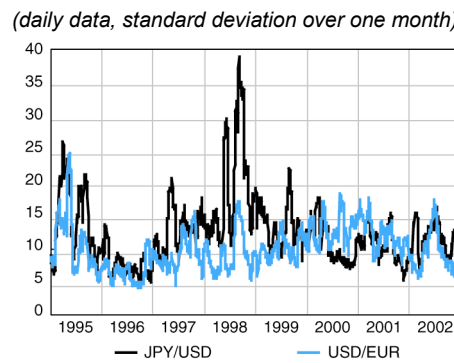
Source: Datastream

**Chart 3**  
**Volatility of long-term interest rate**



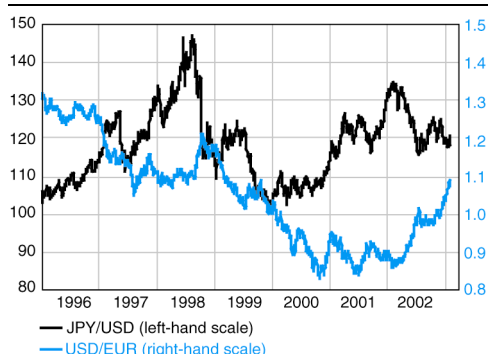
Source: Datastream

**Chart 4a**  
**Volatility of exchange rate over one month**



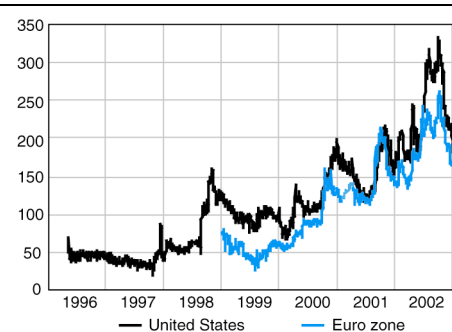
Sources: Datastream, CDC Ixis

Chart 4b  
Exchange rates



Source: Datastream

Chart 5  
BBB/swap spread



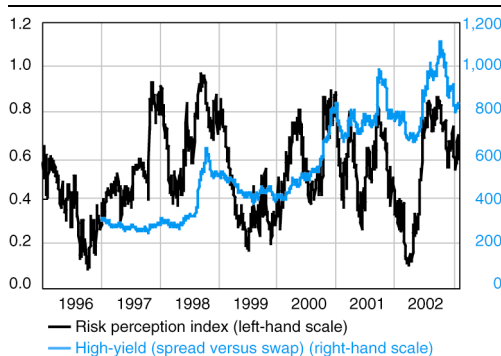
Sources: Lehman Brothers, CDC Ixis calculations

Thus, we can see a steady rise in short-term volatility since the mid-1990s, on all financial markets, with the exception of foreign-exchange market.

## 2.2. Causes of the high short-term volatility and reactions of central banks

A first cause of this rise in volatility lies in the instability of investors' stance with respect to risk, as they have moved very rapidly from phases of strong risk aversion to phases of low risk aversion. Chart 6 shows that investors' risk perception has see-sawed drastically and very fast from 2000 to 2003, with several periods of optimism or pessimism each year. We can also see the strong correlation of risk perception and financial asset prices.

Chart 6  
United States: Risk perception index and high-yield spread



Sources: Datastream, CDC Ixis

Other factors accounting for short-term volatility are more important for central banks:

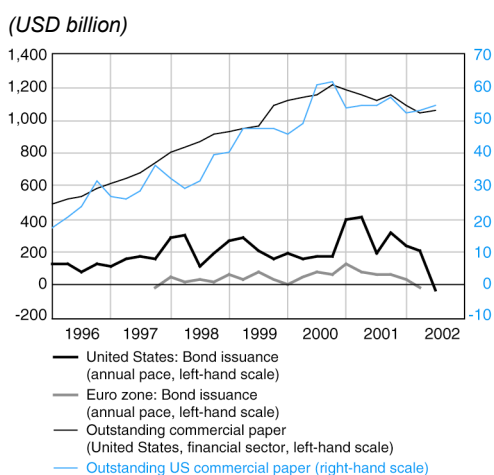
- *the loss of liquidity due to the loss of investor interest in certain markets.* Chart 7a shows the fall in the market of commercial paper in the United States, as well as the disappearance of net bond issuance by non-financial companies in the United States and Europe in 2002, and the similar meltdown in convertible

bond issuance in Europe (Chart 7b). There is a therefore a first form of loss of liquidity due to the disappearance of investor appetite for certain financial assets that leads to the disappearance of the issuance of these assets. The same point also holds in the stock market with the decline in investment funds' appetite (Charts 8a and 8b);

- the *loss of liquidity due to the absence of transactions* on the markets, as can be seen since 2001 on the stock markets (Chart 9);
- *the credit rationing by banks*, for example in France and Germany (Chart 10), due to the woes of banks (noticeable in the credit spreads they must pay (Chart 11), as this drives companies to raise funds on the financial markets.

Chart 7a

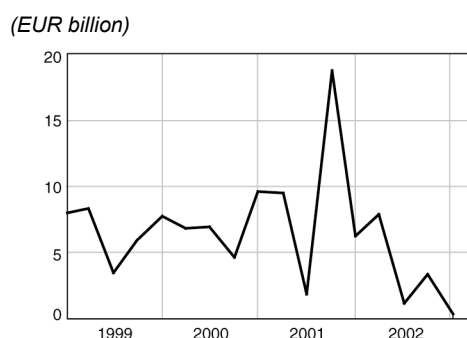
**Net private bond issuance (non-financials) and outstanding commercial paper**



Sources: ECB, Federal Reserve System (Flow of Funds)

Chart 7b

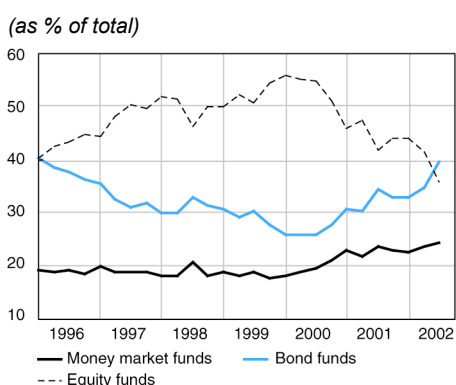
**Euro zone: Amount of convertible bond issuance**



Source: Bondware

Chart 8a

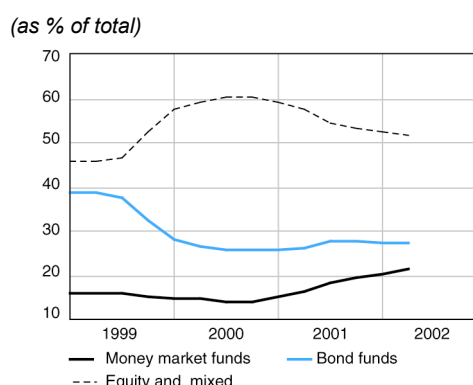
**United States: Mutual fund outstandings**



Source: Federal Reserve System (Flow of Funds)

Chart 8b

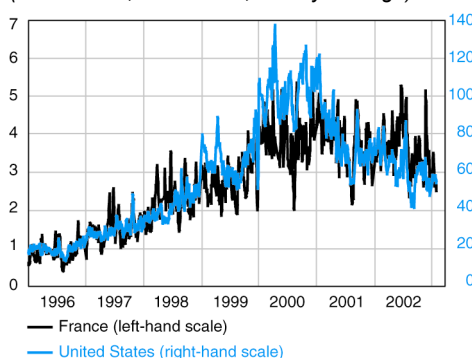
**Euro zone: Mutual fund outstandings**



Source: CDC Ixis calculations (drawing on national sources: France, Germany, Italy and Spain)

**Chart 9**  
**Value of stock market transactions**

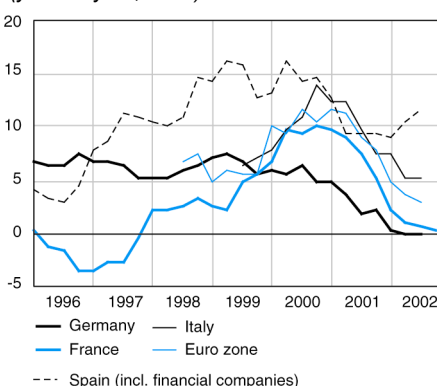
(total market, USD billion, weekly average)



Source: Datastream

**Chart 10**  
**Bank loans to non-financial companies**

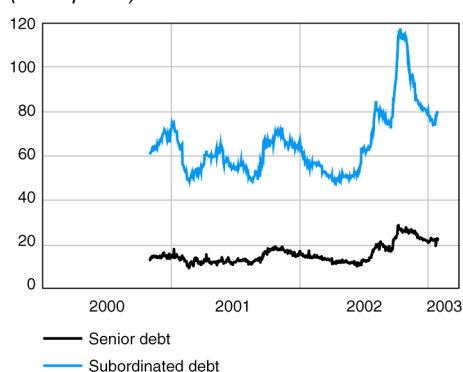
(year on year, as %)



Sources: Deutsche Bundesbank, Bank of France, Bank of Italy, European Central Bank, Bank of Spain

**Chart 11**  
**Credit spreads: Banks**

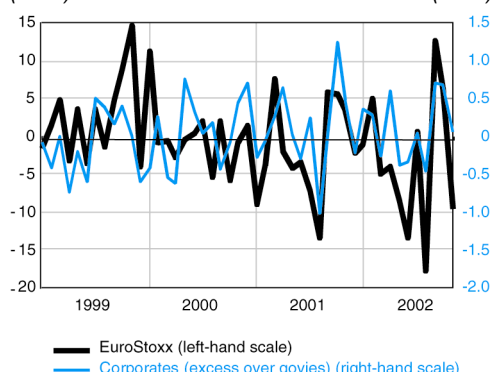
(basis points)



Sources: CDC Securities, Credit Research

**Chart 12**  
**Correlation between markets:**  
**monthly performances EuroStoxx US credit**

(as %)



Source: CDC Ixis

We mentioned above the fact that high volatility is not necessarily a problem; but this can be the case if it results from a loss of liquidity in the financial markets, or the rationing of certain types of financing. It has led to a rise in the average cost of capital for companies, because of the penalty levied on the variability of this cost.

There are furthermore several additional causes of the high volatility:

- the increased correlation between markets, for example between credit spreads and equities (Chart 12) that can be due either to the deterioration in the creditworthiness of borrowers, or the utilisation of models that postulate this correlation;
- the marking to market in the near term of assets by financial intermediaries, which will drive them to switch to greater variability in the supply of their financing to ensure steadiness in their results;



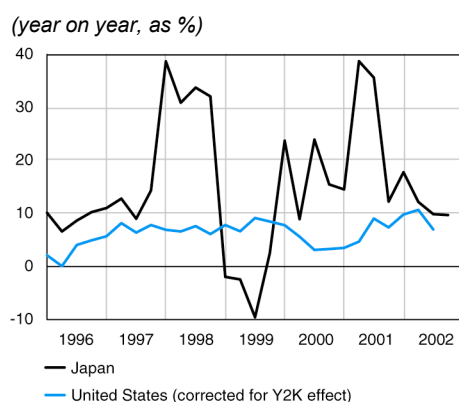
- the interactions between spot markets and derivatives markets (credit derivatives for example); if the development of derivatives markets attracts new traders with low risk aversion, market variability is increased;
- the change in the nature of traders on the markets (increased weight of arbitrageurs, hedge funds, etc.);
- concentration of risks (sellers of protection on the market of credit derivatives, buyers of equity tranches of Asset-backed Securities – ABSs, etc.) among a small number of investors and financial intermediaries (insurers).

What can central banks do?

If the problem consists in a shortage of market liquidity due to the lack of buyers of financial assets, central banks need to inject liquidity that is partly used to increase demand for assets, and this also implies a cut in short-term interest rates. This is a specific role of a lender of last resort focused on the markets and not banks: see a discussion of the efficiency of the Eurosystem as a lender of last resort in Schoemaker (2000) or Goodhart (2000, 2001).

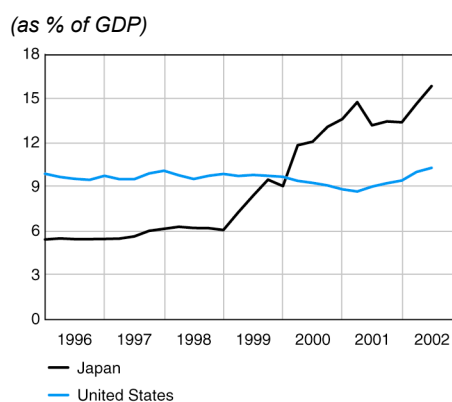
Chart 13 shows the growth of the monetary base in the United States and Japan; however, in both countries and foremost especially in Japan the liquidity thus created is increasingly used to buy government securities (without any default risk and without any consumption of capital) rather than other financial assets (Charts 14a and 14b).

**Chart 13**  
**Central bank's total assets**



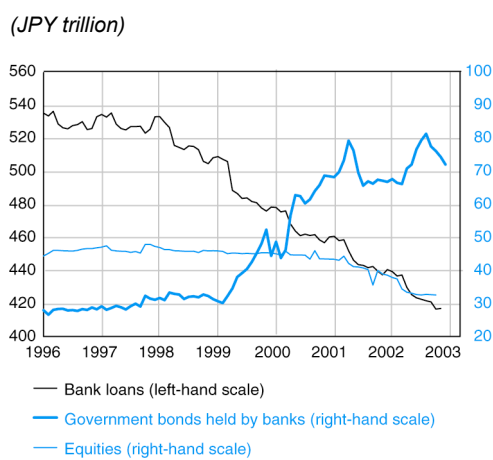
Source: Datastream

**Chart 14a**  
**Government bonds held by banks**



Sources: Datastream, Federal Reserve System (Flow of Funds)

Chart 14b  
Japan: Bank's assets

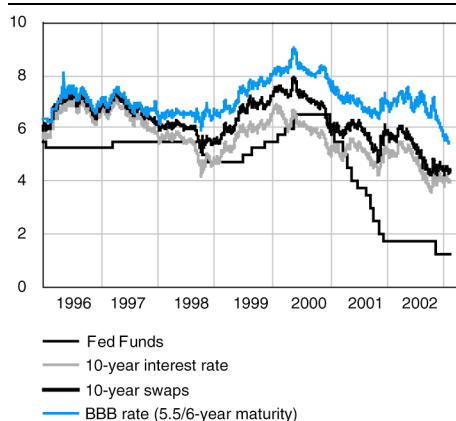


Source: Bank of Japan

Cutting intervention rates also entails the favourable consequence of curtailing the rise in the cost of capital for companies, in a period where risk *premia* are high and variable.

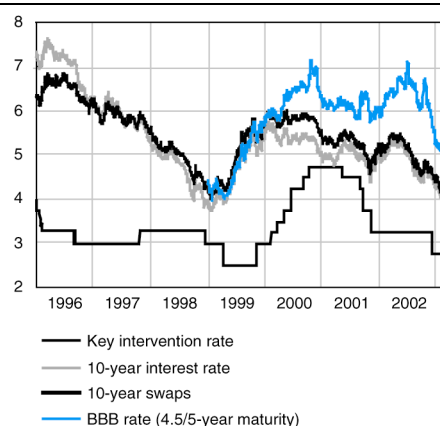
Charts 15a and 15b show that despite the widening in credit spreads, the interest rates BBB rated companies face in the United States and the euro zone have remained low, and have declined since 2000, thanks to the cuts in short-term interest rates.

Chart 15a  
United States: Interest rates



Source: Datastream

Chart 15b  
Euro zone: Interest rates



Source: Datastream

Short-term volatility could also be reduced by several regulatory or prudential measures:

- lowering the frequency with which company results are published, as the reporting of quarterly results increases market volatility and implies that the attention of managers is focused exclusively on financial communication;

- *supervising the behaviour of rating agencies*; if the practice among these agencies of using market data to determine the rating develops, there will be destabilising chains of events: a decline in prices or a rise in spreads, for a borrower, can lack any fundamental reason; but will give rise to a downgrading and a further deterioration in financial conditions for said borrower;
- *limiting the marking to market* to assets that are not held in the long term; applying the same IAS criteria with respect to this point would certainly be destabilising.

Nevertheless, all in all, central banks have reacted well to the “drying-up” in certain markets by increasing liquidity.

### **3. Long-term valuation cycles**

We will now move from the field of short-term volatility, and we will look at reactions in monetary policy to long-term fluctuations in the valuation of financial assets.

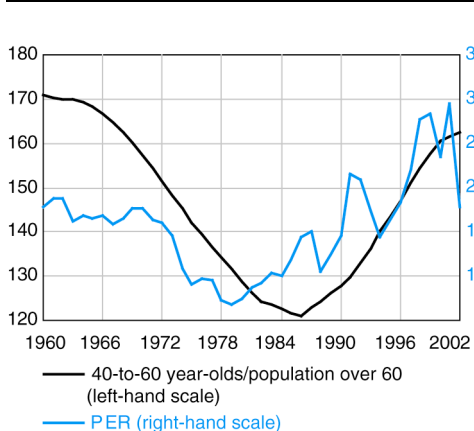
#### **3.1. The nature of fluctuations in valuation**

Certain are normal, for example when they result from demographic trends. As is well known, when there is a high proportion of pensioners in relation to the population in age to save – aged forty to sixty –, there is excess supply of financial assets, notably equities, in the countries where the weight of the funded component is large in retirement systems, as a result the valuation of these assets declines. Such a development is well illustrated in the United States, with regard to equities (Chart 16).

Other fluctuations in asset prices clearly resemble bubbles: the rise in stock market and property prices in Japan in the late 1980s (Chart 17); the rise in stock market prices in the United States and Europe in the late 1990s with a stock market value-to-book value of companies ratio close to 2 (Charts 18a and 18b); the rise in property prices since 1997-1998 in the United Kingdom (Chart 19), as the halving of the rents-to-property prices ratio cannot be explained by the decline in interest rates.

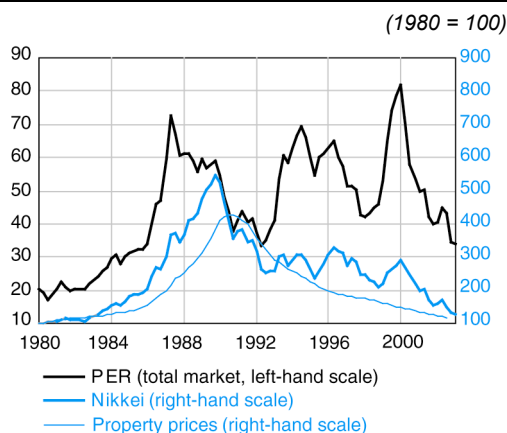
Not all rises in asset prices are bubbles; in the United States and Spain (Charts 20a and 20b), the rise in residential property prices is very well explained by the decline in interest rates.

**Chart 16**  
**United States: Demographic rate and PER**



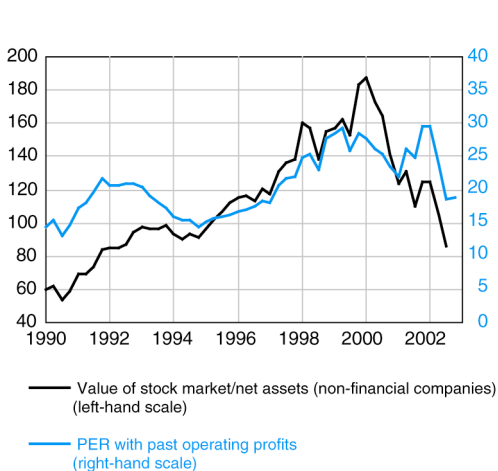
Sources: Standard & Poor's, Data resources Inc

**Chart 17**  
**Japan: Stock market prices, PER and property prices**



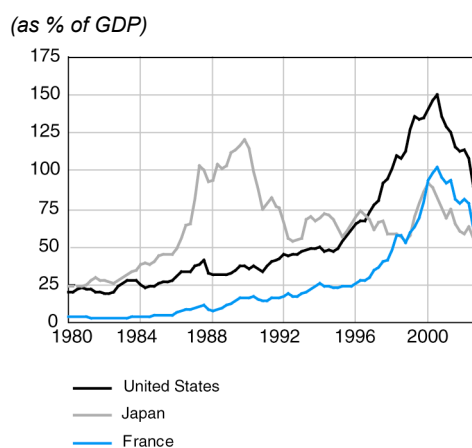
Source: Datastream

**Chart 18a**  
**United States: Tobin's q and PER**



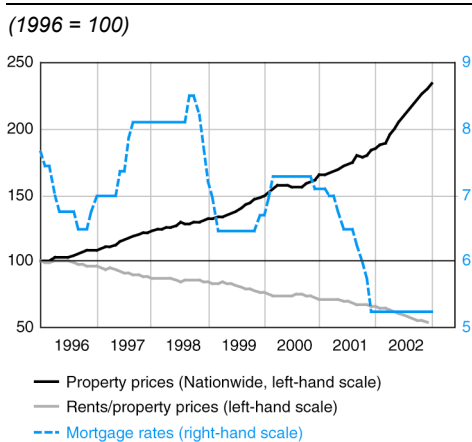
Sources: Federal Reserve System (Flow of Funds), Standard & Poor's

**Chart 18b**  
**Stock market capitalisation**



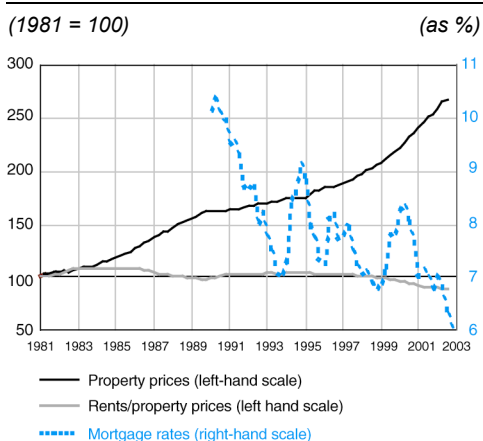
Source: Datastream

**Chart 19**  
**United Kingdom: Property prices, rents and mortgage rates**

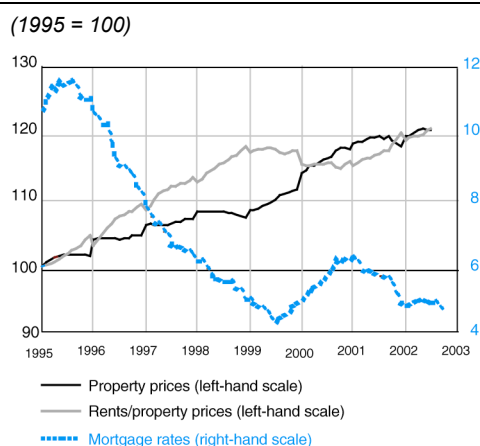


Source: Datastream

**Chart 20a**  
**United States: Property prices, rents and mortgage rates**



**Chart 20b**  
**Spain: Property prices, rents and mortgage rates**



Sources: Datastream, Office of Federal Housing Enterprise Oversight (OFHEO) Source: Datastream

### 3.2. The causes of “abnormal” asset valuation cycles

To explain bubbles in asset prices, *i.e.* abnormal rises in their valuation that persist over time, we can draw on:

- *problems related to information and the deficiency of analyses*

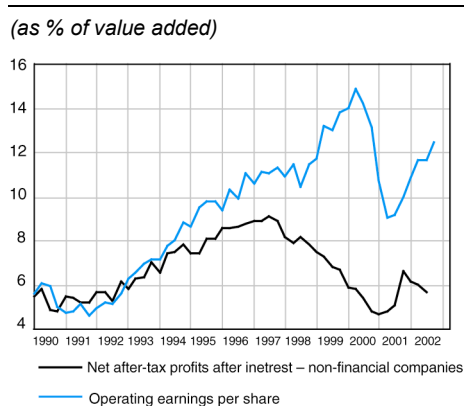
Between 1997 and 2000 the intrinsic profitability of US companies plummeted (was halved), whereas the earnings per share reported by these companies surged (Chart 21).

Investors and analysts, drawing on the data based on results published by companies, therefore had a totally skewed vision of their profitability, which would subsequently only be revealed by the national accounts.

Earnings per share (apart from accounting manipulations) could be boosted by capital gains on disposal, the rise in debt leverage, and share buybacks (Chart 22).

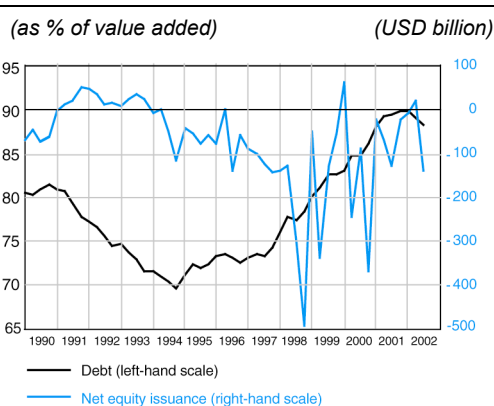
One can also highlight the incompetence of analysts, as they were unable to assess the macroeconomic pertinence of the valuations obtained at a microeconomic level. A 30% excess in returns from 1995 to 1999 should have been seen as worrisome (Chart 23), as well as the fact that the inverse of the PER was far lower than the long-term interest rate, and the fact that Return on equities (ROE) was 13 percentage points higher than the long-term interest rate (Chart 24).

**Chart 21**  
**United States: Corporate earnings and earnings per share**



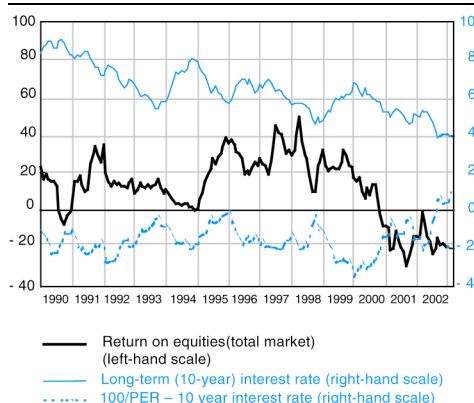
Source: Bureau of Economic Analysis (BEA)

**Chart 22**  
**United States: Non-financial and non-farm companies' debt and net equity issuance**



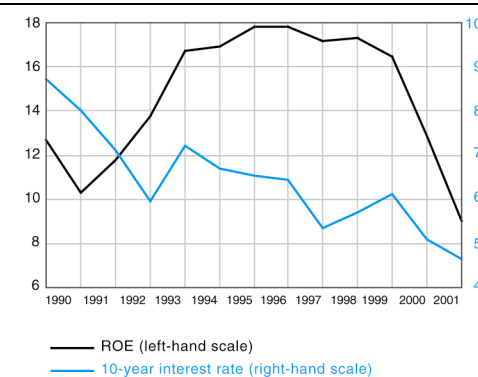
Source: FoF

**Chart 23**  
**United States: Return on equities and 10-year interest rate**



Source: Datastream

**Chart 24**  
**United States: ROE and 10-year interest rate**



Source: Datastream

Dubious valuation techniques were used: for example, real options were drawn upon to increase the corporate valuations derived from the conventional techniques (Discounted Cash Flow model). This explains why the value of Mergers & Acquisitions (M&As) soared in the United States (Table 1), and this is currently the cause of most capital losses in companies' assets.

Table 1  
Amount of M&As in the United States

	(USD billion)
1980	44.3
1981	82.6
1982	53.8
1983	73.1
1984	122.2
1985	179.8
1986	173.1
1987	163.7
1988	246.9
1989	221.1
1990	108.2
1991	71.2
1992	96.7
1993	176.4
1994	226.7
1995	356.0
1996	495.0
1997	657.1
1998	1992.9
1999	1425.8
2000	1740.0
2001	819.0
2002	412.9

Source: Thomson Financial

– *The industrial economy of asset management*

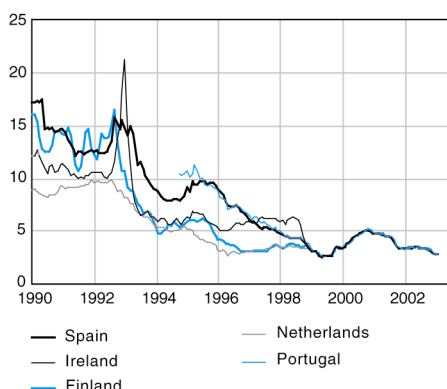
The goal of asset managers diverges from that pursued by individual savers: to maximise their income, they want to maximise their market share; they are hurt when their performance is lower than the sector's average performance, they are assessed on their short-term performance. This forces them to comply with herd behaviour, because they cannot run the risk of making different investment choices from those made by other asset managers, even if these choices, in the long term, prove to be erroneous.

The herd behaviour that increases volatility is therefore a consequence of the organisation of the asset management market and the structure of incentives on this market.

– *The very stimulatory monetary policies implemented even when there are bubbles:*

In all Continental European countries where property prices rose rapidly in the second half of the 1990s, monetary policy became very expansionary (Chart 25), and this was naturally due to the entry into the EMU. Most often, in these countries, growth in credits was very rapid (Chart 26). But the question we are dealing with here consists in the euro zone's heterogeneity, which will be studied below.

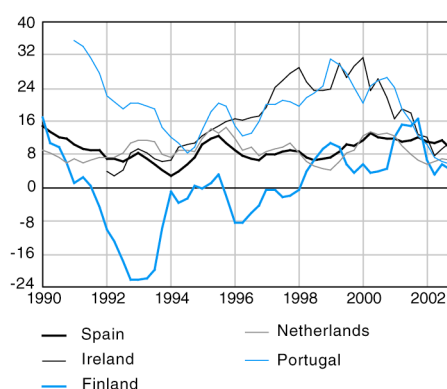
Chart 25  
Nominal 3-month interest rate



Source: Datastream

Chart 26  
Domestic credit

(year on year, as %)



Source: IMF

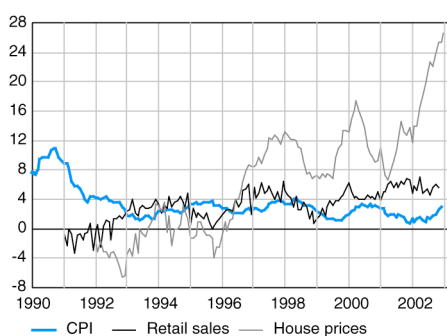
In the United Kingdom, since 1996, the bubble in property prices (Chart 27) has not given rise to a reaction in monetary policy, although it is a threat for banks, and fuels household spending (retail sales).

### 3.3. The stance central banks should have with respect to long-term asset price cycles

Bubbles in asset prices are extremely dangerous: their bursting not only leads to a negative wealth effect but also a borrowers' solvency crisis and even a banking crisis. This was clearly seen in the early 1990s in the Nordic countries (Finland for example, Chart 28) and Japan.

Chart 27  
United kingdom: House prices, inflation and retail sales

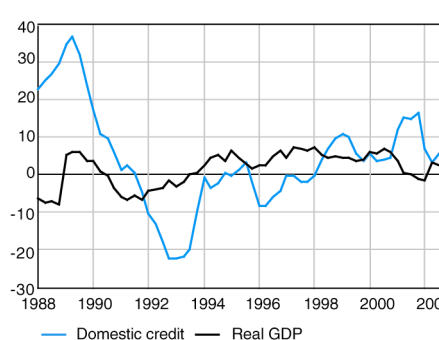
(year on year, as %)



Source: Datastream

Chart 28  
Finland: Domestic credit and GDP growth

(year on year, as %)



Sources: Datastream, IMF

It would therefore be a positive development if central banks or market supervisory authorities prevented bubbles in asset prices, either by changing over to more restrictive monetary policies, or *via* the prudential or information-related measures suggested above: lengthening the horizon at which asset managers are assessed, publication of critical analyses about the level of asset valuation. However, central banks are often very reluctant to intervene on asset prices.



### 3.4. The reasons why central banks are reluctant to control asset prices

It is certain that fluctuations in asset prices have major effects on the economic equilibrium (see the survey carried out by Mishkin, 2001). Trends in stock market prices lead to changes in investment decisions (*via* Tobin's  $q$ ); changes in the credit supply *via* their impact on the credit channel, by changing borrowers' balance sheets, and the value of mortgage collaterals they offer – Bernanke and Gertler (1995); Cecchetti (1995); Hubbard (1995, 2001); and Bernanke, Gertler and Gilchrist (1999) – by affecting household consumption *via* wealth effects (Lettau, Ludvigson and Steindel, 2001). Property prices have a particularly important impact, since the value of property assets often provides the basis of the mortgage collateral for various consumer credits – Kashyap and Stein (1994); Gertler and Gilchrist (1994); and Bernanke and Lown (1991).

The literature also often emphasises the fact that monetary policy should react to trends in asset prices, notably to prevent the appearance of bubbles, as they are destabilising for the banking sector – for example Cecchetti, Genburg, Lipsky and Wadhvani (1999); Goodhart (1996) – or because they are leading inflation and demand indicators – Smets (1997).

However, central banks, in practice, hardly react to asset prices, for various reasons:

- the link between asset prices and inflation can be unstable, as it depends notably on the nature of shocks – Freedman (1994), Artus (1998);
- they believe they do not know how to detect bubbles better than the markets; what is their comparative advantage in this field – Bernanke and Gertler (1999), Bernanke (2002);
- risk of a moral hazard, as the financial markets would also expect prices to be underpinned;
- they are dubious about the possibility of controlling asset prices: how can monetary policy influence them?
- certain authors – Fuhrer and Moore (1992), Woodford (1994) – emphasise the fact that if rises in asset prices lead to markets anticipating a rate hike, they have no impact on demand.

While the first three arguments are acceptable, by contrast the fourth – ability to control asset prices – is hardly convincing.

Although increasing liquidity – the credit supply –, in modern economies, affects asset prices more than prices of goods, asset prices are the most influenced by monetary policy. The greater inertia in the prices of goods results from the increase in competition, both domestic and international, and the greater flexibility of supply:

- other authors – Bernanke, Laubach, Mishkin and Posen (1999), Mishkin (1999) and Artus (2002) – emphasise the risk entailed by multiplying the targets of central banks. Transparency would demand focusing exclusively on the inflation target;

- having an intermediate target of monetary policy that is difficult to interpret ( $M3$  today, but maybe also asset prices) can lead to a loss in credibility – Atkeson and Kehoe (2001), Calvo and Vegh (1999), Faust and Svensson (2001), Herrendorf (1999), and Persson and Tabellini (1994).

Let us try to provide a few answers to these difficult problems and a few suggestions.

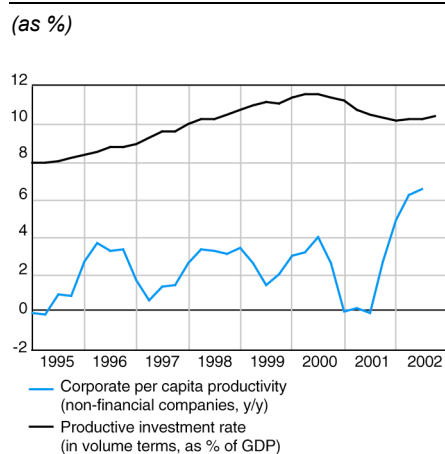
### 3.5. How can central banks influence asset prices without any danger arising?

To circumvent the problem of how difficult detecting bubbles or undervaluations of asset prices can be, in our opinion, firstly central banks must not seek to fine-tune asset prices, but react only to major deviations in relation to fundamental levels (very high PER, sharp rise in the property prices-to-rent ratio).

Even though productivity gains did increase to some extent in the United States in the second half of the 1990s (Chart 29), they could not justify the surge in market valuation.

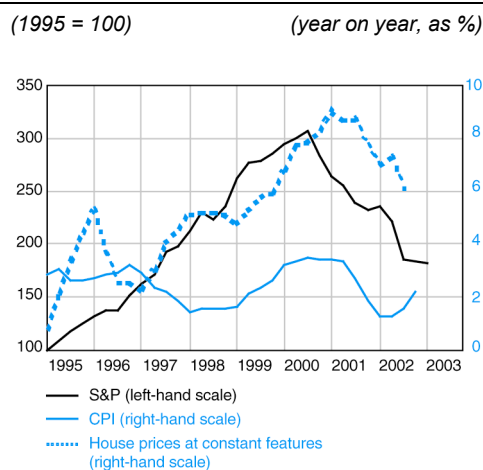
- acting *via* intervention rates is often deemed tricky because there can be a conflict between targets: *e.g.* asset prices can increase rapidly, not prices of goods, as in the United States between 1997 and 2000 (Chart 30).

Chart 29  
United States: Per capita productivity and productive investment



Source: Bureau of Labor Statistics (BLS)

Chart 30  
United States: House prices, inflation and stock market prices



Sources: Datastream, OFHEO

But, in modern economies, the first impact of financial imbalances (excess credit) is to lift asset prices, which are far more flexible than prices of goods. The latter are stabilised by the increase in competition, both domestic and international, and by productivity gains. It is not even certain that asset prices are leading indicators of prices of goods, as is shown by the example of the United Kingdom. If one believes that financial imbalances result in excessive rises in asset prices and prices of goods have become far more stable than asset prices, it

is legitimate to use asset prices as an ultimate target, and not as an intermediate target, of monetary policy.

- a more specific feature of the euro zone is its heterogeneity. Many studies illustrate the differences<sup>1</sup> between countries with regard to transmission mechanisms in monetary policy in the euro zone.

Whatever the causes of the zone's heterogeneity, it leads to substantial divergences between EMU countries with regard to trends in credits (see Chart 31) and residential property prices (see Chart 32). Certainly, the fact that the nature of loans, between fixed and floating rates, varies a lot from one country to the next plays an important role: mostly fixed long-term interest rates in Germany, France, and the Netherlands; primarily short-term floating interest rates in Portugal, Finland and Spain (see Table 2).

Table 2

	Mortgage type (% of total)			
	Variable rate	Fixed rate	Typical term (years)	Usual maximum loan-to-value ratio (%)
Portugal	100	0	20	80
Finland	90	10	10	80
Spain	80	20	15-20	80
Germany	30	70	25-30	80
Italy	40	60	15	50
France	25	75	15	80
Netherlands	10	90	30	75

Chart 31  
Bank loans to households

(year on year, as %)

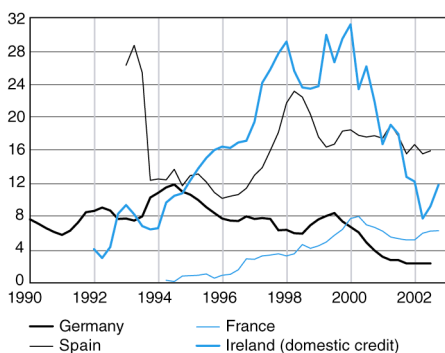
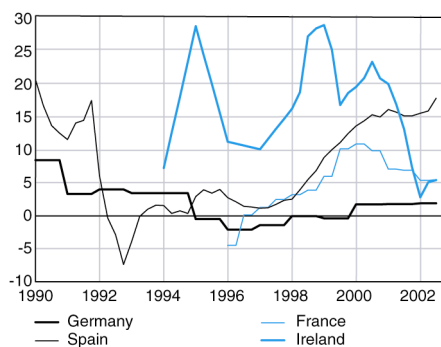


Chart 32  
Property prices

(year on year, as %)



Sources: Datastream, IMF, Banque de France, Bundesbank

Source: Datastream

<sup>1</sup> These differences might be due to those that affect banking concentration (in the countries where the banking sector is concentrated, the presence of oligopoly rents dampens the effect of intervention rates on interest rates on credits); the size, capitalisation and liquidity of banks; the nature of credits (fixed or floating rates); the magnitude of mortgage collaterals, the structure of corporate financing between bank loans and intermediated financing. See for example: Barran, Coudert and Mojon (1997); Favero, Giavazzi and Flabbi (1999); Kashyap and Stein (2000); Kishan and Opiela (2000); De Bondt (1999); Cotarelli and Kourelis (1994); Mojon (2000); Borio (1990); Cecchetti (1999); Clements, Kontolemis and Levy (1999); Ehrmann, Gambacorta, Martinez, Pagès, Sevestre and Worms (2001); see also the November 2002 special issue of the *Journal of Banking and Finance*.

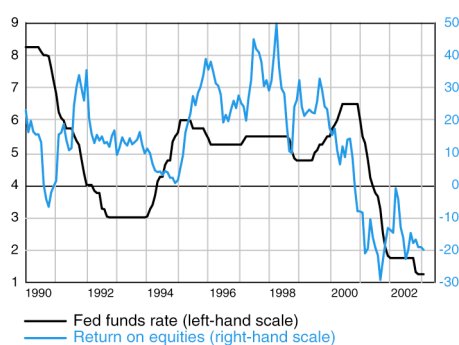
The decline in short-term interest rates has therefore stimulated credit and asset prices in the second group of countries, not in the first.

To answer the problem of this heterogeneity (and also the problem of a conflict of targets mentioned above), we believe one has to increase the number of degrees of freedom and monetary policy instruments. Excessively robust growth in the distribution of mortgage loans in Spain cannot be corrected by a rise in the euro zone's short-term interest rate. It could be by implementing, for instance, statutory reserves on mortgage loans only in Spain. The same type of additional instrument in monetary policy could be used in the countries where trends in asset prices diverge sharply from those in prices of goods or real activity;

- quite often, the monetary authorities give up on fighting excessive rises in asset prices because this would imply substantial rises in short-term interest rates, given the huge gap between the return on assets and short-term interest rates (Chart 33).

Chart 33  
**United States: Return on equities  
 and Fed Funds rate**

(year on year, as %)



Source : Datastream

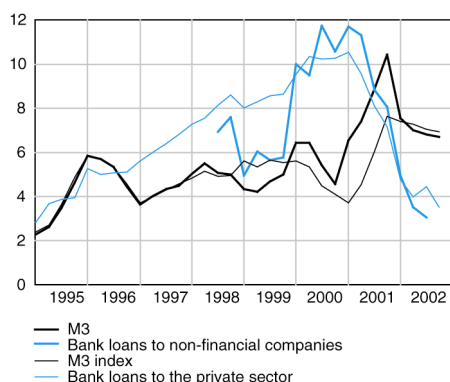
Fighting bubbles in asset prices must therefore occur at an early stage in their rise, because subsequently the monetary tightening would have to be too drastic. This poses the question of how to detect bubbles at the beginning of their development.

We believe one solution would be to use bank loans as an intermediate target.

In the euro zone as well as the United States, bank loans accelerated before bubbles began to rise: in 1997 in the euro zone (Chart 34) and 1998 in the United States (Chart 35). Clearly, trends in *M3* do not give any leading information about trends in asset prices.

Chart 34  
Euro zone: Bank loans and M3

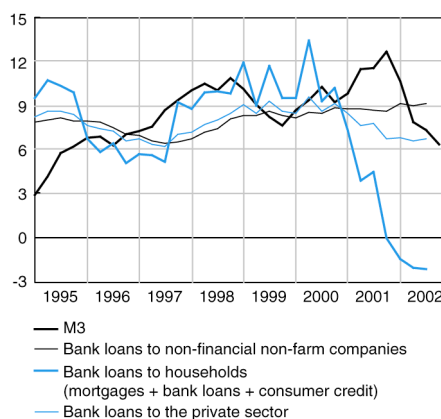
(year on year, as %)



Sources : Datastream, ECB

Chart 35  
United States: Bank loans and M3

(year on year, as %)



Sources: Datastream, Federal Reserve System  
(Flow of Funds)

All in all, in our opinion, asset prices need to be included in the ultimate target of central banks and we believe this could be done without any major difficulty:

- if there is no attempt to fine-tune asset prices;
- if the number of monetary policy instruments is increased;
- if growth in bank loans is used as an intermediate target.

## Summary: towards a more pro-active and less orthodox stance of central banks?

In response to short-term volatility, if it is excessive, we have suggested increasing liquidity in the financial markets, cutting the intervention rate to offset the negative effect of the volatility on investment, as well as several prudential measures concerning asset managers, rating agencies, and also monitoring the accumulation of risky assets (CDS, ABS) in the hands of a small number of financial market traders. In response to the long-term valuation cycles, the bubbles in asset prices, we have suggested including the stability of these prices as the ultimate target of central banks and several approaches to ensure such a change is possible.

But there can be undeniable problems with the conventional monetary policy instruments: the injections of liquidity by central banks cannot head into the financial markets where activity has plummeted, hence volatility, as is shown by the example of Japan; hikes in short-term interest rates can be inefficient to prick bubbles if they are not carried out very early on.

One can then imagine less orthodox monetary policies, for example the direct intervention of central banks on the markets of risky assets.

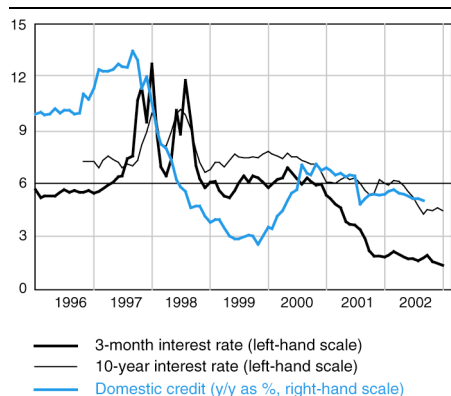
In the recent past, this type of intervention has been carried out by the central bank of Hong Kong.

On 14 August 1998, the central bank – Hong Kong Monetary Authority (HKMA) – bought an estimated amount of USD 400 million of equities (driving the stock market up 8.5% on the very same day), and this policy continued for a total amount of purchases of nearly USD 17 billion. Selling these equities, from late 1999 to 2002, provided USD 19 billion profits for the monetary authorities of Hong Kong.

These interventions occurred as the currency crisis and the financial crisis were raging, with a rise in interest rates and a contraction in lending (Chart 34a). They led to a durable recovery in the stock market (Chart 34b) and definitely coincided with the upturn in the economy (Charts 35a and 35b).

Chart 34a

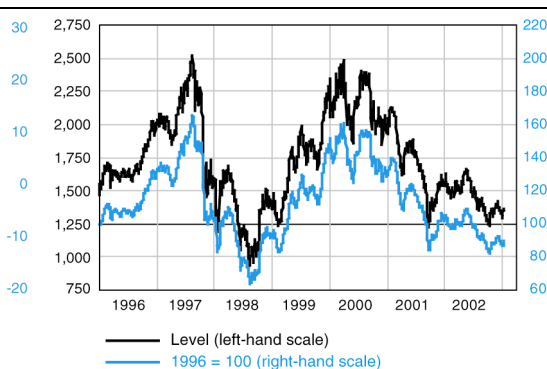
Hong Kong: Bank credit and interest rates



Source : Datastream

Chart 34b

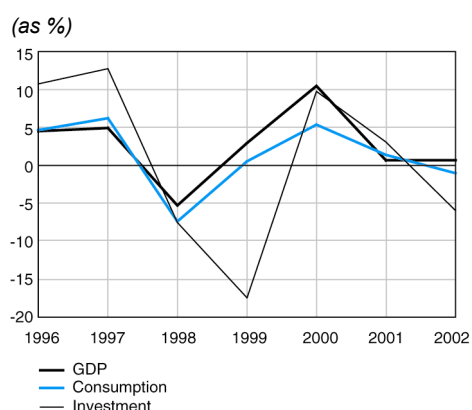
Hong Kong: Stock market prices



Source: Datastream

Chart 35a

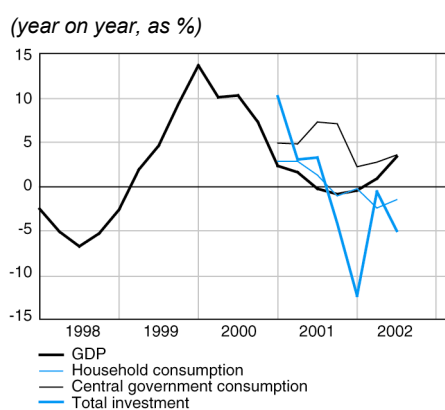
Hong Kong: GDP, consumption and investment in volume terms



Source: Economist Intelligence Unit (EIU)

Chart 35b

Hong Kong: GDP, consumption and investment in volume terms



Source: Datastream

What are the risks entailed by purchases of assets by the central bank?

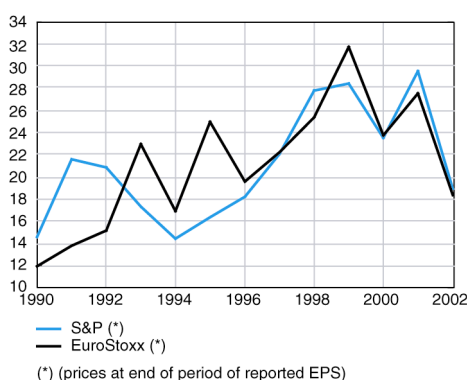
- *moral hazard risk*. If investors know that the central bank will buy when prices decline, they will accept far greater risk-taking since the central bank gives a *de facto* guarantee of prices. Such a risk was discussed in the 1990s with regard to

the Federal Reserve, about a different type of move, since it was argued that it would have to cut interest rates in the event of a stock market dip;

- *asymmetry risk*. The central bank should not buy assets only when their prices are too low and not sell assets only when their prices are too high. The fight against bubbles goes hand in hand with the fight against deflation;
- *risk of distorting prices*. If the central bank does not know how to measure the “normal” price of a financial asset, it will intervene and make this price move even when it is close to its fundamental price, therefore it will uselessly disrupt the markets. Do central banks know how to recognise abnormal asset prices? This is more difficult probably with respect to equities than for property, as was shown by the episode of the bubble in the stock market in the late 1990s when the rise in PER (Chart 36) was sometimes deemed reasonable. This is undoubtedly the case in extreme situations, such as bubbles (property in the late 1980s, today in the United Kingdom and Spain), deflation (German or Japanese property market in the 1990s) (Charts 37a and 37b). Undoubtedly, this is more difficult in more normal situations.
- *a related risk, i.e. a loss for the central bank*, if it mistakenly buys assets, at a still higher price than the fundamental price.

The risks mentioned above do exist. Purchases of equities or property assets can lead to the appearance of a moral hazard, and also entail the danger of a misguided estimate of fundamental prices. But we are not saying that these non-orthodox methods should be used continuously; in the event of a crisis, on the other hand, they are useful to prevent the emergence of bank defaults, a deflationary dynamics, a crisis in borrowers’ solvency and greater volatility in asset prices.

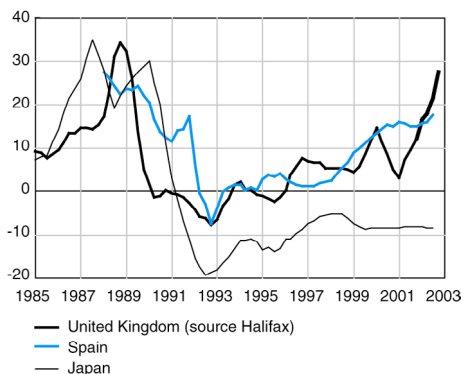
Chart 36  
PER



Sources: Datastream, S&P, Jacques Chahine F

Chart 37a  
Property prices

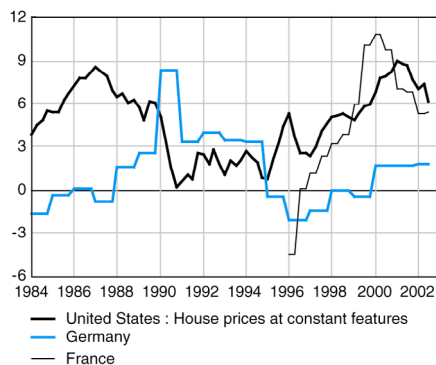
(year on year, as %)



Sources: Datastream, DRI

Chart 37b  
Property prices

(Y/Y as %)



Sources: Datastream, DRI

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**Mervyn King**  
*Deputy Governor*  
*Bank of England*

As ever with Patrick Artus, his paper is very stimulating. I am going to try first to summarise some of its key propositions, and then to talk about high frequency volatility on the one hand and low frequency volatility on the other.

This is not an easy paper to summarise, as you can gather. In fact, it reminds me of some of the old fashioned newspapers that used to boast proudly on the front page “all human life is there”. There are an enormous number of ideas in this paper. But in essence, I think Patrick Artus is arguing that there is good volatility and bad volatility in financial markets. Of course, if you are a market fundamentalist, and believe in efficient markets, volatility is always good; it reflects fundamentals. If you dislike markets, volatility is bad; it represents herd behaviour or something that we should not accept as representing fundamental views. Deep down, my own theory of volatility is captured by the phrase “the good, the bad and the ugly”, because volatility in practice is sometimes good and sometimes bad. It is just very hard to tell, but what we do know is that it causes problems. So, for central bankers, volatility is ugly and I think some of the questions that were raised, not only by Patrick Artus but in the first session, demonstrated the potential difficulties confronting monetary policy in the future, because of volatility.

As I see it, there are two main theses in this paper: the first concerns high frequency volatility and the second low frequency volatility. On high frequency volatility, Patrick Artus documents, for the very recent past, a rise, and then suggests a range of microeconomic and regulatory responses as a cure: for example, changing the reporting frequency of company results and regulating credit rating agencies. He also puts forward the view that, because recent excess volatility might be the result of lower levels of liquidity, central banks could cure this by loosening monetary policy.

The second thesis concerns low frequency volatility. Here I am going to talk primarily about the stock market and make some references to the housing market. Patrick Artus talks about the problems of investors failing to evaluate accounts properly; the information was not reliable. He calls low volatility “the industrial economy of asset management”, the herd behaviour of people who work for fund managers; monetary policy, when it was clear there was a bubble, should have been tighter. Immediately, you can see the ugly nature of this because one of the possible cures for high frequency volatility is to have looser monetary policy to create more liquidity. And yet, to confront low frequency volatility, one of the recent suggestions was tighter monetary policy. So, it certainly is not easy. But Patrick Artus suggests that asset prices should be part of the ultimate goals of a central bank, not just an information variable, and that is something which, up until now, central banks have been very reluctant to do. Indeed, Patrick Artus goes further and suggests direct intervention into asset markets, as he has just described by referring to Hong Kong intervening in equity markets – if necessary, country-specific reserve requirements on mortgages to influence house prices. In order to discuss this, I am going to divide the other two parts of my remarks into comments on high frequency and low frequency volatility respectively.

Let me start with high frequency. Patrick Artus presents some charts of volatility of daily share prices (and other asset prices too, but let me just stick to share prices) and says that these measures have risen since 1997 and have not fallen back, despite the fact that the level of share prices has fallen in the past two years. I am not sure if these charts are particularly compelling, but I do think that you can perhaps provide stronger evidence for Patrick Artus's proposition by looking at really high frequency volatility. If you look at volatility within a day, at hourly changes in share prices, if you plot it for the last ten years or more, let's say for the last fifteen, what you find for *intra* day volatility both in the US and the UK is that, from the mid-1980s right up until about 1997, with one exception, volatility was pretty flat. The one exception was the 1987 stock market crash, where almost as a statistical phenomenon, the measure of volatility spikes up but very quickly comes back down again. So, apart from just the numerical effect of the large stock market crash in 1987 and the subsequent recovery, there is not actually much change in very high frequency volatility. But in the past five years, that very high frequency volatility has gone up; moreover it has become a bit more persistent and, if anything, more volatile. So, the volatility of volatility – if you will forgive the expression – has risen.

That raises the question at the high frequency level as to why that is the case and it suggests that maybe there is less arbitrage activity, at least in stock markets. And perhaps some of the consequences of the 1997-1998 financial market disturbances and the subsequent withdrawal of hedge funds from those markets, at least on a larger scale, have affected the degree of arbitrage activity and hence very high frequency volatility. I put it as a question, and I do not know the answer to it. So, at that level, there is some evidence to support Patrick Artus's proposition. But if you look at just slightly less high frequency volatility, it is much less obvious to me that there has been a structural shift.

Let us look at monthly volatility now – returns on the stock market on a month before – and let us go back a century. If you plot volatility from 1900 onwards and look at monthly volatility, again both in the US and the UK – these are the ones I have examined – it is actually very hard to argue that there is any distinguishable rise in volatility as a trend in the recent past. Indeed, in both the US and the UK, volatility is pretty close to its long-term, by which I mean centuries-long, average. So, I do not think that volatility does look particularly high by historical standards. Of course, volatility varies over time and, in particular, volatility tends to rise quite sharply following large price falls. These movements in volatility can be persistent at a monthly horizon. I therefore do not think we should be surprised to find in periods as short as a few years that we see volatility in these markets at different levels than was the case in the previous five years. But what we also see from these data is that there is a broad tendency over a longer period for volatility to revert back to its historical mean. So, it seems to me quite possible that over the next five years or so, volatility will indeed – if it is in fact above its historical average – revert to that without any public intervention.

There is, of course, great difficulty, particularly at the high frequency level, in talking about excess volatility. There is a long-standing debate in economics. Robert Shiller started the literature on whether, in particular, stock markets were excessively volatile. The basic problem is that this debate is almost philosophical in nature, in the sense that share prices are the present discounted value of future returns, future profits, or dividends over an infinite horizon. It is simply impossible to show in terms of observable, scientifically provable propositions whether or not there was information that a rational person could take into account and reproduce

this volatility or not. I believe the right way to approach it is to consider whether, in particular contexts, it is sensible, plausible or useful to believe that volatility is reflecting fundamentals or not. Not to consider whether there is excess volatility or not, but how to think usefully about the volatility we observe. It seems pretty clear – and it seemed pretty clear at the time – that if you look at the dotcom phenomenon, it was not actually terribly useful to think in terms of rational valuations of the future. You could try to do so, but it was not at all easy to come up with the view that these were rational valuations. It would have been much better if people had simply focused on basic arguments from industrial economics according to which, even if there was a new economy, there was no reason why one firm would necessarily capture all the profits from it.

Now, I accept that, even on this proposition, there are differing views. But there are some such blatant examples of companies, like the famous and aptly named British company “Lastminute.com”, which sold holidays to people at the last minute, hardly a new idea and not using particularly new technology. The actual assets of the company, which could easily be valued in traditional terms, were worth less than a million pounds. However, it floated on the stock market and raised 70 million. It was rapidly valued at over 400 million. The value has now sunk back to slightly less than 70 million which, of course, is the value of the cash that is left in the bank because the company could not spend 70 million on this kind of venture.

It does not take a great genius to realise that, in this particular context, there was something bizarre about exaggerating the value of these kinds of companies. Where it concerns new technologies, it is much harder. Where it concerns the stock market as a whole, where there is evidence, as there was in the US, of a change in productivity growth, it is extremely hard to know whether or not rises in stock market levels are sensible or not, and since quite small changes in expected growth rates of either future returns or the discount rate, that is the risk premium, can generate large changes in present discounted values, I am not sure if it is at all helpful to ask whether the market is rational or not. What central banks have to do is face up to the question of the consequences of these movements.

Patrick Artus proposes two policies to deal with this kind of volatility:

- First, he suggests that rating agencies contribute to asset price volatility because they base their ratings on market information. I am not fully convinced that yet more regulation of yet another private-sector firm is actually going to be terribly beneficial. It is true that rating agencies are not terribly popular, but that is true of all agencies that carry out such activities, and you need pretty strong evidence, I think, to substantiate the claim that volatility is due to this kind of phenomenon. You could just as well say that you need more competitive pressure on rating agencies rather than less.
- The second suggestion is that we lower the frequency with which companies report results because the reporting of quarterly results increases market volatility and means that managers focus too much on communicating to financial commentators and analysts on a quarterly basis. From this point of view, it is hard to disagree. We do not want people to think too much about the short term. We want to encourage long-term thinking. But a counter-argument, one that has a long tradition in monetary policy, is to say that if you want to get people’s minds off these quarterly changes, you should publish the data every single day. This would get us away from these specific events. So, if we believe that people are

focusing too much on the short run – and I do not necessarily dissent from that – the reasons they do it are not likely to be resolved simply by changing the regulatory requirements for quarterly reporting. It has much more to do with the genuine difficulty of assessing the performance of fund managers and the wish, in order to choose a good fund manager, to assess them over a period so that you could then shift your funds from one to another. But that may be relatively short term from the point of view of the success or otherwise of the fund.

Well, that is enough about high frequency volatility. Let us move on to low frequency volatility.

Again, Patrick Artus provides us with a number of charts on price-earnings ratios which show clearly – in his words – bubbles. Now, I do not like using the word “bubble” because it has a connotation attached to it which is that “it is bad”. However, I am prepared to accept the definition proposed by Olivier Blanchard, who gave a precise technical definition of the word bubble in a stochastic model of valuations. But very often people define bubbles after the event, and that is much easier to do. It may be the case that we believe that the price-earnings ratios of companies are a stationary series but we have a relatively small number of observations on large shifts in price-earnings ratios and I do not believe there is anything in economic theory that tells us that the ratios of prices to earnings for the corporate sector, or indeed the ratio of house prices to average earnings, to take a different example, should necessarily be constant. Changes in discount rates in the one, or changes in access to financial markets in the other, could lead to changes in these long-run average ratios. This is one of the difficulties that central banks face when they come to make judgements about whether movements in asset prices are likely to be reversed.

Let me be a bit more concrete about asset prices and the problems faced by central banks in this context. Patrick Artus referred to house price inflation in the UK, as did a number of people, including Ray Barrell earlier this morning. It is true that house prices have risen very rapidly in the UK, and as a ratio to average earnings have reached the previous peak that we saw in the late 1980s and that has led some people to suppose that the crash in house prices that occurred in the early 1990s cannot now be far away. If you accept this, then of course the implication is that perhaps interest rates in the UK should have been higher because of the asset price consideration. But, of course, house prices are not the only asset in the UK economy and they may not even be the most important one. The exchange rate is arguably the most important of all and the sterling exchange rate, until the last month, for a period of four or five years, went up by more than 30% against the euro and in real effective terms by over 20%. That is a very dramatic rise both in nominal and real effective exchange rates. As a result, the trade deficit has grown and the profitability of the tradable goods sector has fallen by two-thirds. That suggests that, for this asset price reason, interest rates should have been lower than they were. But what about equity prices? Equity prices more than doubled between 1995 and 2000, and they have since halved; presumably on an asset price consideration that would have meant that interest rates should first have been higher and then lower than they might have been. All that does is tell us that you cannot isolate one asset price and say that this particular asset price – because there is or is not a bubble – means that interest rates should or should not have been either higher or lower. You have to look at it in the context of the economy as a whole. There are indeed justifiable concerns about movements in asset prices, but I think these pose a challenge for all frameworks and I should like to go back to some comments from the first session.

I do not think that asset prices invalidate any monetary policy framework. They form neither a critique of inflation targeting in my view, nor of monetary targeting. What we know is that if you get large movements in asset prices, which for quite plausible reasons – even if they are difficult to prove – may be reversed in years to come, you can expect some pretty big shocks. In other words, the shocks confronting the policy framework may be much larger than those we have seen in the past: this was the point that was brought up this morning. This would be a challenge for all monetary policy frameworks, because it means that the consequences of those shocks would not just persist for the normal forecast horizon of a year or two, but possibly for many years beyond. And one may want to take that into account when formulating policy by looking not just over the next one to two years, but at a longer horizon. As I see it, the main message arising out of the concern about asset prices, is the need perhaps to take a longer forecast horizon for monetary policy than is conventionally the case. I do not believe that any honest person can claim to know the equilibrium level of asset prices, as they are dominated by expectations of what other people are willing to pay, and the response of those asset prices to any of the policy measures is also extremely unpredictable.

Let me conclude, therefore, by looking at two of the propositions that Patrick Artus makes for policy intervention by central banks. One is that central banks should be willing to buy and sell assets like equities directly to influence their movements. I think – and Patrick Artus explains all the costs of this (as well as the benefits) which include moral hazard – more generally that what is dangerous is the futility of trying to target something that you do not understand. Trying to claim that you are targeting an asset price is extraordinarily difficult when you do not know why asset prices have moved significantly in the recent past, which is why you were trying to take action.

The second one is to have country-specific statutory reserves on lenders to control mortgage lending. Patrick Artus gives the arguments of both Spain and the UK. So, let me give a counter-argument. Is it obvious that the Spanish house price rise is indeed a bubble? Why cannot it just be that Spanish housing has actually become more attractive for European consumers relative to others?

In the UK, there are big differences between regions, which can be explained in terms of migration, international movements of capital and people, and also changes in the monetary framework, the expected level of interest rates and the degree to which competition in mortgage markets has lowered the real interest rate on mortgage loans relative to the rest of the structure of interest rates. I do not know whether there is a bubble or not, and I am not sure if it is very fruitful to spend one's time arguing about that. We need to understand the shocks that affect asset prices and what they mean for future shocks and then almost any monetary framework can be used to try to deal with them. So, although there has been a lot of attention devoted to discussing what asset prices mean for monetary policy frameworks, the real question is what these asset price movements mean for monetary policy full-stop, irrespective of the framework that we are using.

As a final comment on all this, I do think that Ray Barrell had a good point this morning, when he said that we need to be conscious of these longer-term problems. That is what I mean when I say that the asset price movements that we see should make us think about a longer forecast horizon than may be conventional, if it is possible that we will face some serious problems in the future, if these movements in asset prices reverse or have consequences for demand over a longer period than the

normal one to two years that we expect for demand shocks. That suggests that a wise central banker would choose this year to retire – and what you ought to be worried about is the number of people who have actually decided to accept positions as central bank Governors this year.

# CYCLICALITY AND MONETARY POLICY

Ernst Welteke

*Chairman*

Lucas Papademos

Stanley Fisher

Jürgen Von Hagen

Yutaka Yamaguchi

*According to their order of presentation*



## **Ernst Welteke**

*President*

*Deutsche Bundesbank*

In this session, we will discuss the topic of “cyclicality and monetary policy”. Macroeconomic policies influence the ups and downs of the economy. They can alter business cycles and change the dynamics of the economy. Underlying volatility of the cycle can be smoothed by an appropriate macroeconomic policy approach. Cycles can damage an economy in the short term but facilitate structural change in the long term. Keynes and Schumpeter would probably have disagreed strongly about the necessity of smoothing business cycles. Maybe our panellists will be able to give us some new answers to this fundamental question.

An independent monetary policy aiming at price stability has a stabilizing effect on business cycles. High interest rates in boom times have a dampening effect on the economy, whereas lower rates in times of recession should have a stimulating effect. Some economists however advocate a further fine-tuning of business cycles. Such a proactive monetary policy would interfere with the goal of price stability. Moreover, an additional stabilizing effect is doubtful.

For almost all central banks, the primary objective is to maintain price stability. The question of the secondary objective for monetary policy is always raised in times of slow growth and high unemployment. In the past two decades, most central banks have abandoned multiple and potentially conflicting goals for a number of reasons.

This session will raise a number of questions.

- Should central banks step in when asset prices rise sharply?
- Should they also step in when asset prices tumble?
- Should we prefer symmetric or asymmetric goals?
- What do central banks know about the true value of assets and can our monetary aggregates serve as helpful indicators in this regard?
- Should we limit our activities to providing a safety net for emergencies? Do certain rules of banking supervision and accounting standards contribute to the cyclical behaviour of banks and corporations or could an appropriate supervisory framework smooth cycles, deflate asset price bubbles and thereby avoid a monetary policy response to inflated asset prices?

On this panel, we have the chance of obtaining some answers to the many open questions which I have already mentioned.

Vice-President Lucas Papademos might provide some answers from the perspective of a central bank. Having worked in the US and as Governor of an EMU country, he is also in the unique position to give us some insight into two quite different perspectives.

Deputy Governor Yutaka Yamaguchi might have different answers in view of the specific circumstances of the Japanese economy.

Stanley Fischer can give us an inside view from a business bank and of his experience of crisis solution in his former position.

Academia is represented by Jürgen von Hagen who may be able to give us new information on the influence of monetary policies on other economic agents.

It is always valuable for central bankers to be in touch with the latest results of economic research. I have to admit, though, that there are also time lags between monetary policy measures and their pass through, and there is a time lag between the publication of new economic research and theories and their application by central banks, probably even longer than twelve to twenty-four months. It shows that monetary policy tends to have a long-term orientation. This is another example of central banks' ability to smooth the cycle, the ups and downs of theoretical fads and fashions.

# Economic Cycles and Monetary Policy

**Lucas Papademos**

*Vice-President*

*European Central Bank*

## 1. Introduction

“Economic Cycles and Monetary Policy” has been a subject at the centre of theoretical and policy debates among economists for a very long time. This reflects the complexity of the issues raised by the existence of economic cycles for the conduct of monetary policy. No simple policy *formulae* have been found which have proved valid over time. One reason is our imperfect knowledge of the factors and processes determining the amplitude and duration of economic cycles. Another reason is the uncertainty surrounding the magnitude of, and the time lags in, the effects of monetary policy on economic activity. Complexity and uncertainty, however, do not imply a lack of understanding. Economic theory and empirical evidence lend support to a number of propositions regarding the links between economic cycles and monetary policy. These propositions and the experience of policy-makers offer some general lessons on the role and effectiveness of monetary policy in dealing with economic cycles. My aim is to provide an assessment of the validity of these propositions and policy lessons.

Only a few years ago, the topic we are discussing seemed largely irrelevant or obsolete. Over the past twenty years, aggregate output volatility has declined steadily and recessions have become shorter and milder in industrialised countries, except Japan. Indeed, following the continuous expansion of economic activity in the previous decade, notably in the United States (US), many predicted in the late 1990s the demise of the economic cycle as a consequence of continuous advances in information technology, which foster higher productivity growth, as well as of the stabilising effects of globalisation, financial liberalisation and the ability of macroeconomic policy to minimise output fluctuations. Moreover, over the past twenty years it has progressively become accepted that the overriding objective of monetary policy is to secure price stability, through which it can foster higher, sustainable growth and help to reduce output volatility. Unfortunately, the predictions concerning the demise of the economic cycle have proved to be premature. The US recession in 2001, the significant slowdown in the euro area, the prolonged deflation in Japan, and the very sluggish and uncertain global recovery in 2003 have provided unwelcome evidence that the cycle is still alive. In addition, some of the factors which have contributed to or explain recent economic developments, for instance the collapse of equity prices and the excessive growth of debt, have raised doubts about the ability of monetary policy to minimise output volatility by maintaining price stability. As a result, there is renewed interest in issues such as the changing nature of economic cycles as well as the role and

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effectiveness of monetary policy in stabilising output fluctuations, particularly in an environment of low inflation.

In my presentation I will address several relevant issues as follows. In Section 2, I will review the main theoretical arguments and the supporting empirical evidence concerning the links between monetary policy and the economic cycle. In this context, the alternative views that have been expressed about the necessity, feasibility and desirability of a counter-cyclical monetary policy will be highlighted. In Section 3, the changes observed in the nature and magnitude of economic cycles in recent years will be examined with a focus on the role of financial markets and monetary factors in generating cycles. Then, in Section 4, the available empirical evidence regarding the monetary policy transmission mechanism will be summarised, drawing in particular on recent research by ECB and Eurosystem economists. Finally, on the basis of the preceding analysis and empirical results, I will consider a number of propositions concerning, first, the role of monetary policy in influencing the economic cycle and, second, the appropriate strategy for the conduct of a stability-oriented monetary policy.

## **2. Economic cycles and the role of monetary policy: the alternative views**

Economic cycles are a consequence of the influence of various factors and processes. They can be triggered and driven by different types of shocks affecting demand and supply in product and financial markets. Such shocks include changes in policies, whether macroeconomic or structural. Moreover, economic cycles – their magnitude and duration – reflect the dynamics of the economic system, as determined by technological processes, agents' behaviour and expectations, and institutional features of the economy. Policies influence the cycle not only by directly affecting aggregate demand and supply but also by shaping expectations and institutions.

The role of monetary policy in influencing the economic cycle can be discussed in terms of five questions about whether and how policy can perform a stabilising function. The first question is whether it is necessary for monetary policy to play a stabilising role or whether it can be expected that output deviations from its long-term growth trend will be short-lived as a result of the smooth operation of market mechanisms, especially in an environment of price stability. The second question is whether, or under which conditions, monetary policy can influence aggregate real output in a systematic and effective way in both the short term and the long term. The third is whether monetary policy can stabilise cyclical fluctuations without jeopardising its ability to achieve its primary goal of maintaining price stability. Fourth, given the uncertainty associated with the size and timing of various disturbances and given our imperfect knowledge of the structure and dynamics of the economy, can monetary policy successfully mitigate cyclical fluctuations or could it end up accentuating them as a consequence of inaccurate information and overambitious or mistaken actions? Finally, and provided that the answers to the previous questions lead to the conclusion that monetary policy can indeed play a stabilising role, a number of important practical issues must be addressed as regards how monetary policy can best contribute to reducing cyclical fluctuations: should it be conducted in a discretionary way or on the basis of a well-defined and publicly announced strategy and policy rules?

I will now focus on the first four questions, which relate to the necessity, feasibility and desirability of a counter-cyclical monetary policy. The answers to these questions on the output-stabilising role of monetary policy depend on our views about certain key features of the structure and functioning of the economy, particularly of the labour and financial markets. Views still seem to differ, as evidenced by recent theoretical and empirical work. For this reason, it is useful to review and assess the alternative theoretical views and the supporting empirical evidence before reaching any conclusions. Such a review will also highlight how the theoretical and policy debate on these issues has evolved over time partly in a cyclical fashion, influenced, not surprisingly, by the economic cycle itself.

Following the Great Depression, Keynes (1936) made the case for stabilisation policies in general and particularly for the role of monetary policy in stabilising the cycle under certain circumstances. Keynes and his followers argued in favour of stabilisation policies on the basis of two premises: the first being the downward rigidity of wages (and prices); the second the concept of liquidity preference, that is the proposition that the demand for money also depends on the interest rate, the opportunity cost of holding money<sup>1</sup>. The first premise, downward wage rigidity, implies that full employment cannot automatically be restored following a shortfall in aggregate demand. It thus establishes the need for stabilisation policy. The two premises together imply that, if aggregate demand is insufficient, an expansion of the nominal money supply can restore output to its full employment equilibrium, as long as there is no “liquidity trap” associated with very low interest rates. Thus, the feasibility of a stabilising monetary policy is established, though its effectiveness depends on the conditions prevailing in financial markets. The Keynesian paradigm may seem highly relevant in the light of the recent economic slowdown, particularly with respect to its causes, features and potential cures: subdued animal spirits of entrepreneurs, rising nominal wages despite the sluggish economic activity, and an environment of historically low interest rates in the United States and the euro area, and indeed zero interest rates in Japan. This paradigm, however, does not fully explain the causes and nature of the recent economic slowdown. Hence, no direct conclusions should be drawn concerning the appropriate stance or potential effectiveness of monetary policy.

A central theoretical issue, with crucial implications for the dynamics of the cycle and the role of monetary policy in stabilising it, is the nature and stability of the relationship between inflation and output fluctuations in both the short term and the long term. This issue has been at the core of the theoretical debate and associated econometric work for more than forty years, since Phillips (1958) observed an apparent empirical relationship between the growth of wages and the rate of unemployment. The nature of this relationship, particularly its short-term dynamics, is more complex than initially considered, for it reflects the effects of various factors influencing behaviour in labour and product markets, such as agents’ expectations, incomplete information, contractual arrangements and market adjustment mechanisms. Certain aspects of this relationship are still considered open, since the relevant evidence is not judged to be final. It is noteworthy that some of the open issues relate to current concerns.

The empirical results of Phillips appeared to expand the realm of stabilisation policy to include choosing the unemployment rate and output level which could be

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<sup>1</sup> This proposition, which reflects the role of money as a financial asset and not only as a medium of exchange, has implications for the effectiveness of monetary policy in stabilising output.

permanently secured as a function of long-term inflation. The long-term output-inflation trade-off formed the basis of aggregate demand management and anti-inflation policy in the late 1950s and in the 1960s, although the theoretical underpinnings to this relationship were relatively few (see Samuelson and Solow, 1960). A theory for the existence of a non-vertical long-term Phillips curve was put forward by Tobin (1972), who argued that the observed downward rigidity of nominal wages requires a certain amount of inflation in order to enable real wages to adjust to changing economic conditions. This argument, which has recently been further elaborated and empirically refined, does not rest on money illusion but on the idea that workers will resist relative wage cuts and that, consequently, inflation provides a means of synchronising real wage reductions across the economy.

The rising inflation in the late 1960s and early 1970s coincided with, and contributed to, a resurgence of classical-monetarist views on the relationship between output and inflation and on the role of monetary policy. Milton Friedman (1968) and Edmund Phelps (1968) independently advanced theories based on the notion of the natural rate of unemployment (or level of output) to explain deviations of output from its potential level or growth trend not as a consequence of changes in aggregate demand, but as a result of mistaken price expectations and misperceptions regarding the real wage. As misperceptions can only be temporary, deviations of output from its long-term potential level would also be temporary. Two major conclusions emerged from this analysis: first, no inflation-output trade-off exists in the long run and, second, expectations and their nature are of crucial importance in generating output fluctuations in the short run and in determining the effectiveness of monetary policy in stabilising output.

Robert Lucas (1972, 1976) and his associates developed the Friedman-Phelps theory further, reaching striking neoclassical conclusions about the nature of economic dynamics and the role of monetary policy. On the basis of the propositions that (i) expectations are “rational” and (ii) wages and prices are sufficiently flexible, they showed that output fluctuations around long-term equilibrium levels due to demand shocks are transient, randomly distributed and likely to be small. They also demonstrated that there are no short-term Phillips curve trade-offs that can be exploited by monetary policy to stabilise the economy. They therefore concluded that it is neither necessary nor feasible for monetary policy to stabilise the economy. Furthermore, they warned against the risks of mistakes inherent in excessively pro-active monetary and fiscal policies. This analysis has been used to advocate the advantages of adopting some strict form of monetary targeting<sup>2</sup>.

Nevertheless, the magnitude and duration of macroeconomic fluctuations in the 1970s and 1980s demonstrated that various forms of nominal rigidities do exist and cannot be assumed away. Furthermore, although agents’ expectations should, in principle, be formed “rationally”, in practice they are based on more limited information about the structure of the economy than is normally assumed in theoretical models. These facts led to the development of theories which, although accepting neoclassical postulates and the “rationality” of expectations, imply that there exist short-term inflation-output trade-offs that can be exploited by central banks. Moreover, specific monetary policy rules have been proposed and estimated, notably by John Taylor (1996, 1999), which aim to minimise output and price fluctuations around policy targets.

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<sup>2</sup> See, for example, Sargent and Wallace (1975).

In the low-inflation environment of the 1990s, theoretical arguments were presented, together with some empirical results, to support the view that when inflation is low there exists a stable long-term relationship between inflation and unemployment. Moreover, it had previously been argued that economic cycles generated by demand shocks could have permanent effects on aggregate supply. Akerlof, Dickens and Perry (1996, 2000), building on the ideas of Tobin, contended that at very low inflation a permanently higher rate of unemployment can emerge and that, consequently, a moderate inflation rate may be necessary to “grease the wheels” of the labour market. In particular, they calculated that in the face of downward wage rigidity an attempt to reduce inflation from 3% to zero would raise the equilibrium rate of unemployment in the United States by 2.6 percentage points. Wyplosz (2001), employing a different approach, presented some indications that a “grease effect” is present at low inflation rates in Europe. The relevance of these results for the choice of an appropriate price stability objective is obvious. The evidence, however, of the existence of nominal rigidities is mixed<sup>3</sup>. Moreover, there are indications that wage and price rigidities are removed or mitigated in an environment of low inflation. Conversely, inflation in the presence of nominal rigidities can also “put sand in the gears” of the labour market<sup>4</sup>. The reason for this is that, because of “menu costs” and fixed nominal contracts, changes in the general price level may not be evenly transmitted throughout the economy and may thereby lead to unintended and disruptive changes in relative prices.

In a similar vein, Blanchard and Summers (1986, 1987) emphasised that economic cycles can have permanent supply-side effects based on the notion of hysteresis in unemployment. There are a number of possible reasons why this may be the case. For instance, following a downturn and a consequent rise in unemployment, the newly unemployed experience a process of gradually diminishing human capital and search effort as their unemployment spell lengthens and they become less attractive to potential employers. Alternatively, “insider-outsider” models of the type developed by Lindbeck and Snower (1986), in which unions set wages by taking into account only the interests of those currently employed, imply that wages will be set too high to allow the unemployed to return to work. These theories suggest that monetary policy should aim to prevent marked and persistent increases in unemployment in order to speed up its return to the “natural” equilibrium rate and also in order to avoid possible permanent effects of cyclical fluctuations on potential output and the “natural” unemployment rate.

What are the implications of the alternative theories and the associated supporting empirical evidence for the role monetary policy can play in stabilising the economic cycle? Academic economists still seem to be divided on this issue, though views have converged significantly over the last twenty years. There is a long list of articles presenting the pros and cons of a counter-cyclical monetary policy. I would like to point out two contributions which have made the cases for and against monetary stabilisation policies in a comprehensive and forceful way: the presidential addresses delivered at the annual meetings of the American Economic Association by Franco Modigliani (1977) and Robert Lucas (2003). It is interesting to note that although these two leading economists differ in their approaches to and conclusions on the necessity and desirability of counter-cyclical monetary policy, at the same

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<sup>3</sup> This evidence is briefly surveyed in Issing (2001).

<sup>4</sup> See Groshen and Schweitzer (1999).

time they do accept the validity of a number of key propositions regarding (i) certain basic features of the economy's functioning and (ii) the effects of monetary policy on macroeconomic aggregates.

In arguing the case for stabilisation policies, Modigliani (1977) recognises that the economy is not inherently unstable and that ambitious attempts to fine-tune it could be destabilising. He emphasises that money is neutral in the long run, though he questions the notion of "long run" from a policy viewpoint. Nevertheless, he argues that the economy is far from shockproof and that stabilisation policies can play an important role in maintaining it on a stable full employment path. In particular, he suggests that the deterioration in economic stability in the mid-1970s should be attributed to the failure to use stabilisation policies effectively to deal with the major supply shocks of the period.

Lucas (2003) directly addresses the magnitude of the benefits of stabilisation policies. He acknowledges that macroeconomic policies have succeeded in protecting the economy from deflationary risks using both monetary and fiscal instruments. He argues, however, that the welfare gain from more active stabilisation policies is negligible: just a tiny fraction of one percent of aggregate consumption in the United States. This negligible gain has to be weighed against the risk of wrong policies which actually aggravate the economic cycle. Conversely, Lucas emphasises the role of public policies (monetary and fiscal, as well as structural policies in the real and financial sectors) in enhancing economic growth and welfare from the supply side. With regard to monetary policy, he argues that emphasis should be placed on providing a stable nominal framework for the formation of agents' expectations. This requires, first and foremost, that monetary policy ensures price stability.

Although there are still differences in the theoretical approaches to the analysis of economic cycles and alternative, opposing views are still being expressed about the role of monetary policy in stabilising output fluctuations, a significant convergence of approaches and views has occurred. Today, conceptual differences are much less stark. Most elements of the neoclassical critique have become accepted. For instance, the notion of a long-term vertical Phillips curve and the central importance of expectations are largely undisputed. At the same time, New Keynesian features such as nominal rigidities have retained a central role in explaining data. The literature on optimal monetary policy (see, for example, Woodford (2003) for a survey of that literature) emphasises output stabilisation as a central element. The so-called New Neoclassical Synthesis, as presented by Goodfriend and King (1997), expresses a consensus that combines long-term neoclassical and real business cycle features with New Keynesian short to medium-term adjustments. Models used by central banks, including the ECB, embody these features, emphasising the optimal behaviour of agents over time and rational expectations, but they also take into account the existence of nominal rigidities, imperfect competition and incomplete information.

Today central bankers can count on stronger and clearer guidance from the theoretical and empirical work of academics than was the case in the 1960s and 1970s. Two general propositions are widely accepted: the benefits of price stability and the importance of maintaining a stable policy framework for guiding the public's expectations<sup>5</sup>. It is also generally accepted that there are no permanent

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<sup>5</sup> See Fischer (1994, 1996), Feldstein (1999) and Issing (2001)



trade-offs between inflation and output growth or unemployment. Nevertheless, the debate regarding the role of a counter-cyclical stabilisation policy remains active: in particular, whether such stabilisation is necessary, whether it can yield significant benefits, and whether it is realistically feasible. Ultimately, the answers to these questions depend on the empirical evidence. To shed some further light on these questions, I will next examine the nature of the economic cycle and the state of our knowledge of the monetary policy transmission mechanism, particularly in the euro area.

### **3. The changing nature of the economic cycle**

The potential for stabilisation policies depends on both the size and the nature of economic cycles. Recent analyses of the United States have pointed to a long-term decline in output volatility. While some studies identify a structural break in US output volatility at the beginning of the 1980s, Blanchard and Simon (2001) argue that this decline, although it was temporarily halted during the 1970s, is a phenomenon which can be traced back at least to the 1950s. Moreover, they report that, with the notable exception of Japan, other industrialised countries including Germany, France and Italy have also experienced a downward trend in output volatility. There are several reasons for this significant phenomenon: among them are the increasing relative importance of services in aggregate output, improvements in inventory management, and the stabilising effects of monetary policy.

The increasing share of output generated by services is a well-documented feature of industrialised countries. The production of services requires less physical capital and commodities than manufactured goods. Hence, services are less susceptible than industrial production to large swings in commodity prices, which have frequently contributed to past economic cycles. In addition, lower capital requirements also imply a lower sensitivity of output to the investment cycle, which is another defining feature of macroeconomic fluctuations.

Moreover, changes have taken place in inventory management techniques. The classic inventory cycle when, following a fall in demand, firms are left holding large inventories, therefore exacerbating the need to cut production, appears to have become less severe. Blanchard and Simon find that, over the last fifteen years, inventories have become counter-cyclical in the United States. McConnel and Perez-Quiros (2000) show that a sharp decline in the volatility of US output since 1984 has coincided with a significant drop in the proportion of durables output accounted for by inventories. Possible reasons for this change include a more accurate forecasting of demand, the favourable impact of information technology and more flexible production methods allowing for “just-in-time” stock management. The consequence of these developments is that firms need not reduce output drastically when confronted with a fall in demand.

Another important factor underlying the decline in output volatility is the change in the orientation and conduct of monetary policy. Following the experience of high and variable inflation in the 1970s and early 1980s, monetary policy in many countries has put greater emphasis on attaining and maintaining price stability over the medium and longer term rather than on stabilising short-term output fluctuations. This change, which in many countries has also been possible as a result of the increased independence of central banks, has helped to deliver not only lower and less variable inflation, but also more stable output growth. It is a fact that, in the

1980s, the volatility of both inflation and output dropped sharply, together with the decline in the level of inflation in industrialised countries; moreover, output growth and inflation remained stable in the 1990s, while the level of inflation remained low.

In sum, economic cycle volatility has declined in the last few decades in many industrialised economies. However, there are also reasons to believe that other structural changes in these economies may have created new sources of potential instability that policy-makers ought to monitor very closely. In particular, I would like to discuss the role of asset prices in the economic cycle, a topic which has recently received a lot of attention.

Financial markets have increased markedly in importance since the 1970s. For instance, between 1990 and 2000, stock market capitalisation in the United States and the euro area increased fivefold. One implication of the increasing size of stock markets is that changes in stock prices are likely to have a more pronounced impact on the economy than in the past. However, while the development of financial markets improves the allocation of resources between savers and investors, economists have long been aware that financial markets can be characterised by periods in which asset prices tend to deviate substantially from their equilibrium values<sup>6</sup>.

A common feature of an asset price boom, in either stock or real estate markets, is that it tends to coincide with a parallel significant expansion of credit aggregates<sup>7</sup>. These parallel developments can be mutually reinforcing during periods of expansion or contraction. For example, in the case of mortgage lending, where it is possible to borrow against the value of the real estate, credit and real estate price increases have been mutually reinforcing. Since the famous article of Irving Fisher (1933) in the first issue of *Econometrica*, it has been recognised that these processes can lead to debt overhang and deflation spirals once the bubble bursts. These known potential consequences are usually forgotten or underestimated during periods of expansion. Nevertheless, the risk that financial instability may spread to the real economy does, of course, exist. Indeed, many of the more pronounced cyclical fluctuations and, for that matter, the deepest recessions experienced in OECD countries in the last two decades have been associated with asset price cycles.

#### **4. The monetary policy transmission mechanism: general features and euro area evidence**

In order to assess the impact that monetary policy may have on the economic cycle, a good understanding of the features and dynamics of its transmission mechanism is necessary. Our knowledge of this mechanism is inevitably imperfect owing to its complexity, including its potentially time-varying nature. Following the launch of the euro, the ECB, in particular, was faced with an additional formidable factor of uncertainty, stemming from the potential impact of the introduction of the new common currency and the conduct of the single monetary policy on the expectations and behaviour of economic agents in the euro area. Hence, the study of the transmission mechanism has been the top priority on our research agenda. Empirical studies of the monetary policy transmission mechanism are numerous for the

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<sup>6</sup> See, for example, Bernanke and Gertler (1999).

<sup>7</sup> See Borio and Lowe (2002).

United States and other industrialised countries, but corresponding research for the euro area is relatively limited. In this part of my presentation, I will focus on the evidence available concerning the transmission mechanism in the euro area, emphasising its general features and certain empirical results relevant to the conduct of monetary policy and its potential response to the economic cycle.

A group of Eurosystem researchers worked on this topic over a two-year horizon, assembling a large body of empirical evidence. Their findings, which have been published in the ECB Working Paper Series (numbers 91-114) and subsequently in Angeloni, Kashyap and Mojon (2003), focus on the effects of changes in policy-driven interest rates on aggregate demand and its components, money, credit and prices. A wide range of macroeconomic and microeconomic data and models were used, partly in order to ensure that the empirical results would not be overly sensitive to arbitrary choices of models or data sets. Both the euro area and the individual Member States were analysed. The outcome of this research leads to a number of interesting conclusions.

A first conclusion is that there are important similarities in the cyclical behaviour of the euro area and the US economies as well as in their responses to monetary policy. The time sequence of lead and lagged reactions to monetary policy characterising prices, output, and the main components of aggregate demand appear to be remarkably similar between the two economies. This should perhaps not be surprising, given that the size, degree of openness and output structure of these two economies are not very dissimilar. It suggests that the inner workings of the two largest world market economies may not be all that different. This is reassuring because the vast theoretical and empirical literature on the monetary transmission mechanism in the United States could be a benchmark for evaluating the transmission mechanism in the euro area. Although there are still lively discussions among central bankers and academics on the relative importance of the various channels of monetary policy in the United States<sup>8</sup>, a broad consensus exists on the stylised facts regarding the effects of changes in interest rates on output and prices as well as on the different channels through which these changes are likely to be transmitted.

The stylised facts on the effects of monetary policy on aggregate output and the price level have mainly been established using vector auto-regression models. According to a wide variety of such models<sup>9</sup>, a change in the monetary policy stance, say an easing of monetary policy, is followed by a temporary increase in output, which peaks within four to eight quarters but diminishes eventually to zero, while the price level adjusts more gradually, albeit permanently. In addition to the results obtained from vector auto-regressions, this pattern of responses is also borne out by more traditional econometric models such as the Federal Reserve model of the US economy. This evidence is consistent with the view that there is no output-inflation trade-off in the long run.

From a theoretical perspective, these patterns of output and price responses are also consistent with the two-stage consensus paradigm of the transmission mechanism. First, due to nominal rigidities, changes in nominal interest rates affect real interest rates and aggregate demand (along the *IS* curve). Second, the change in demand

<sup>8</sup> See, for instance, the surveys by Bean, Larsen and Nikolov (2003) and Mishkin (1995).

<sup>9</sup> These models mainly differ in terms of the information that is available to the central bank when it determines the monetary policy stance. See Christiano, Eichenbaum and Evans (1999).

conditions influences prices and wages as the aggregate supply responds only partially to demand. This reading of the empirical evidence on the transmission mechanism is also supported by simulations based on highly stylised dynamic general equilibrium models. Several theoretical contributions have shown that, provided that they include some form of nominal rigidities, these models would deliver this type of output and price responses to a change in the monetary policy stance<sup>10</sup>.

Regarding other aspects of the monetary transmission mechanism, there is no consensus view about the relative importance of the interest rate channel and the credit channels in the first stage of the transmission mechanism described above<sup>11</sup>. Some economists argue that the response of the real interest rate to money supply changes is too small and short-lived to explain the size of the response of investment and, more generally, of aggregate demand. Hence, in their view, it is likely that changes in the interest rate may actually affect spending by shifting the liquidity constraint of either banks or firms and households. Others consider that although the credit channel may amplify the policy effects *via* the interest rate channel, the quantitative significance of such amplifications remains to be demonstrated convincingly.

A second general conclusion about the monetary transmission mechanism in the euro area is that a change in the policy interest rate seems to lead to an adjustment in output that reaches a peak after a period of between one and two years. The response of the price level is typically estimated to be much more gradual, but long lasting. This broad qualitative pattern emerges consistently across a variety of empirical models. However, the exact time profile of these dynamic effects cannot be estimated precisely, particularly for the euro area. The old monetarist creed, summarised by the famous characterisation by Milton Friedman of the transmission lags as “long and variable”, is confirmed by the evidence available for the euro area.

A third set of conclusions concerns the channels of influence of monetary policy through financial markets. Looking at all the evidence, it appears that a set of simple links across the structure of interest rates, together with the estimated responses of private expenditure to those rates, is sufficient to account for the main patterns of the euro area response to policy changes. Thus, the interest rate channel seems to work reliably. This does not mean, however, that other influences reflecting the structure of financial markets are not relevant. As we know, financial and banking structures can be important, particularly in the euro area. The ECB has recently published a special report focusing on a comparison of euro area financial structures, and is actively engaged, together with competent national and European authorities, in initiatives aimed at fostering the integration and efficiency of the European financial system.

A fourth result relates to the potential presence of significant asymmetries across countries in the functioning of the transmission mechanism and the impact of monetary policy. However, the likely presence of ongoing structural change makes it particularly difficult to draw firm conclusions on cross-country differences.

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<sup>10</sup> See, for instance, Benassy (2002) and Smets and Wouters (2002).

<sup>11</sup> Bernanke and Gertler (1995) review the debate on the credit channel and show that interest rate channel effects cannot explain the monetary policy transmission completely thus leaving room for other channels. Angeloni *et al.* (2003) find that the interest rate channel cannot explain the overall transmission patterns in several euro area countries (Germany, France, Italy, Belgium, Greece and Austria), thus allowing a role for a credit channel.

The effects of monetary policy may depend to a considerable extent on the monetary policy regime itself and its effects on expectations. During the typical sample period for which models were estimated, euro area countries adopted a variety of monetary policy strategies. Hence, the change in the policy regime resulting from the introduction of the euro could have affected the transmission channels in some countries more than in others. At present, there is neither consistent nor reliable evidence that the output and price responses to a change in monetary policy in individual countries differ markedly from the euro area average.

A fifth important issue that needs to be considered is whether the effects of monetary policy on output and the price level are linear and symmetric, *i.e.* whether the effects of monetary policy are the same regardless of the cyclical conditions of the economy, the level of interest rates and the direction of change in the policy stance. The existence of such nonlinearities or asymmetries obviously has implications for the impact of monetary policy over the economic cycle.

Theoretical analyses of the functioning of credit markets under imperfect information suggest that a change in the policy interest rate may trigger a more than proportional change in the cost of raising external finance for some class of borrowers than for some others. In particular, proponents of the credit channel of monetary policy consider that a more restrictive policy stance can reduce loanable funds by worsening the quality of the borrowers' balance sheets and collateral. This mechanism is likely to be more pronounced during an economic slowdown, as the cash flow of firms and the income of households are deteriorating. Our results on this topic are tentative, mainly due to the limitations of our statistics. However, the evidence available shows that in euro area countries and the United States the response of output to changes in the interest rate is stronger during recessions than during booms<sup>12</sup>.

Another important source of asymmetry or nonlinearity in the effects of monetary policy, on which much emphasis has been placed in recent years, relates to the functioning of the transmission mechanism at very low levels of inflation and interest rates<sup>13</sup>. In an environment of very low inflation, there is a risk that a marked downturn would lead to deflation and monetary policy could lose its potency to restore price stability because nominal interest rates cannot fall below zero. Whilst such a sequence of events is possible, recent results suggest that the probability of the zero-bound constraint on nominal interest rates being reached is low if the level of inflation remains above one percent<sup>14</sup>.

A pertinent question is whether monetary policy retains its effectiveness at very low rates of interest. This issue has been contentious since Keynes (1936) suggested the possibility of a liquidity trap. It has also become topical again with the recent Japanese experience of virtually zero interest rates. As we know there are two views. The first or liquidity trap view is based on the proposition that when interest rates are zero there is an infinitely elastic demand for money balances and any increase in the money supply is simply absorbed in higher balances. Monetary policy therefore becomes unable to affect output or prices. The alternative view states that households and firms will eventually become satiated with money balances and an

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<sup>12</sup> See Peersman and Smets (2001).

<sup>13</sup> For a discussion of the relevant issues, see, for example, Viñals (2001)

<sup>14</sup> See Coenen (2003)

increase in the money supply beyond some level will lead to portfolio shifts and changes in spending. Thus, in this case, an expansionary monetary policy can be effective even when the short-term nominal interest rate is zero and when it can be implemented by open market operations in which the monetary authority purchases assets of many forms such as bonds, real estate, equities and foreign exchange.

The debate concerning the validity of these two views essentially boils down to answering an empirical question regarding the nature of the money demand function at very low interest rates. Not surprisingly, work in this area is hampered by the lack of observations of such interest rates. However, Meltzer (2001) found that on two occasions, when short-term interest rates were close to zero in the United States, the money base growth had a significant impact on consumption even after interest rate and lagged consumption effects had been taken into consideration. This suggests that households can become satiated in money balances. Nevertheless, as King (1999) pointed out, it is not clear what mechanism causes changes in base money to have an impact on output and prices at low interest rates. It may be related to changes in risk premia on other assets, as suggested by King, or it may also involve other channels. This is an issue which merits further research.

## 5. Lessons for central banks

### 5.1. The role of monetary policy

The preceding review of the theory and evidence of the links between macroeconomic fluctuations and monetary policy leads to a number of conclusions about the role and conduct of monetary policy. The first relates to monetary policy objectives. Both theory and evidence support the proposition that monetary policy should primarily aim at maintaining price stability, as it can effectively control the price level in the medium and longer run, while its effects on real output are only transitory. Moreover, the evidence available strongly suggests that, by securing price stability, monetary policy fosters sustainable growth in various ways and can also help to reduce output volatility. The long lags in the effects of monetary policy on the price level and the importance of expectations in the transmission process imply that monetary policy should be implemented in a forward-looking way and in a manner which helps anchor expectations to the price stability objective.

Monetary policy can influence aggregate economic activity in the short and the medium term. Consequently, in principle, it can play a stabilising role. However, this does not imply that, in general and in practice, such a role is necessary or desirable in the sense that it can be performed effectively. The decline in the magnitude of cyclical output fluctuations over the last twenty years in many countries would suggest that the need for such a counter-cyclical role has, on average, diminished. Moreover, there is evidence that a large, if not the largest part of cyclical output variability cannot be attributed to nominal demand shocks but is a consequence of real (*e.g.* technology-related) shocks which cannot be effectively offset by monetary policy. In addition, under “normal circumstances”, *i.e.* when the central bank is faced with cyclical fluctuations of average magnitude, the systematic pursuit of activist counter-cyclical policy can be ineffective and run the risk of accentuating rather than mitigating output volatility. This risk is a consequence of the uncertainty and variability of the lags in the effects of monetary policy on output as well as of the uncertainties associated with identifying the types of shocks and the precise cyclical position of the economy. For all these reasons, which are supported

by the balance of evidence, the conduct of an activist, fine-tuning counter-cyclical monetary policy involves more risks than potential benefits and should be avoided under normal circumstances.

However, there may exist “particular circumstances” which can be triggered by severe shocks and/or characterised by unusually large fluctuations due to the cumulative impact of various factors. In such situations, monetary policy can play an output-stabilising role which is consistent with its commitment to its primary objective of securing price stability. Such a policy must be implemented carefully and communicated effectively so that public expectations and the central bank's credibility are not adversely affected. The appropriate policy response will partly depend on the type of shock which is primarily responsible for the observed cyclicality of output. In the case of a sizeable demand shock that also causes inflation expectations to diverge from the norm of price stability, the boundaries between price stability and cyclical stabilisation become blurred. Monetary policy should endeavour to counteract inflationary and deflationary risks alike in a symmetric, proactive and forward-looking manner. The experience of the early 1980s, when the US Federal Reserve acted to stabilise the economy and to counteract expected inflation, is a characteristic success story. Risks of deflation support the need for additional caution in this respect because of the possibility that monetary policy may encounter problems associated with the zero bound on nominal interest rates. In such circumstances, timely and forward-looking action may be required to ensure that expectations remain firmly anchored on price stability and risks to growth are minimised.

This links up to the issue of the role of asset prices in the monetary policy process. History has shown that asset price movements can be the forerunners of large inflationary and deflationary risks – for instance, the experience of the United States in the 1920s and 1930s and of Japan in the 1980s and 1990s. In my view this is a major reason why these prices deserve attention. Identifying asset price misalignments, particularly in individual markets, is exceedingly difficult. But financial imbalances are normally indicated by several concurring signals. In this respect, our analysis confirms that asset price movements that are not in line with fundamentals tend to be accompanied by unusual changes in monetary and credit aggregates. By taking these movements into account, a central bank can assess and indirectly address a potential source of instability. However, in view of the implied risks signalled by rapid money or credit growth, using the interest rate instrument to help stabilise asset prices is not likely to be easy in practice and may not be particularly effective, given the dominant role of expectations in fuelling asset bubbles. Thus, warnings by the authorities about the potential risks and/or the implementation of appropriate supervisory policies may be a more effective means to address this problem, as stressed by Yamaguchi (1999).

In the case of a major supply shock, a central bank is likely to face a dilemma. For instance, a marked and persistent rise in the price of oil can create conditions in which a central bank's actions to maintain price stability may conflict with the aim of smoothing the direct contractionary impact of the shock. A monetary policy geared towards medium-term price stability should normally aim at containing the second-round effects on prices coming from wage earners and from firms seeking to maintain real wages and profits unchanged, despite the loss in the terms of trade. The more established credibility the monetary authority has in terms of preserving price stability, the easier this task should be. In this respect, it is important to acknowledge that supply-side shocks always entail a change in the non-inflationary

potential level of output. Price stability and economic cycle stability may be reconciled if the loss of potential output stemming from supply shocks is properly recognised.

## **5.2. The ECB's policy framework and macroeconomic stability**

I would now like to focus on the role the ECB can play so as to contribute to macroeconomic stability. The Treaty and the ESCB/ECB Statute clearly state that the primary objective of the single monetary policy is to maintain price stability. They also state that, provided that the attainment of its primary objective is not jeopardised, the ECB will support the general economic policies of the European Union so as to contribute to the achievement of the EU's objectives. These include "sustainable and non-inflationary growth". Thus, the ECB's mandate and the conclusions previously reached regarding the role of monetary policy are consistent. This mandate, which is enshrined in the Treaty, lays the foundations for the ECB's commitment to price stability and, together with the Treaty provisions concerning central bank independence and accountability, it supports the ECB's credibility.

To implement its mandate and complement the Treaty provisions, the ECB has formally adopted a monetary policy strategy, which provides the framework for internal policy decisions and external communication. A key element of this strategy is the commitment to maintain price stability in the medium term according to an explicit quantitative definition. The announcement of a quantitative definition of price stability aims to anchor the public's inflation expectations. The evidence available confirms that this goal has been achieved, since inflation expectations in the euro area – as measured from surveys – have consistently remained below but close to 2%. Another important feature of the ECB's strategy is that it is forward looking, with a medium-term orientation. This reflects the long time lags in the effects of monetary policy on the price level, which have been confirmed by the empirical evidence on the monetary transmission mechanism in the euro area. As such, the strategy does not justify short-term activism and policies aimed at fine-tuning the economy. At the same time, the medium-term orientation of the strategy allows for a gradualist policy response to shocks to the price level and provides a degree of flexibility which may be needed to deal with various types of severe shocks.

The combination of commitment and flexibility which characterises the ECB's strategy allows for some "constrained discretion" in dealing with cyclical output fluctuations, consistent with maintaining price stability<sup>15</sup>. The forward-looking, medium-term orientation of the strategy also makes it possible to be proactive in monetary policy-making. As I have mentioned, this is essential if monetary policy is to react promptly and effectively when significant risks of inflation or deflation emerge. Furthermore, in the case of cycles caused by supply shocks, the medium-term orientation helps to maintain expectations of price stability, thereby helping to minimise undesirable second-round price effects and at the same time speeding up the return to a path of long-term growth.

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<sup>15</sup> The term "constrained discretion" has previously been employed by King (1997) and Bernanke and Mishkin (1997) to describe the inflation targeting approach to monetary policy. I use this term in a broader and different sense, similar to that used by Bernanke (2003).



In conclusion, I would like to emphasise that economic theory and evidence support the proposition that the primary objective of monetary policy should be to maintain price stability in the medium and longer term. By attaining this objective, monetary policy fosters sustainable growth and helps to reduce the volatility of aggregate output. Thus, an activist counter-cyclical monetary policy aimed at fine-tuning the economy should be avoided under normal circumstances. The risks such a policy entails outweigh potential benefits. This, however, does not mean that we should not retain some flexibility to act when faced with severe shocks that imply major risks to growth. The monetary policy strategy of the ECB provides flexibility to react appropriately to such situations and in a manner which is consistent with its commitment to price stability.

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## Stanley Fischer

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The contribution of Lucas Papademos is a very useful and interesting paper. In light of the time constraint, let me move from my original nine points to four points:

- first, on the channels of monetary policy,
- second, on fine-tuning,
- third, on asset prices and monetary policy,
- fourth, on a key omission, which I will describe at the end.

On the channels of monetary policy, the paper emphasizes that monetary policy works through its impacts on spending *via* interest rate and credit channels in much the same way in Europe as it does in the United States. Interestingly, the paper says that research sponsored by the Eurosystem does not find major differences in the ways monetary policy works in different European countries.

The paper also refers to the effects of the monetary policy framework on expectations. I believe that as we think about what has happened since the introduction of inflation targeting regimes and other stability-oriented monetary policy frameworks, we will put more and more emphasis on the role of expectations and the self-stabilising capacities of a system in which there is a belief that policy will produce a stable, long-term inflation rate. To put the point I am trying to make very simply, consider the case of the Bank of England and the remarkable stability of the inflation rate in Britain in the last five or six years that is shown on one of Patrick Artus' charts. It is really very hard to believe that that stability was brought about by the great success of the Bank of England in moving the helm of monetary policy every ten seconds. Rather, once the Monetary Policy Committee had established the credibility of the monetary policy framework – and that was of course difficult – they did not have to adjust the levers of monetary policy very often. It seemed that the system had developed a self-stabilizing property that we probably need to understand a bit more.

Second, on fine-tuning. The paper, like everyone, is against fine-tuning. But at the same time, let me quote, “monetary policy should endeavour to counteract inflationary and deflationary risks alike, as soon as they emerge and in a systematic, proactive and forward-looking way”. I am in favour of being systematic, proactive and forward-looking, and also against fine-tuning, but I am not sure exactly where to find the dividing line. I assume the advice is to avoid adjusting the policy levers too often: when in doubt do nothing. There is a story about Calvin Coolidge, who as you know presided over the great boom in the 1920s in the United States. When his advisors brought him some difficult problem to deal with, he listened carefully and then asked: “What can I do about it?” They said “nothing”, he said “very good” and went back to sleep. There must be an optimal degree of tuning because presumably, we are also not in favour of crude tuning. We need to figure out what the right balance is.

The third point on asset prices, on which the paper was very interesting. The point that Lucas Papademos made – and it is a bit different from what is usually said about suspected asset bubbles – is that such bubbles are typically associated with signals of other problems, particularly very rapid credit growth, so that the policymaker would know from more than asset prices alone that something potentially dangerous is happening in the asset markets. In the end Lucas Papademos recommends that such situations should be dealt with mainly by talking about the problem, rather than by using the interest rate. This is based on an episode of his own past history where he apparently successfully talked down an asset bubble in Greece. That was a successful episode, but history includes some failed cases of talking down asset price bubbles – this issues remains a very active and very important one.

In thinking about the difficulties of recognizing bubbles, I am reminded about the famous United States Supreme Court ruling on pornography where the judges in essence said that although they could not define pornography, they knew it when they saw it. It is the same with asset price bubbles: there comes a point at which you can believe with considerable confidence that you are in a bubble process. That is likely to happen late in the process, but I believe it does eventually happen if the bubble keeps on inflating. Because the consequences of doing nothing may be very severe, the policymakers need by that point to think about doing more than talking, possibly using regulations, and even possibly *in extremis*, using interest rates.

Finally, on the key omission, there is a discussion on the monetary policy framework of the ECB at the end of the paper, but you did not see the words “two pillars” anywhere and you did not see a discussion of inflation targeting. Thus, while the paper discusses many aspects of the ECB policy framework, it does not address the central elements of the framework. It would have been interesting to have a discussion of the “two pillars” approach, of which one is inflation targeting.

But I thought that the author of this paper, of this detective novel, was giving us a hint, because right at the end, he referred to constrained discretion. It appears that central bankers sometimes have to deploy constrained discretion in discussing their own actions.

## Jürgen von Hagen

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I read Lucas Papademos' paper much like a symphony, although it turns out to be more of the Bruckner-type than the Hector Berlioz-type. A symphony that develops two themes, tosses them around, brings up sub-themes, carries the main themes forward and ends in a finale furioso which, as I read it, is no less than calling for a change in the ECB's policy paradigm.

The first theme developed in the paper is "Asset prices and monetary policy". The main message is that asset prices play a role in monetary policy. My first reaction was that we have known that for a while: Irving Fisher talks about it, Tobin talks about it, Brunner and Meltzer talk about it, so why should we be excited? The problem is that, once we note that there are more asset prices than just "the" interest rate in the economy, we have to realise that we are not just talking about asset prices, we are really talking about relative asset prices and that is the relative asset prices of debt, contrasted to the relative price of equity, contrasted to relative price of real estate and perhaps other forms of assets.

Once we allow our models to give these relative asset prices a significant role in the transmission of monetary policy, we obtain what Rudi Dornbusch, in a comment on Brunner and Meltzer's work once described as a forest of partial derivatives. The point is that our models become so ambiguous and require so many assumptions about the relative substitutability of these various assets that in the end, we have nothing to say about the particular effect of monetary policy actions on the business cycle. And I am saying that mainly to emphasise that it is fine to recognise the importance of asset prices for monetary policy, but then the main message must be to be very careful, even if we are looking at a major decline of stock prices today, in 2003, because we are also looking at a major increase in housing prices. Thus, one important relative price is moving down and another one is moving up. Whether or not a cut in the monetary policy rate is appropriate under the face of these developments remains very much up in the air.

I would also like to make some advertisement for recent researches conducted by Charles Goodhart and one of my colleagues at the University of Bonn, Boris Hoffman. They pursue exactly this line of questions, asking what are the important asset prices in the transmission of monetary policy. They do that by estimating *IS* curves and forecasting models for CPI inflation rates. Consistently, they find that the important asset price in the economy seems to be, at least for these purposes, real housing prices and not stock prices. Real housing prices dominate equity prices when it comes to forecasting inflation. They also turn out to be extremely useful for constructing a meaningful, empirical *IS* curve. Stock prices and exchange rates do not play that role. This suggests that we should pay more attention to real housing prices today and less to stock prices.



The other main theme of the paper is the paradigm of “constrained discretion” as a guide for monetary policy. The concept of constrained discretion rests on four propositions elaborated in the paper:

- *proposition A*: monetary policy should give priority to price stability;
- *proposition B*: monetary policy has no lasting impact on output, hence its role can only be stabilizing around potential;
- *proposition C*: it is not worthwhile attempting that under normal circumstances;
- *proposition D*: monetary policy should retain flexibility to stabilise output in the case of severe shocks, or severe cumulative impact of various factors.

The problem with constrained discretion of course is that the minute you spell out *proposition D*, *proposition A* has lost credibility. Lucas Papademos recognises that and responds immediately by saying that, therefore, discretion must be “carefully implemented and effectively communicated”. Now the first question is: Is that possible or is it wishful thinking? Empirical evidence certainly suggests that credibility must be earned and maintained at the cost of sticking to the goal of price stability, even in bad times.

The second problem is: Who defines what are severe shocks or when are the cumulative effects of various factors severe? Policy-makers and central bankers always tend to call the present situation they are in severe, no matter what it really looks like, in order to justify monetary activism. Let me give you an example. In the spring of 1999, when the euro economy was basically returning to normal – except for Germany, which had just inflicted on herself some severe negative supply shocks – the ECB decided to lower interest rates to prevent some severe circumstances, with the result that inflation picked up soon afterwards, peaking at slightly above 3%, and has been above 2% since the year 2000. A current analysis of our situation today certainly bears the risk of a replay of this mistake, with the only exception being that this time we are going to start the process at an inflation rate of 2.3% rather than 1%.

Lucas Papademos’s points to the empirical evidence suggesting that the ECB has gained enough credibility to use constrained discretion. My question is, what about the observation that core inflation remains sticky and above 2% even under a weak real economy? What about the observation – and especially in Germany – that unions have quite aggressive wage demands even in the presence of weak labour markets? That does not support the idea of credible monetary policy communication.

Summing up, I think the key sentence in this paper is “activist monetary policy should be avoided in normal circumstances”. The way to interpret this is to say in parenthesis that the limitation to “most circumstances” does not apply for today. So I take this as a call for a new policy paradigm at the ECB. Personally, I am not convinced that the proper policy response to the current circumstances is to be seen in a more activist policy, especially because the signals we get from asset prices are quite ambiguous.

## **Yutaka Yamaguchi**

*Deputy Governor*

*Bank of Japan*

Lucas Papademos gave a careful and very useful overview of the key issues in business cycles and monetary policy. He points out that, while the volatility of output growth and inflation has steadily declined in both the US and the euro area over the past decade, such has not been the case in Japan. This remark perhaps permits me to offer my personal view on the Japanese experience in a slightly different flavor, which could be complementary to his argument.

Typically the key issues in monetary policy are those discussed in Papademos paper and they include: are asset prices an effective information variable about future price developments? Given the asymmetric effects of monetary easing and tightening, which is more important, preemptive easing or preemptive tightening? Moreover, is it a good thing for monetary policy to assume symmetric reaction to the inflation gap and deflation gap in a policy rule? And, how can monetary policy be effected to prevent the adverse effects stemming from the boom-bust cycle of asset prices on the economy, including financial systems?

These questions are very much relevant to us. In fact, I agree that Japan's experience suggests that the boom-bust cycle of asset prices could have significant effects on business cycles. At the same time, however, I feel that our recent experience tells us something beyond those standard discussions on business cycles and monetary policy. It seems to me that a major issue arising out of Japan's decade-long difficulties is that a significant and unforeseen slowdown in the potential growth rate can be the main concern to central bankers.

One can construct a long list of problems responsible for the slowdown in Japan's potential growth rate from about 4% a year in the 1980s to around 1% more recently. Recognized as such problems are: erosion of the balance sheets and persisting financial instability; failure for the economy to shift resources from inefficient firms and sectors to more productive ones; and lack of effective governance to promote such adjustment. Regardless of the "true" cause of shift-down in growth, a weakening potential growth can pose serious questions for monetary policy, of which I will discuss just a few.

The first is the behavior of asset prices. When growth potential slows down with lower productivity rise, inefficiency at firms tends to aggravate and rates of return fall. The stock prices of such firms are unlikely to recover in the long-run. The balance sheets of these firms remain weak. Such seems to be the basic background for the persistent decline in key asset prices since the early 1990s – which amounted to as much as annual 10% or cumulatively 80%.

How can monetary policy differ from standard stabilization policy in such a situation? To the extent asset prices provide a useful clue to forecast future inflation, the central bank with price stability objective would address the prospective inflationary development incorporating the projected effects coming from the asset markets. Furthermore the central bank might want to respond to a large swing in asset prices in a flexible manner so as to achieve price stability "over time", while allowing a temporary deviation from the defined state of stability.

However, such an approach would require a stable relationship between asset prices and prices of goods and services. Such robustness is not expected in an economy where growth potential is significantly weakening. Then the issue is whether an “aggressive” monetary policy could somehow achieve desirable positive inflation even while falling trend of asset prices continued. This can be a complex problem in the case of an economy like Japan where rising property value has historically played a pivotal role to stabilize balance sheets of firms both financial and non-financial.

To be sure, structural shift in growth can only be learnt with a significant lag. The central bank has to operate on the basis of real-time information. It might feel compelled to ease if faced with downside risks associated with collapsing asset market irrespective of underlying structural transformation of the economy. But the effects of such actions would likely be quite different in economies with or without shifting growth potential.

The second question is to what extent should monetary policy be eased when some real (as opposed to monetary) forces are thought to be at work to adversely affect potential as well as current economic growth? Some economists indeed point out in the Japanese context that the prevailing low interest rate is not effective in stimulating private demand while deferring the resolution of structural problems. They favor non-zero interest rate to limit any incentive for postponing painful adjustment. Only after further structural adjustment, the logic goes, private demand will grow responsive to policy stimulus.

No doubt, the first best policy response is to address the factors responsible. In the case of a downward shift in the growth potential, efforts to reverse such a trend should be given overriding importance. Monetary policy cannot directly boost such potential; it can only offer stable ground for sound economic development, which itself is an important contribution.

My own line of thinking in this situation has been as follows. First, even if some structural factors on the “real” side are behind prolonged low economic growth, it is very difficult to estimate their contributions. Moreover “supply side” problems are often intertwined with demand factors. As long as some positive net effects are expected on the demand side monetary policy should be mobilized. Second, some structural policies are likely to worsen short-run growth picture. Thus in the process of resolving structural problems, monetary policy should be engineered so as to provide maximum support for aggregate demand. Easy money, particularly when sustained, might provide some incentives for forbearance, but after all central bank is not operating under a mandate to minimize moral hazard on the part of economic agents.

The pursuit of this line of thinking could in theory bring any central bank to the zero nominal bound of interest rate unless the economic situation somehow begins to improve on the way. In practice, short of genuinely extraordinary shocks, central banks seldom face such a situation. But, in exceptionally adverse situations, the zero nominal rate might be most consistent with the economy. Then the conventional monetary policy loses its power to further affect the economy.

The Bank of Japan, having confirmed that even the zero short-term rate didn’t produce satisfactory results, adopted “quantitative easing” framework two years ago. Full evaluation of this framework has yet to be conducted. On the other hand,

suggestions abound that the Bank further shifts to “unconventional” policy options to stimulate the economy. I will not deal with these issues since they are perhaps too Japan-specific. Suffice it to say here that at least one line of argument on the role of monetary policy leads us, at least in theory, to the various issues surrounding zero nominal bound of interest rate and beyond. And once a central bank stepped into the “quantitative easing”, it would carefully have to devise an exit strategy – which is my final topic of discussion today.

Exiting from easy money phase would not be such a big challenge under normal economic circumstances. An independent central bank would shift interest rate gear from low to normal to high as needed. Losses in some markets would no doubt emerge but it is a part of the game well expected by market players.

In contrast, an exit from “quantitative easing” would present more formidable challenges. The central bank concerned would start absorbing the massive excess reserves it had supplied simply to go back to the interest rate regime. It would weigh alternative approaches to implement the exiting but would have to sell some assets on a massive scale. Coupled with the shifting picture of inflation outlook, such an operation by the central bank might trigger a sharp market reversal. Would an inflation target effectively moderate such market reaction? I think not, though it is an interesting question. The very existence of a low inflation target, when inflation is rising enough to warrant a regime change in monetary policy, might well induce the forward-looking financial markets to anticipate the degree of liquidity absorbing operations and associated changes in the market rates.

Exiting from “quantitative easing” without destabilizing the financial markets and the economy appears to be a narrow path indeed. But it is something that a responsible central bank has to carefully formulate even as it explores avenues for further easing.

# **GLOBALISATION AND INTERNATIONAL FINANCE**

Jean-Claude Trichet  
*Chairman*

**Lecture**

Alan Greenspan

# Global Finance: Is it Slowing?

**Alan Greenspan**

*Chairman*

*Board of Governors of the Federal Reserve System*

For at least the past twenty years, the process of financial globalization has been rapidly advancing. The development of new financial products, notably a wide variety of over-the-counter (OTC) derivatives, and the removal of many barriers to international capital mobility have tightened linkages among global financial markets. As a result, capital has flowed more freely across national borders in search of the highest risk-adjusted rates of return.

At some point, globalization undoubtedly will reach maturity. Financial innovation will slow as we approach a world in which financial markets are complete in the sense that all financial risks can be efficiently transferred to those most willing to bear them. Equivalently, as institutional and legal impediments to cross-border flows are eliminated, the bias in the allocation of savings toward local investments will be reduced to its minimum, and the opportunity for arbitrage across national markets will disappear.

In this lecture, I will consider whether there are signs that globalization is nearing maturity. In particular, has the pace of financial innovation begun to slow? Do the patterns of capital flows suggest that global financial markets are approaching full integration? And, most important, what do the answers to these questions imply regarding the potential for future contributions of globalization to economic growth and financial stability?

## ***Has the pace of financial innovation begun to slow?***

Although the pace of innovation cannot be measured with precision, important new instruments continue to emerge. Credit derivatives arose only in the early to mid-1990s. Still more recent has been the marriage of derivatives and securitization techniques in the form of synthetic collateralized debt obligations (CDOs). These instruments have broadened the range of investors willing to provide credit protection by pooling and unbundling credit risk through the creation of securities that best fit their preferences for risk and return. The combination of derivatives and securitization techniques is being applied to a growing range of underlying assets.

Additionally, the way that OTC derivatives are traded and settled clearly could be significantly improved. Despite, or perhaps because of, the rapid pace of product development, the derivatives industry still executes trades predominantly by telephone and confirms them by fax. Systems for the electronic execution and confirmation of trades require a degree of standardization and a large measure of cooperation that are not required for developing new instruments. Still, the derivatives industry has a long history of cooperating to standardize documentation, and it is disappointing that so little progress has been made in adopting efficient and reliable means of executing and confirming trades.

We must also consider how broadly the recent innovations have been adopted. Of course, the growth of OTC derivatives over the past twenty years has been spectacular and shows no obvious signs of abating. The latest estimate by the Bank for International Settlements of the worldwide notional amount of OTC derivatives outstanding reached USD 128 trillion in June 2002, a figure more than 25% larger than that recorded a year earlier. Such derivatives have become indispensable risk-management tools for many of the largest corporations. Yet a recent study drawing on US Securities and Exchange Commission filings indicated that, as of year-end 1997, only a little more than half of the thousand largest US non-financial corporations used OTC or exchange-traded derivatives<sup>1</sup>. More detailed, comprehensive and timely data are available for American banking organizations. Those data show that although the fifty largest US banking organizations all used derivatives as of September 2002, only 5% of all US banking firms used any type of derivative. In the case of OTC credit derivatives, which have proved to be particularly effective in risk management, a mere 0.2% of US banking organizations have begun to use such tools. Even among the fifty largest, less than half use these instruments. Thus, judging from the data on the use of derivatives, the potential for financial innovation to have a broader impact and thereby to continue contributing to globalization appears considerable.

### ***Evidence of financial globalization in capital flows***

Implicit in the criterion for complete globalization that opportunities for cross-border arbitrage disappear is that global savings should flow irrespective of location to investment in projects with the highest risk-adjusted rate of return<sup>2</sup>.

A half-century ago, Harry Markowitz showed mathematically that an investor can reduce the variance, and hence the riskiness, of his portfolio for a given expected return by diversifying into assets with imperfectly correlated returns<sup>3</sup>. Subsequent research showed that foreign assets are excellent candidates for diversification<sup>4</sup>.

Direct barriers to capital flows, such as restrictions on foreign purchases of domestic assets and limitations on the ability of domestic residents to invest abroad, have promoted home bias, although, as I will discuss shortly, many such direct obstacles in recent decades have been mitigated. Indirect barriers, such as high costs of foreign transactions, inadequate information on foreign investments and cultural and linguistic differences between foreign and domestic investors, are also seen as sustaining home bias. And finally, there are exchange rate and country risks. Wild swings in exchange rates can entirely erase earnings on foreign assets, even as those

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<sup>1</sup> W. Guay and S.P. Kothari : “How Much Do Firms Hedge with Derivatives?”, *Journal of Financial Economics*, forthcoming.

<sup>2</sup> Risk-neutral investors, if they exist, will price an asset solely on the basis of its expected return. But at best, very few humans are risk neutral. In general, investors require an asset’s price to be discounted below the risk-neutral price as compensation for bearing risk. The amount of compensation required will vary both with the actual riskiness, or variance, of the asset’s returns and with the investor’s degree of risk aversion. If familiarity reduces an investor’s uncertainty over expected returns to an asset, one would expect that that investor would discount unfamiliar assets more heavily than familiar assets. In such a case, differences between foreign and domestic investors’ familiarity with an investment would lead to under-investment by foreigners relative to domestic investors, leaving an irreducible minimum bias toward investing locally. It is thus total risk, not neutral risk, that is arbitrated.

<sup>3</sup> H. Markowitz (1952): “Portfolio Selection”, *Journal of Finance*, vol. 7, n° 1, p. 77-91.

<sup>4</sup> H.G. Grubel (1968): “Internationally Diversified Portfolios”, *American Economic Review*, vol. 58, p. 1299-314; or B.H. Solnik (1974): “Why not Diversify Internationally Rather than Domestically?”, *Financial Analysts Journal*, vol. 30, p. 91-135.

same assets yield a healthy return in local currencies. Concern over who will bear the exchange-rate risk or, alternatively, who will bear the costs of hedging that risk are an additional factor retarding international investment. Along with foreign exchange risk, political risk helps to drive a wedge between foreign and domestic perceptions of the expected risk-adjusted return to an asset. The consequence of such dual expectations is a lower market clearing price for those assets and a lower level of foreign investment than would exist in the absence of such distortions.

Aside from any direct or indirect barriers, people seem to prefer to invest in familiar local businesses even though currency and country risks do not exist. The United States has no barriers to interstate investment, and the states share a common currency, culture, language, and legal system, yet studies have shown that individual investors and even professional money managers have a slight preference for investments in their own communities and states. Trust, so crucial an aspect of investing, is most likely to be fostered by the familiarity of local communities.

Researchers have consistently found that, in general, investors direct too much of their savings domestically. Owing to risk aversion, they tend, to their own detriment, to over-discount foreign returns. Such suboptimal allocation of capital lowers living standards everywhere.

In their seminal paper twenty years ago, Feldstein and Horioka pointed out that, on net, nations' savings are generally invested domestically<sup>5</sup>. Their research implies that global savings are inefficiently distributed to investment, meaning that savers are bearing too much risk for the returns they achieve and that countries with high-potential investment projects are getting less financing than they could productively employ. A clear benefit of financial globalization is that, to the extent that it reduces home bias, savings will be better directed to the most promising investments in the world, increasing global economic growth and prosperity. However, so long as risk aversion exists and trust is enhanced by local familiarity, we cannot expect that home bias will fully dissipate.

Nevertheless, is globalization at least reducing home bias toward its minimum level? Survey data collected in the United States suggest a large swing toward foreign investment. US residents began to increase the share of foreign assets in their portfolios from less than 9% in the late 1970s to about 15% by the mid-1990s. Since then, the trend has leveled off. The increased allocation to foreign assets was broad based, encompassing portfolio flows into debt and equity securities as well as foreign direct investment.

A substantial part of the swing to holdings of foreign assets by US residents coincided with a significant liberalization of capital accounts in both developed and emerging-market economies. In Western Europe, as goods markets became increasingly integrated, capital accounts followed suit. Starting in the 1980s, controls on foreign exchange and on inbound and outbound capital flows were relaxed. In Japan, the most-restrictive capital controls were relaxed in the early 1980s, but major liberalization came in the mid-1990s with the "Big Bang" financial reform measures. Similarly, many emerging-market economies removed or weakened currency and capital account controls in the 1990s. One cross-country

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<sup>5</sup> M. Feldstein and C. Horioka (1980) : "Domestic Savings and International Capital Flows", *Economic Journal*, vol. 90, p. 314-29.



study finds that, from 1983 to 1998, capital account openness improved markedly<sup>6</sup>. With increased experience, US investors doubtless improved their familiarity with foreign investment opportunities, and home bias, accordingly, declined.

Data on financial flows into the United States indicate that foreign purchases of US securities and foreign direct investment in the United States began to pick up in the early 1990s, and it has surged in the past four years. A similar pattern is apparent in the accumulated foreign holdings of securities issued by US residents. As late as 1998, foreign residents owned just 6% of US equities, but by 2001 that figure had risen to almost 15%. Reliable data on capital flows and securities holdings outside the United States are scarce, but what data we can muster tell a similar story.

Although international diversification appears to have increased over the past two decades, it remains puzzling that, as I mentioned previously, shares of foreign assets in US residents' portfolios began to plateau in the mid-1990s at levels still well below full diversification. This outcome might indicate either that substantial indirect barriers to capital flows still exist or that an irreducible home bias among US investors is inhibiting geographic diversification.

Formidable indirect institutional barriers to lowering home bias beyond those to which I alluded earlier obviously do remain. Legal restrictions on foreign ownership of domestic assets or limits on the flow of domestic funds abroad can be significant. Informal disclosure practices that favor local investors may lead to information asymmetries – that is, an advantage to domestic residents in acquiring information about prospective investments – that discourage foreign investment in a country. These asymmetries may be exacerbated by differences in corporate governance and local norms of fairness that diverge from foreign standards, undercutting trust. This unfamiliarity fosters risk aversion and elevates home bias.

Recent studies suggest that differing disclosure and corporate governance standards preserve home bias. Researchers have shown that, in most countries, holding a controlling interest in a firm yields significant benefits that do not accrue to minority shareholders, and that a substantial portion of home bias in those countries can be attributed to local holdings of closely held firms<sup>7</sup>. Additionally, staff at the Federal Reserve Board and International Monetary Fund have shown that, for firms from emerging-market economies that meet US standards for disclosure and protection of minority shareholder rights, US residents hold the theoretically predicted proportion of company shares in their portfolios<sup>8</sup>. Thus, it appears that an improvement in global reporting and corporate governance standards could significantly reduce global home bias.

So do derivatives markets that help to narrow the wedge between the perceived risk-adjusted returns of foreign and domestic residents on any particular investment. Foreign exchange forward contracts and swaps have helped reduce the overall risk

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<sup>6</sup> J. Miniane (2000): "A New Set of Measures on Capital Account Restrictions", *mimeo*, Johns Hopkins University, November

<sup>7</sup> A. Dyck and L. Zingales (2001): "Why are private benefits of control so large in certain countries and what effect does this have on their financial development?", *mimeo*, University of Chicago, or T. Nenova : "The value of corporate votes and control benefits: cross-country analysis", *Journal of Financial Economics*, forthcoming; and M. Dahlquist *et al* : "Corporate governance and the home bias", *Journal of Financial and Quantitative Analysis*, forthcoming.

<sup>8</sup> H.J. Edison and F.E. Warnock (2003): "US investors' emerging market equity portfolios: a security-level analysis", prepared for the *IMF Global Linkages Conference*, January.

of securities denominated in foreign currencies or to transfer the risks to agents with either a greater appetite for risk or a longer investment horizon over which to smooth losses. Even the imposition of capital controls, foreign exchange restrictions, or devaluations of fixed currencies can now be at least partially hedged through nondeliverable forward contracts that settle in dollars for the change in value of an underlying currency over some pre-determined period. Credit default swaps now allow agents to hedge or exchange even sovereign risk. Argentina's recent default provided a powerful test of these new derivatives and proved their worth, perhaps even helping to limit contagion.

The further development of derivatives markets, particularly in smaller economies where idiosyncratic risk may be more difficult to hedge, will likely facilitate greater cross-border flows and a more productive distribution of global savings. The coincident development of local derivatives markets may facilitate the development of local currency bond markets in small or emerging-market economies by giving foreign and domestic investors more tools with which to hedge their exposure to the country risk.

***What are the real economic implications of financial globalization?***

It should be apparent that the process of financial globalization has come a long way but is as yet incomplete. Further development should lead to the enrichment and growth of developing economies as global savings are efficiently directed to capital accumulation in those countries where the marginal product of capital is highest.

Another possible result of the process of financial globalization is increasingly large international payment imbalances as countries exporting capital run current account surpluses and those receiving capital run current account deficits. However, such developments should not necessarily be taken as a sign of a systemic problem. They can, in fact, be a sign that the global economy is becoming more efficient at directing capital to assets with the highest risk-adjusted rate of return. Along the way, the economies that liberalize first and to the greatest extent, and credibly commit to respect the property rights of foreigners, may receive the greater portion of free-flowing capital and thus potentially both greater net inflows and larger current account deficits.

This process may have contributed to the recent expansion of the US current account deficit. That expansion coincided with a steady appreciation of the US dollar in the late 1990s, suggesting that net demand for US assets was an important factor driving the significant widening of the US current account deficit. As noted earlier, US savers' appetite for increasing the share of their portfolio devoted to foreign assets began to wane, and at roughly the same time capital account liberalization in other countries freed a large pool of savings to be invested internationally. These newly freed savings flowed disproportionately to the United States, where as a consequence one must assume risk-adjusted returns were perceived to be highest.

Apparently, rapid US productivity gains not seen elsewhere raised expectations for the return to capital on US assets. Moreover, the Asian crisis in 1997 combined with the Russian default a year later to reverse global investors' enthusiasm for investments in developing economies. The crises reminded foreign investors of the indirect barriers that continue to exist, especially in the developing world: a lack of adequate corporate disclosure and governance; underdeveloped, and often capricious, legal structures for contract dissolution and bankruptcy; and *ex post*

government intervention in favor of domestic residents over foreign investors. Capital flows to the emerging-market economies, which had been at record levels throughout the early 1990s, dried up as a result. In contrast, the deep and broad financial markets of the United States and a well-developed legal system with a long history of respect for private property drew record financial flows into the United States.

The lesson we should draw, however, is not that continued financial globalization will draw ever greater amounts of capital to the United States or even to the industrial world more generally. There are limits to the accumulation of net claims against an economy that persistent current account deficits imply. The cost of servicing such claims adds to the current account deficit and, under certain circumstances, can be destabilizing.

The gross size of global quarterly or annual surpluses and matching deficits should rise as indirect barriers to cross-border investment are eliminated and home bias is reduced. However, portfolio adjustments will presumably continuously ameliorate such imbalances. As international accounting and reporting standards become better, information asymmetries that currently exist between foreign and domestic investors will diminish. Adequate disclosure will, one hopes, accompany the development of institutions that will reduce corruption, and improve corporate governance, respect for private property and the rights of minority shareholders. Together with the growth of deeper and broader markets for derivatives, these developments should lower the risk of cross-border investment, making a wider array of the world's assets more attractive to international investors.

Despite much progress, the process of global financial integration is far from complete. Though most direct barriers to international capital flows have been eliminated, numerous indirect barriers remain in place. While a dazzling array of financial innovations has sprouted in recent decades, the inability of market participants to hedge, trade, or share certain risks, especially those related to cross-border investment, implies that financial markets still need further innovation and deepening. Such barriers to capital flows preserve home bias and impede the efficient distribution of global savings to the most productive investments.

We must remember that as financial globalization matures it will have consequences to economies that we cannot ignore. Global capital flows will increase in size and will switch directions more easily. As a result, temporary imbalances will naturally occur from time to time. To counter these, we need to consider various multilateral policy initiatives, from international accounting standards to international capital requirements for banks, from a “New Financial Architecture” to crisis prevention and resolution mechanisms. Also, market participants will need to enhance their ability to manage vast quantities of collateral that are integral to globalized modern finance. Our goals should include not only global financial stability, but also the promotion of free flowing capital directed to its most productive uses throughout the world. That goal will bring about greater financial stability and a more prosperous future for all who choose to participate in the global economy.

# **CYCLICALITY AND INTERNATIONAL FINANCIAL STABILITY**

## **Round Table**

Jaime Caruana  
*Chairman*

Gikas Hardouvelis

Gerd Häusler

Philippe Lagayette

Guillermo Ortiz

*According to their order of presentation*

**Jaime Caruana**  
*Governor*  
*Banco de España*

It is a real pleasure for me to be here today with this excellent group of panellists to discuss an issue – Cyclicalities and International Financial Stability – that is quite a complex one. Some elements of this discussion have already arisen in the previous discussions. We have seen that cycles have to do with responses and reactions. At least three times, I have seen a chart of housing prices in Spain and also examples of how credit is growing in my country. So we are quite certain that the financial sector can contribute to swings in real activity, and in some occasions even intensify and accelerate them. Evidently, there are feedback effects between credit growth and increases in assets prices. This interaction between financial and real factors in business cycles requires close attention. I believe that in the regulatory and supervisory worlds this interaction is duly receiving such attention.

All of this is even more complex when we look at the international or global economy, where we have global information and greater integration between national economies and financial markets. This integration brings benefits in terms of risk sharing, but also has some potential for shock contagion. We have massive stocks of funds and flows can change rapidly.

These are only a few of the issues that we can discuss today with this first-rate panel. The first panellist is Gikas Hardouvelis. He is Professor at the University of Piraeus, Chief Economic Advisor to the Prime Minister in Greece and has also had quite a good, and varied background in the private sector. I see that he has also worked for the Athens Derivatives Exchange, as a Member of the Board of Directors. I would like to start by inviting Gikas Hardouvelis to take the floor.

# Asset Prices and the Need for New Policy Instruments: the Case of Countercyclical Margin Policy

**Gikas A. Hardouvelis**

*Professor, University of Piraeus  
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## *Abstract*

*Margin requirements are official restrictions on the amount of credit investors can receive from brokers in order to buy or short-sell stock (Hardouvelis, 1988). A margin policy of leaning against the wind of stock price fluctuations is stabilizing both in the short- and the long-run.*

*Higher margins reduce both short-run stock price volatility and the possibility that a bubble unfolds, thus contributing to both short- and long-term stability in the market. Increasing margins is a precautionary measure. At the other end, lower margin requirements soften a sudden fall of stock prices without resulting in higher short-run volatility. Decreasing margins is an ex-post measure that improves liquidity, calms the market and softens a crash.*

*Unlike monetary policy, a countercyclical margin policy can be administered without having to agree on the presence or absence of a bubble and without having to compromise any other policy objectives. It can also be administered by a regulator other than the central bank.*

## **1. Introduction**

Asset price booms and busts are back at center stage in the public policy debate. During the last fifteen years, the major economies of the world have witnessed at least three major bubble crashes, beginning with the October 1987 worldwide stock market crash. Then, in the early 1990s we saw the collapse of the Japanese stock and real estate markets and the subsequent stagnation of the Japanese economy. And more recently, in the first quarter of 2000, we witnessed the collapse of technology stocks in the US, which carried over to a world-wide gradual decline in stock markets and a subsequent growth recession across the developed economies.

Recently, there is an explosion of interest in the subject of how monetary policy can cope with bubbles. This literature is reviewed briefly in section 2. Some argue that it is impossible to identify bubbles. Others argue that monetary policy need do nothing about bubbles, since it counteracts them automatically by following its inflation targets (Bernanke and Gertler, 1999). Others disagree and propose that monetary policy respond to bubbles in addition to responding to deviations from its other objectives. Finally, others claim that the correct policy for counteracting bubbles is not monetary policy, but regulatory policy.

This paper subscribes to the view that we need to explore new instruments for tackling the issue of abrupt movements in asset prices. These instruments should preferably be regulatory, specific to the problem of bubbles because monetary policy

is overburdened by its other objectives, which take priority. The paper claims that the authorities need to take another look at an instrument with a long history: margin requirements. The historical evidence shows that margin requirements were, indeed, an effective tool of counteracting excessive movements in stock prices. The paper provides a comprehensive review of the empirical evidence.

The review on margin requirements and their effects proceeds in sections 3 through 8. Section 3 provides a description of margin regulation and an analysis of the way regulators responded in the past in order to counteract perceived unfolding bubbles. Then, section 4 concentrates on the issue of whether or not margin requirements restrict investor behaviour. Many arguments are raised against the use of margins on the basis that they are ineffective or can easily be circumvented. Yet, the empirical evidence shows a negative association between margin requirements and trading activity.

Sections 5 through 8 concentrate on the effects of margins on prices and their volatility. Section 5 examines evidence on the ability of margins to temporarily break an upward price trend or to cushion a price decline. Section 6 reviews the evidence on the relation between margin requirements, long swings in asset prices away from fundamental values and excess volatility. Section 7 focuses on short-term volatility and examines its relation to margin requirements. It clarifies some of the controversies on the time series studies on the issue and concludes that the relation is unambiguously negative. Section 8 refines the discussion of the previous section by reviewing evidence that finds an asymmetric relation between margin requirements and volatility, which suggests the use of countercyclical margin policy.

Finally, section 9 summarizes the principal findings and discusses the political economy of setting up a countercyclical margin policy. Unlike monetary policy, margin policy can be administered without having to agree on the presence or absence of a bubble and without having to compromise any other policy objectives.

## **2. Bubbles and crashes: What is the appropriate policy response?**

The October 19, 1987 stock market crash, the largest single-day crash since 1929, took many financial economists by surprise because they could not explain it as a sudden revision neither in risk *premia* nor in market expectations of future fundamentals (Blume, Mackinley, and Terker, 1989). Similarly, regulators and politicians were shaken up by the inability of the US cash and futures markets to operate smoothly during the hours of the crash and by the contagion between the various stock markets around the world. A Presidential Task Force was soon created, headed by Thomas Brady, an investment banker at the time, in order to study the phenomenon and recommend policy changes. The Brady Report did lead to some policy changes, one of which dealt with the question of which organization or regulator is responsible for setting margin requirements on equity instruments, an issue which is closely related to the Federal Reserve and will be discussed later.

Despite its severity, the crash of 1987 was forgotten relatively soon. This is probably because in a few months after October 1987 the stock market recovered fully and the economy was unaffected. Finance economists recovered from their initial shock as well, and simply told the rest of the economics profession not to worry about large swings in asset prices. Cochrane (1991), for example, argues that focusing on price

changes provides the wrong intuition. Instead, we should be focusing on the size of the required rates of return, since a permanent change of, say, a couple of percentage points in the required rate of return can easily generate enormous price swings. And given our lack of understanding for the size of the equity premium, we should not be surprised to see large price swings. Moreover, as far as the 1987 crash is concerned, we cannot ask theories to explain unique events. One data point, such as the 1987 crash, does not constitute evidence against the efficient market hypothesis.

Relegating large asset price swings to the unexplained error term of a regression test of the efficient markets hypothesis may satisfy finance economists. It does not satisfy macroeconomists or policymakers. The bursting of the Japanese bubble made this very clear. Unique but unusual data points in the time series of stock or other asset returns can and, usually, do matter for economic activity. Both theory and history show that abrupt changes in asset valuations affect economic activity through a multiplicity of channels, such as the wealth effect, Tobin's  $q$ , or the state of the balance sheets of financial intermediaries and the wedge between the internal and external financing cost of corporations (Bernanke and Gertler, 1990).

Is the effect of booms and busts in asset prices serious enough to require special attention by the monetary and regulatory authorities? Put differently, should the authorities respond autonomously to the excessive movements of asset prices? This is a question, which has caught the attention of economists and policy makers during the past five years, as the US technology bubble was growing until it crashed.

A lot of the discussion has focused on the appropriate response function of the monetary authorities. When the exclusive target of monetary policy is price stability, then monetary authorities would respond to asset price changes only if those changes provide information about current or future inflation<sup>1</sup>. There is a lengthy literature, which claims that certain asset prices, like bond yield spreads or stock returns do predict future inflation in certain time periods. However, in a recent reassessment of the evidence, Stock and Watson (2001) claim these forecasts are highly unstable. Hence, in this restrictive view of the conduct of monetary policy, bubbles and busts of asset prices do not seem to influence monetary decisions. Bubbles could influence monetary decisions, however, in an economy in which central banks follow additional targets.

Many central banks have multiple targets. Long-run inflation is not their only target. They worry about the overall stability of the financial system and use their monetary and regulatory powers to achieve it. Some also worry about economic activity in the short-run, about recessions and unemployment. Of course, they do differ amongst each other, but their differences reflect the priority weights each one places on the individual targets.

Bernanke and Gertler (1999, 2001) argue that it is not necessary to react to bubbles if a central bank follows flexible inflation targeting, that is, it has adopted the joint target of long-run price and short-run output stability. The consequences of the bubble are counteracted automatically by the effort to keep inflation on target. This occurs because the bubble affects aggregate demand, which raises output above its natural rate, thus raising inflation. Monetary policy, being an aggregate demand

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<sup>1</sup> Goodhart (2001) argues that asset prices, especially housing prices, ought to be part of the current CPI basket because consumers care about current as well as future inflation.



policy aimed at preventing output and inflation from rising, automatically responds to the bubble consequences by preventing aggregate demand from expanding.

Blanchard (2000) takes issue with Bernanke–Gertler neutrality proposition. He argues that a bubble does not affect all components of aggregate demand equally. It is likely to affect investment more than consumption. Strict inflation targeting would then result in an unchanged overall output but with its composition altered. At the time the bubble bursts, there would be more investment and less consumption, hence excessive capital accumulation with the usual unpleasant aftermath, like collateral problems, which undermine financial stability. Of course, the central bank has the choice to eliminate the bubble from its early beginning by stabilizing investment *via* a larger increase in interest rates. Such a policy, however, would come at the expense of generating a recession. Hence, there is no easy way out of the bubble.

Cecchetti, Genberg, Lipsky and Wadhvani (2000) and Cecchetti, Genberg and Wadhvani (2002) also disagree with Bernanke and Gertler. They find that the optimal reaction function of the central bank includes not only a response to expected inflation and to the deviations of output from its potential or full-employment level, but also to deviations of asset prices from their fundamental values.

Kent and Lowe (1997) point out that the effects of bubbles and busts are asymmetric. During the expansion phase of the bubble, asset prices and economic activity expand, but following the bursting of the bubble the economy does not return to the original equilibrium. It undershoots it. The reason is the new higher fragility of the financial sector that the bubble has left behind. The financial accelerator is working in reverse.

Mishkin and White (2002) examine fifteen US stock market crashes from 1900 to 2000 and claim that the problematic crashes were the ones that left the balance sheets of financial institutions weak. They claim that financial instability is what the authorities ought to be concerned about, not bubbles and market crashes *per se*.

Of course, monetary policy is not the only way to respond to a bubble. Schwartz (2002) examines the US experience in the late 1920s and early 1930s and the Japanese experience in the 1980s and early 1990s and concludes that the main problems originated during the expansion phase of the bubble by excessive bank lending, which was collateralised by assets at inflated prices. She argues against the use of monetary policy. In these two episodes, the appropriate response by the authorities at the time should have been to make bank capital requirements an increasing function of the risk they were undertaking. Thus Schwartz prefers using discretionary regulatory policy.

Schwartz' discussion brings out an important point: if the source of the problem is known, it is preferable to use a specific rather than a general instrument. If most of the damage of a bubble is done *via* the collapse of the financial intermediation process, stricter capital requirements are one such specific instrument. More stringent provisioning is another.

Borio, Furfine and Lowe (2001) argue for using the above two supervisory instruments in a countercyclical fashion. They claim it is important to build a protective cushion in good times, which can be drawn down in bad times.

A similar countercyclical policy was proposed by Hardouvelis and Theodossiou (2002) in the case of stock market margin requirements. Margin requirements are also an instrument targeted specifically at stock prices, which allows monetary policy to carry on with its other objectives. We analyse this instrument next.

### 3. Margin requirements: definition and the regulator's response function

Margin requirements are official restrictions on the amount of funds, which brokers can lend to customers for the purpose of buying or short-selling stocks (Hardouvelis, 1988). An initial margin requirement of, say, 40% implies that when buying a stock worth USD 100, an investor has to put up at least USD 40 of his own cash (or the equivalent in securities he owns) and borrow a maximum of USD 60<sup>2</sup>. In short-selling a stock, the same margin requirement applies in order to protect the broker from a price appreciation of the stock that could trigger customer default<sup>3</sup>.

Hardouvelis (1990) reports that historically the Federal Reserve used margin requirements as a tool of containing excessive speculation in the stock market. Federal Reserve documents indicate that in order to assess excess speculative activity, the Fed paid particular attention to a rapid increase in stock prices, a rise in margin credit as well as other variables such as high trading volumes, inflationary pressures, or an expanding economy. In deciding to decrease margin requirements, Fed officials cited a drop in stock market credit and the disappearance of those factors that had led to the earlier increase. Hardouvelis uses a three-state-ordered-response-logit model to estimate the decision by the Federal Reserve to increase, keep the same or decrease margins. He finds that the recent trend in stock prices as well as the level of margin credit – as a percent of stock market capitalization – significantly affect the Fed decision.

Following the introduction of official margin requirements in 1934, the Federal Reserve changed them twenty-two times until the year 1974. After 1974, the Fed has avoided the use of margin requirements, keeping their level frozen at 50%<sup>4</sup>.

Hardouvelis and Peristiani (1992) describe margin regulation in Japan. Japanese margin regulation is very similar to US regulation and was first imposed in the early 1950s. In Japan it is not the central bank, which is responsible for setting margin requirements, but the Tokyo Stock Exchange (TSE). The TSE has changed margin requirements more frequently than the Fed in the US, close to hundred times in the four decades from the 1950s to the late 1980s. The TSE also publishes more detailed data on trading volume initiated through margin accounts. Regular monthly data exist for long as well as short trading positions, which are based on margin

<sup>2</sup> The broker keeps the stock as collateral for the loan and subsequently keeps track of the customer's capital position. If the stock price falls to USD 85, the investor's capital position with the broker falls to USD 25 (= USD 40 – USD 15 of capital loss in the collateral), at which point the required maintenance margin of 25% triggers a call from the broker for additional collateral. The customer has to deliver USD 15 of cash (or equivalent securities) in order to bring the capital position back to 40% of the original purchase price for otherwise the broker would sell the stock. If the stock price increases, say to USD 120, the customer has an unused credit line of USD 12, which is equal to the difference between the maximum allowable loan of USD 72 (= 0,6 x 120) and the margin loan of USD 60. See Sofianos (1988) for a detailed description of margin regulation.

<sup>3</sup> The broker keeps the proceeds from the short-sale plus the margin, which can be in the form of securities.

<sup>4</sup> The maintenance margin is set by the exchanges. It has remained fixed at 25% since 1934. The maintenance margin for short-selling is 30%.

borrowing. Hardouvelis and Peristiani show that the TSE also used margin requirements as a tool of controlling excessive speculation in the stock market, responding to the recent changes in stock prices and trading volumes, as well as trading volumes caused by margin borrowing. Since 1990, the TSE has brought initial margin requirements down to 30% – with a maintenance margin of 20% – and has not increased it ever since, apparently because of the well-known decade-long slump in Japanese stock prices.

#### **4. Margin requirements and trading activity: Do margins constrain investors?**

##### **4.1. The evidence**

There is wide agreement in the academic literature that margin requirements do constrain trading activity. Margin eligibility studies, for example, show that over the counter stocks, which become eligible for margin collateral, are more actively traded and *vice versa*, they are less actively traded when they are taken off the list of eligible stocks (Grube, Corwin, Joy and Howe, 1987 ; Seguin, 1990). Hardouvelis and Peristiani (1992) report strong evidence from the Japanese stock market. Not only does total trading decline following an increase in margin requirements, but trading which is performed through margin accounts declines proportionately more than trading settled on cash.

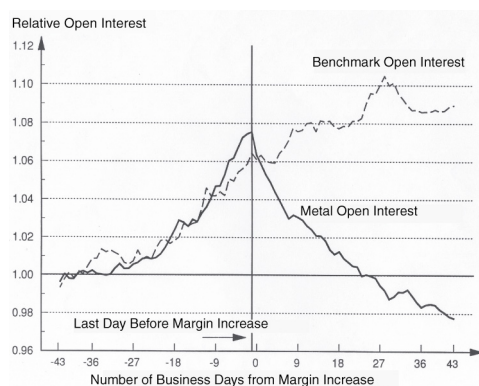
Clear evidence on causality, running from margin requirements to trading volume, is also presented in Hardouvelis and Kim (1995), who study the effects of margin requirements in markets other than the stock market, specifically metal futures markets<sup>5</sup>. Their sample contains five hundred margin changes in the 1970s and 1980s, thus providing considerable statistical power. Hardouvelis and Kim compare the trading and open interest behaviour of metals that undergo a margin change with those metals that do not, and find statically and economically significant differential responses. Some of that evidence is reproduced in the figures below. The figures reveal that following a margin increase, trading volume leaves the contracts on which the higher margin is imposed – thus open interest declines – and, apparently, moves into the contracts with unchanged margin requirements. The opposite occurs following a margin decrease.

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<sup>5</sup> In futures markets, a clearing house intervenes between the long and short customer. The exchanges set the margins. Margins are usually stated in dollars per contract, and when translated in percentage of the underlying value, they are very small, often as low as 3%. Brokers keep track of the customers' equity position continuously and can call for additional funds any time they perceive an adverse price movement.

Chart 1a

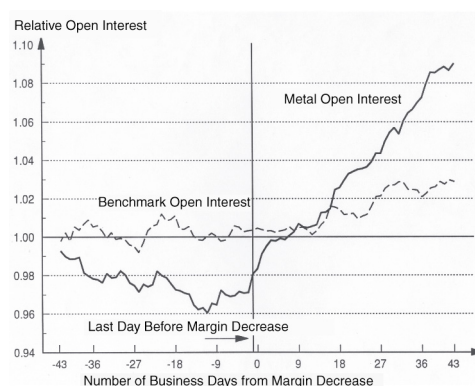
**The behavior of Open Interest before and after an increase in margin requirements in metal futures markets**



Source: Hardouvelis and Kim (1995)

Chart 1b

**The behavior of Open Interest before and after a decrease in margin requirements in metal futures markets**



Source: Hardouvelis and Kim (1995)

Notes: The Open Interest refers to 8 metal futures markets: CBT gold and silver; COMEX gold, silver, copper and aluminum; NYM platinum and palladium. The sample contains 226 margin increases from 1971 to October 1990. The Open Interest of business day  $t$  is divided by the average open interest of business days  $-52$  through  $-44$  to create the Relative Open Interest for each margin increase, from day  $-43$  to  $+43$ . The above plot is the cross sectional weighted average of relative open interests, with weights that are proportional to the ranking of the size of each percentage increase in margins. Benchmark Open Interest is a similar measure, extracted selectively from the same set of 8 metal futures markets. For each of the 226 margin increases, a metal is included in the benchmark group if it satisfies the condition that it did not undergo a margin change in the window  $[-43, +43]$ .

## 4.2. Doubts on the effectiveness of margin regulation

Despite the evidence that margin requirements constrain trading activity in financial markets, there are many who argue that margin requirements are an ineffective policy tool because they do not “bite” sufficiently. The argument is based mainly on the presence of close substitutes for margin loans, such as mortgage debt, home equity loans, consumer loans and the like. This argument ignores the fact that margin loans are the most convenient way of obtaining a loan in order to buy – or short-sell – stocks and that individual investors would first borrow from their brokers before resorting to other forms of loans, which involve higher transaction costs and, most likely, financing costs as well.

Another argument against the effectiveness of margin policy is that margin debt represents a very small amount of debt relative to the stock market capitalization. In both the US and Japan, margin debt does not exceed 2% of market capitalization. One counter-argument is that the amount of trading performed through margin accounts represents a much larger fraction of total trading volume. In Japan, for example, where the relevant statistics are collected and published on a regular basis, margin trading is approximately 20% of total trading. In the US, occasional surveys show similar magnitudes. Thus the investors who use the margin accounts are the active marginal investors who are responsible for the determination of prices. A second counter-argument can be based on a comparison of margin policy to other policies, such as central bank interest rate policy. For example, does any one seriously claim that interest rate policy is ineffective because the size of open market operations is miniscule relative to the size of trading activity in secondary bond market?

A final argument, which is leveled against the effectiveness of stock margins, claims that while stock margins may constrain active investors in the market, those investors are primarily small investors. The presence of derivative instruments, such as stock index futures and options, which carry very small margin requirements allow sophisticated investors, who do not wish to buy individual stocks, to find cheap leverage in index derivatives<sup>6</sup>. This is, indeed, a powerful argument, which brings out the point that if margins are to be used actively as a policy tool, margin requirements in stock index futures and options cannot remain intact at their present levels. They have to be brought to par with margins in the cash markets.

The difference in margin requirements between the cash and derivative markets was the main reason for transferring the regulatory authority of stock index margins to the Federal Reserve from the Futures Exchanges in the late 1980s. This transfer occurred after an extensive debate on the causes of the crash of 1987, which pitted the Futures and Options exchanges and the overall derivatives industry against the New York Stock Exchange. One suspected culprit for the crash of 1987 was the low margin requirements of the derivatives contracts on the S&P 500, which allow speculation on the direction of the future stock market movement without much of a personal investment. It was, therefore, decided that a single agency ought to monitor both cash and derivative margins for better coordination and in order to bring margins in the two sets of markets closer to par with each other. Since that time, however, the Federal Reserve has been reluctant to touch the issue of margin requirements. The reluctance of the Federal Reserve is understandable since it cannot unilaterally bring margin requirements down in cash markets. It has to increase the margins on derivative markets as well and is apparently concerned about the negative effects on the liquidity of those markets.

## **5. Margin requirements and the level of stock prices**

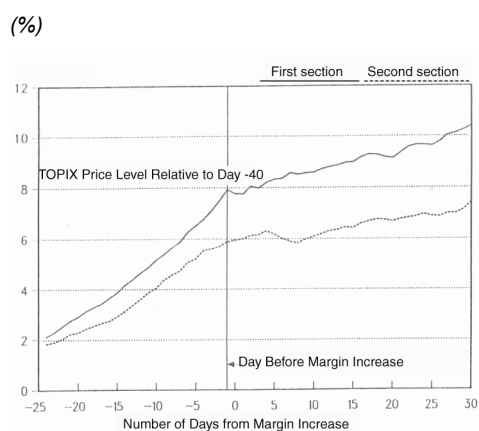
Most of the early studies on margin requirements, as well as some subsequent work, have concentrated on the effect of changes in margin requirements on the level of stock prices. They are event studies, which focus on a time window around a margin event. This margin event is either the inclusion or exclusion of a particular stock in the list of stocks, which are eligible for collateral lending by the brokers, or a change in the overall margin requirement. Largay (1973), Largay and West (1973), Eckardt and Rogoff (1976), Grue, Corwin, Joy and Howe (1987), Seguin (1990), are examples of margin eligibility studies. Grube, Joye and Panton (1979), Hardouvelis and Peristiani (1992), Hardouvelis and Kim (1995, 1996) are examples of event studies around a margin change.

The overall conclusion from these studies is that increases in margin requirements reduce a previous run-up in prices and decreases in margin requirements cushion a previous price decline. The following two figures are taken from Hardouvelis and Peristiani (1992) and describe the stock price behaviour in Japan around the approximately hundred margin changes that took place over a period of thirty-five years.

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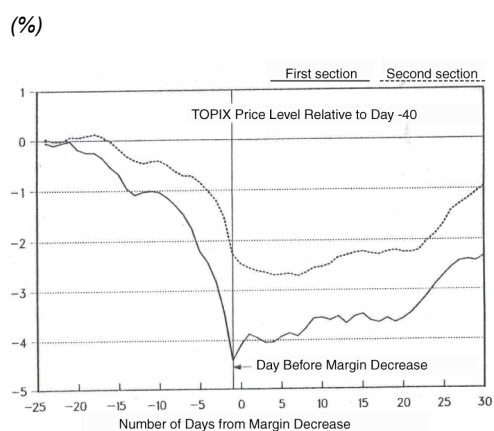
<sup>6</sup> The typical initial margin requirement on the S&P futures contract for speculators would be around 15% of the contract value. For hedgers, it is half that amount. Maintenance margins for speculators are less than their initial margins, and are usually set to equal the initial margins of hedgers. A hedger is an institution or individual who can provide evidence to the authorities that it is micro-hedging a specific cash need.

Graphique 2a

**The behaviour of Japanese stock prices before and after an increase in margin requirements**


Source: Hardouvelis and Peristiani (1992)

Graphique 2b

**The behaviour of Japanese stock prices before and after a decrease in margin requirements**


Source: Hardouvelis and Peristiani (1992)

Notes: A margin increase is announced after markets close on business day -1 and becomes effective on business day 0. 44 margin increases occurred over the sample period from 1961 through 1988. The plot presents cumulative returns relative to business day -40 and is a cross-sectional average of the 44 cumulative return series. Second Section stocks are not eligible for margin lending. There were 52 margin decreases over the sample period.

These event studies show that both the increase and the decrease in margin requirements have a temporary stabilizing influence on stock prices. By their nature, the studies cannot address the question of permanent effects on stock returns or the effects on the excessive component of stock price movements.

## 6. Margin requirements, excess volatility and long swings in stock prices

Hardouvelis (1990) is the first study that tackles the question of whether or not margin requirements restrict the behaviour of destabilising speculators. To address this question, he attempts to estimate the relationship of margin requirements with excess volatility and with long swings in stock prices. Excess volatility is a concept over which there is considerable disagreement among financial economists. For that reason, Hardouvelis presents three different types of tests.

The first test is a regression-based volatility test on stock price movements that had been proposed by Froot (1987). The evidence confirms the presence of excess volatility and shows that excess volatility is lower (higher) when margin requirements are high (low) or are increasing (decreasing). Some of that evidence is repeated in table 1 below. Briefly, a negative slope coefficient in the reported regression is evidence of excess volatility, whereas a positive coefficient would have been evidence of insufficient volatility<sup>7</sup>. The sample period from 1929 to 1987 is partitioned into years of high and years of low margin requirements. The regression

<sup>7</sup> The test compares today's stock price with the present value of the price in a specific future date. As such, it differs from the usual volatility tests in the literature, whose horizon is infinite, that is, they compare today's stock price with the present value of future dividends. The moving-average of dividends, which appears on both the left-hand-side and right-hand-side of the regression equation, is used in order to transform the variables into stationary series.

coefficient is negative in both sub-samples, indicating the presence of excess volatility throughout the sample. However, during periods of low margin requirements, excess volatility is a lot stronger than during periods of high margin requirements: Coefficient  $\beta_L$  has an absolute magnitude, which is larger than the corresponding magnitude of  $\beta_H$ . Moreover, the differences across the two regimes are both economically and statistically significant.

**Table 1: Regression-based tests of excess volatility across high and low margin requirement regimes**

$(R_t - i_{t-k}) Pd_{t-k} = \beta_0 + \beta_H H_t Pd_{t-k} + \beta_L L_t Pd_{t-k} + u_t$					
Horizon k	$\beta_H$	$\beta_L$	Rbar <sup>2</sup>	SEE	H <sub>0</sub> : $\beta_H = \beta_L$ $\chi^2(1)$
1 year	-0.214* (0.075)	-0.341* (0.110)	0.11	4.65	4.60* [0.032]
4 years	-0.740* (0.183)	-1.20* (0.212)	0.43	7.83	10.73* [0.001]

Source: Hardouvelis (1990), Table 5B

Notes:  $R_t$  is the nominal return including dividends of the S&P composite from the end of year  $t-k$  to the end of year  $t$ ,  $i_{t-k}$  is the yield to maturity on a  $k$ -year security at  $t-k$ . Returns are not annualised.  $Pd_{t-k}$  is the ratio of the stock price at the end of year  $t-k$  over the average dividend of the three-year period from  $t-k-3$  to  $t-k$ .  $H_t$  ( $L_t$ ) is a dummy variable that takes the value of unity if margin requirements greater than (less than or equal to) 50%. Newey-West standard errors are inside the parentheses, which correct for conditional heteroskedasticity and an MA ( $k-1$ ) error term. Significance level is in the brackets below the chi-squared statistic.

The sample period runs from 1929 through 1987. The results are similar in the post-depression sample period.

The second test in Hardouvelis (1990) is a test of mean reversion in stock prices. A fad or irrational deviation of current stock prices from their fundamental values, which persists but eventually dissipates, would create mean reversion in stock prices. This mean reversion is manifested in a negative autocorrelation in multi-period horizon stock returns, as well as in a negative correlation between today's price-dividend ratios and future multi-period stock returns<sup>8</sup>. The evidence shows that mean reversion is less (more) pronounced when margin requirements are high (low). Some of that evidence is repeated in table 2 below.

<sup>8</sup> Cochrane (1991) describes the relationship of multi-period regression tests with volatility tests.

**Table 2: Margin requirement and mean reversion in stock prices**

Panel A: $(R_t - i_{t-k}) = \beta_0 + \beta_H H_t Pd_{t-k} + \beta_L L_t Pd_{t-k} + u_t$					
Horizon k	$\beta_H \times 100$	$\beta_L \times 100$	Rbar <sup>2</sup>	SEE	H <sub>0</sub> : $\beta_H = \beta_L$ $\chi^2(1)$
1 year	-1.43* (0.37)	-2.03* (0.49)	0.20	0.206	7.21* [0.007]
4 years	-5.33* (0.71)	-7.44* (0.81)	0.59	0.355	20.32* [0.000]

Panel B: $r_t = \alpha_0 + \alpha_H H_t r_{t-k} + \alpha_L L_t r_{t-k} + v_t$					
Horizon k	$\alpha_H \times 100$	$\alpha_L \times 100$	Rbar <sup>2</sup>	SEE	H <sub>0</sub> : $\alpha_H = \alpha_L$ $\chi^2(1)$
1 year	-0.024 (0.188)	0.028 (0.192)	-0.03	0.226	0.04 [0.838]
4 years	0.163 (0.208)	-0.445* (0.168)	0.13	0.445	9.75* [0.002]

Source: Hardouvelis (1990), Table 6B

Notes:  $R_t$ ,  $i_{t-k}$ ,  $Pd_{t-k}$ ,  $H_t$ ,  $L_t$  are defined in table 1.  $r_t$  is the real rate of return on the S&P 500 index from period  $t-k$  through period  $t$ , defined as the nominal stock return  $R_t$  minus the CPI rate of inflation. Newey-West corrected standard errors are inside the parentheses. Significance level is in the brackets below the chi-squared test.

The sample period runs from 1929 through 1987. The results of Panel A are similar in the post-depression sample period.

The third test is based on a regression of stock price volatility over an annual horizon on margin requirements. The annual horizon is intended to capture the presence of long swings in stock prices, without compromising the sample size. After controlling for variables to which the Federal Reserve responds when setting margin requirements, such as margin credit, the direction of price changes, signs of an over-heating economy, etc., it is found that the association is negative and, both economically and statistically significant.

Other authors have provided similar evidence on a negative association between margin requirements and unwarranted stock price movements. Kofman and Moser (2001) present a “price-reversal” test similar in spirit to the second test above and conclude that price-reversals were more frequent during periods of high margin requirements. They examine a longer period from 1902 through 1987. They interpret the price reversals as evidence of mispricing and conclude that margin requirements help avoid mispricings.

Fortune (2001) examines the relation between margin debt and jump volatility in stock prices, using a jump diffusion model. This model allows a decomposition of volatility into the usual volatility plus an unusual portion, which is due to abrupt jumps in stock prices. Although jump volatility is a statistical construct, which does not necessarily match the economic concept of excess volatility, it is nevertheless a statistic that has more power to detect excess volatility. Fortune estimates his model over a period of constant margin requirements, namely the post-1974 period. He finds a negative association between the overall level of margin debt (as a percent of stock market capitalization) and the size of the mean jump of stock prices, which translates into a negative relation with jump volatility.



## 7. Margin requirements and volatility

Whereas the theoretical relation between excess volatility and margin requirements is unambiguously negative, the corresponding theoretical relation between total volatility – one component of which is excess volatility – and margin requirements is ambiguous. It is possible and probable that margin requirements restrict not only the trading activity of noise traders, but of rational investors as well. If the primary impact of margins is on rational investors whose behaviour is stabilizing, then the relationship between margin requirements and short-term volatility may well turn out to be positive.

### 7.1. Multiple margin changes

Short-term volatility was the focus of attention of a number of papers, which followed the original Hardouvelis (1990) study. Whereas Hardouvelis utilized volatility over an annual horizon in order to capture long swings in stock prices, the subsequent studies (Schwert, 1989 ; Kupiec, 1989 ; Salinger, 1989 ; Hsieh and Miller, 1990) focused on volatility *per se*, as the end-point of the analysis. With the exception of Salinger (1989), these authors criticized the specification of the regression equation in level form that was used in Hardouvelis (1990). Instead, they performed their analysis in first differences, regressing the change in volatility on the change in margin requirements. In the first-difference specification, they claim that the negative association disappears.

Hardouvelis and Theodossiou (2002) show that the specification used by the critics of the original Hardouvelis study is flawed. The specification suffers from an over-differencing problem, similar to the problem that has repeatedly been pointed out in the vast co-integration literature of the last fifteen years: to estimate the relationship between two non-stationary, but co-integrated, variables using a first difference specification, it is necessary to include in the regression an error-correction term. Excluding the error-correction term from the list of explanatory variables results in severe misspecification and, thus, erroneous interpretation of the estimated coefficients of the bivariate relationship. In the case of margin requirements and volatility, both variables turn out to be stationary, but one could argue, as Hsieh and Miller (1990) did, that the two variables are “near non-stationary”. Thus, these authors preferred to utilize a first-difference specification. However, unaware of the over-differencing problem, they excluded from their analysis the equivalent of an “error correction” term.

Hardouvelis and Theodossiou perform the regression analysis in first differences, including the “error correction” term. They show that the association between margin requirements and volatility in the first-difference specification is, indeed, negative and significant, as was the case in the original Hardouvelis (1990) specification, which was performed in level form. The long-run elasticity of volatility with respect to margin requirements is estimated to be  $-0.35$ , which suggests that if margins were to increase from 50% to 60%, the standard deviation of daily returns would decrease by approximately 7%, namely, from an average daily level of 0.82% to 0.76%<sup>9</sup>.

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<sup>9</sup> As will be explained later, the elasticity is different during bull and normal periods from bear periods.

Evidence of an economically and statistically significant negative association between margin requirements and volatility is also present in the Japanese stock market. In the Hardouvelis and Peristiani (1992) event study, an increase in margin requirements from 50% to 60% would, *ceteris paribus*, decrease daily volatility in the month following the increase by approximately 1/5 its sample size<sup>10</sup>. This relationship is causal, running from margin requirements to volatility. Causality is established by a comparison between the volatility of First Section stocks of the TSE with the volatility of Second Section stocks. Investors cannot borrow on margin in order to buy or short-sell Second Section stocks, so the changes in margin requirements affect First Section stocks only. It turns out that only the volatility of First Section stock prices is affected by the changes in margin requirements, not the volatility of Second Section stocks. Moreover, during the 1961-1988 sample period, exactly during those months when the TSE changed margin requirements, the relation between the returns of Second Section stocks and the returns of First Section stocks deteriorates. In the two hundred fifty three months during which no margin change took place, the “beta” of Second Section stock returns when regressed on the First Section stocks returns is 0.98. This *beta* declines drastically to 0.66 in the sixty nine months during which one or more margin changes occurred.

## 7.2. Single-event margin changes

Seguin (1990) uses stocks that are traded over the counter which, following the Over-the-Counter (OTC) Market Act of 1968, were allowed for the first time to be bought or sold on margin, provided they satisfied some minimum eligibility criteria. Margin-eligible firms are determined by the Federal Reserve, which continually updates the list by adding new firms and de-listing others that fail to maintain the criteria. When a firm becomes eligible, its margin requirement essentially drops from 100% to 50%. Seguin compares the volatility of stocks prior to their inclusion in the list of eligible stocks with their volatility right after their inclusion. 54% of the firms in his sample show a reduction in volatility, whereas 46% show an increase. On a cross-sectional average basis, volatility declines by approximately 2% and trading volume increases by 15%. Given the extremely large change in margin requirements from 100% to 50%, the estimated drop in volatility represents an elasticity of close-to-zero, hence the relation is not economically significant. Nevertheless, Seguin concludes that margin requirements constrain primarily rational investors, whose behaviour is stabilizing.

Seguin’s empirical analysis suffers from two shortcomings, which cast doubt on his preferred interpretation of the evidence: First, there is a potential sample selection bias problem in his methodology. The firms in the list of eligible stocks are not picked randomly. They are OTC firms, whose category the Federal Reserve has changed because they have recently acquired those qualitative characteristics that larger firms, which are traded in the stock exchanges, typically have. Greater trading volume and lower volatility may, therefore, simply reflect a corroboration of the Federal Reserve’s successful selection strategy<sup>11</sup>. This type of sample selection bias is not present in the time series or event studies, which examine multiple margin

<sup>10</sup> The earlier figures 2a and 2b show that the price trend is affected by the change in margin requirements. Because the price trend is related negatively to volatility (see later discussion), it is necessary to control for the price effects on volatility, the so-called “leverage effect”. Without this control, there is a bias towards zero. The relation remains negative, but is quantitatively smaller.

<sup>11</sup> A similar sample-selection bias exists in the analysis of changes in futures margins and volatility. The futures exchanges respond to higher volatility by raising futures margins (Hardouvelis and Kim, 1995).

changes in the stock market and control for the regulator's response function. Second, Seguin finds that upon admitting a firm in the list of eligible firms, its price increases, a phenomenon analysed earlier in section 5. Recall that this price increase alone could be the cause of the volatility decline through the well-known leverage effect (Christie, 1982). Seguin does not control for the price effects on volatility, so his results are not easily interpretable.

Finally, note that Seguin presents evidence for new listings in OTC eligible stocks, that is, cases when a decrease in margin requirements occurs. De-listings were fewer and the de-listed firms were highly volatile, providing less statistical power for his analysis and eventually no statistically significant results. Thus, Seguin's conclusion is drawn from the case margin decreases only. This evidence, notwithstanding the two problems mentioned earlier, turns out not contradict the studies that have analysed multiple margin changes, as the next section on the asymmetry of the margin effects points out.

There is also a large body of literature, which examines the effect of the introduction of futures and options contracts on the volatility of the underlying stocks. For the sophisticated investors, the introduction of derivative instruments results in a substantial decrease in the effective margin requirement of the underlying stocks. Hence, one could indirectly interpret the evidence in these studies as resulting from, among other factors, the decrease in effective margins. This literature does not reach unanimous conclusions.

Harris (1989) presents a very careful comparison of the volatility of stocks included in the S&P 500 index with the volatility of similar stocks, which are not included in the index. He finds that until 1983, the year when the S&P 500 futures contract was introduced, the volatility of the two sets of stocks was the same. After 1983, however, the volatility of the stocks included in the S&P 500 index increased relative to the control set. This increase occurs on many different trading days, not just the days of the expiration of futures and options contracts, which are known to cause turmoil in the stock market (Stoll and Whaley, 1987).

On the other hand, studies that examine the influence of the introduction of stock options tend to find the opposite effect, a drop in volatility (Skinner, 1989; Detemple and Jorion, 1990). Neither study, however, is able to ascertain the effects of options delisting, which is equivalent to an increase in margin requirements.

Summing up the literature on margin requirements and volatility, we see that on the one hand, the evidence in studies that examine multiple margin changes points to a negative causal effect of margin requirements on volatility. On the other hand, studies that explore single events, such as the listing or de-listing of OTC stocks from margin eligible stocks or the introduction of futures and options contracts, fail to give a unanimous picture. This is perhaps due to the limitations of the single-event analysis, as in many of these studies the estimated relationships could be the result of unidentified extraneous third factors.

## 8. The asymmetric relation between margin requirements and volatility: leaning against the wind of stock price fluctuations

### 8.1. The evidence on asymmetry

The negative relationship between margin requirements and volatility turns out to be an asymmetric one. Hardouvelis and Theodossiou (2002) present evidence that during bull and normal periods the association is strongly negative, whereas during bear periods the association almost disappears. To check the sensitivity of the results to the econometric specification, Hardouvelis and Theodossiou use both a regression model as well as exponential GARCH-in mean model, in which they estimate the relationships at the daily, weekly and monthly frequencies. A bull (bear) period is defined to be a period of consecutive positive (negative) monthly stock returns<sup>12</sup>. In bull and normal periods, the expected long-run elasticity of daily volatility to changes in initial margin requirements is approximately  $-0.63$ , implying that an increase in margin requirements from the current level of 0.5 to 0.6 would reduce daily volatility by approximately 12.5%. In bear periods, this elasticity is statistically indistinguishable from zero.

Hardouvelis and Theodossiou also uncover a second complementary asymmetry, which describes a temporary relation between margin requirements and volatility. Recall the well-established empirical regularity that volatility temporarily declines following good news about stock prices, and temporarily increases following bad news (Nelson, 1991). It turns out that this asymmetry becomes more pronounced when margin requirements are high and less pronounced when margin requirements are low. Put differently, at times when stock prices decline, the subsequent increase in short-term volatility becomes larger if margin requirements are high, and at times when stock prices increase, the subsequent decline in short-term volatility becomes larger if margin requirements are again high. Thus, in the short-run, high margin requirements are related to both lower volatility at times of positive surprises about stock prices and higher volatility at times of negative surprises about stock prices.

Fortune (2001) also finds an asymmetric relation between margin debt and jump volatility, more precisely, the size of the mean jump in stock prices. His estimated negative relation turns out to be weaker following a bull run in stock prices and stronger following a bear run. He follows Hardouvelis and Theodossiou in defining bull and bear runs based on a stream of consecutive either positive or negative stock returns. Fortune's evidence is consistent with the notion that margin loans tend to push stock prices up (or soften any fall) in bull periods and push stock prices down in bear periods.

The evidence of asymmetric effects provided by Hardouvelis and Theodossiou (2002) and Fortune (2001) suggests that the previous literature on margin requirements ought to be looked again with new spectacles. Margin increases ought to be examined separately from margin decreases.

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<sup>12</sup> The number of consecutive months is allowed to vary from three to six, and the estimated results remain qualitatively the same.

## **8.2. The policy conclusion**

The above results suggest that during periods of rapidly increasing stock prices, as in the case of a bubble, it would be stabilizing to increase margin requirements. Similarly, it would also be stabilizing to raise margin during periods of calm markets, simply as a preventive measure. Higher margins would then constrain the behaviour of noise traders, hence reducing volatility as well as the possibility of a bubble unfolding. Once margins are raised, the optimal time to bring margin requirements back down to their earlier level is when there is a sudden rapid decline in stock prices. Reducing margin requirements during a panic avoids the depyramiding of stock prices which margin calls could generate, smoothing the reduction in prices and generating more stability. Indeed, it appears that the optimal policy is a policy of leaning against the wind of stock price fluctuations.

## **9. What next? How should a countercyclical margin policy be implemented?**

In sum, higher stock market margin requirements restrict trading volume, reduce volatility and, interestingly, reduce the long swings of stock prices, which can originate from a variety of sources, such as market misperceptions of fundamentals and of risk, enthusiasm or pessimism that dissipates slowly, bubbles of any sort, rational or irrational. Lower margin requirements, on the other hand, increase trading volume, cushion sharp declines in asset prices, but do not increase short-run volatility. Indeed, the effects of margin requirements on volatility are asymmetric.

The conclusion is stark: a margin policy of leaning against the wind of stock price fluctuations can be stabilizing both in the short run and in the long run. On the one hand, increasing margins reduces both short-run volatility and the possibility that a bubble unfolds, thus contributing to both short-term and long-term stability. Increasing margins is a prudential measure. On the other hand, decreasing margin requirements softens the sudden fall of stock prices without resulting in higher short-run volatility. Decreasing margins is an ex-post measure that improves liquidity, calms the market and softens a crash.

How does a central bank or the regulatory authority responsible for setting margin requirements go about implementing a countercyclical margin policy? Would it face political or economic constraints that would prevent it from carrying out an effective policy?

It seems that a point of departure ought to be a drastic decrease in margins once a crash occurs. This is a policy similar to the discretionary liquidity injections that the Fed undertook following crisis situations, like the 1987 stock market crash or the LTCM collapse in 1997. Then, after market conditions become normal, margins can be raised back to their long-run average or even higher. It seems that such a policy would not trigger any political backlash because it would be understood by the financial community and by the public that margin requirements do exist, they remain above a certain level, but occasionally they are brought down in order to cushion crisis situations.

This type of policy also would avoid the frequent criticisms about whether or not anyone can tell if a bubble is unfolding or that pricking bubbles is dangerous. It is a

policy that does not differentiate between normal and bull periods<sup>13</sup>. It is only a policy that distinguishes bear periods from the rest, and it does so, simply by responding to observable large declines in prices or crashes, a politically easier decision to take.

Of course, the authorities may still wish to be brave and decide to increase margins during periods of over-optimistic expectations, rampant speculative activity and rising prices. The timing of this action is more difficult to ascertain because we do not tend to observe sudden one-day large upward spurts in prices, like we do in the opposite case of crashes. Nevertheless, politically it is a lot easier for a regulatory authority to increase margin requirements rather than for the monetary authority to increase interest rates. Few can accuse the regulatory authorities for not acting prudently when raising margins. Margin requirements affect the stock market alone, and are perceived that way. A rise in interest rates, on the other hand, is a broader policy, which affects a cross section of economic agents and the overall economic life. A monetary authority can easily be accused of abandoning its other objectives, chasing after bubbles, whose existence is probably doubted. This can cost the monetary authority its long-run credibility. From an economic point of view as well, a rise in interest rates has side effects, which margin requirements do not (recall the Blanchard argument).

Those who argue that margin requirements are ineffective cannot go against a countercyclical margin policy since, in their view, stock market margins are neutral. Those, however, who think that margins do play a useful role in curbing long swings in asset prices, may wish to examine ways of expanding that role. For example, a thorny aspect in margin regulation is the consistency of margin requirements across cash markets and the spectrum of their derivative instruments (Estrella, 1988). Derivative instruments have lower initial margin requirements but more frequent margin calls. It is time for some comprehensive research on this and other related topics.

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<sup>13</sup> It is a policy consistent with the evidence that the effects of margin requirements on short-run volatility are very similar across normal and bull periods.

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The topic of this panel, “Cyclicality and International Financial Stability”, is a very timely and relevant subject. International financial stability is an objective that we at the International Monetary Fund (IMF), deal with on a day-to-day basis – in both our lending and surveillance efforts, and I am delighted to be here to participate in this symposium. More broadly, I would say that the maintenance of financial stability has become a “high growth industry”.

I will focus my remarks on three related areas.

- What has occurred in financial markets in the past decade that have caused them to exhibit a greater degree of pro-cyclicality in the sense of magnifying the amplitude and duration of business cycles?
- What is the IMF doing to help dampen the pro-cyclicality of financial markets and to promote financial stability?
- What are some of the broader reform issues the international community might consider going forward to further reduce the pro-cyclicality in financial markets?

### **1. What may have changed in the past decade or so?**

To use a nautical metaphor, the “high seas” of global finance have exhibited a fair amount of turbulence during the past thirteen years, including more frequent bad storms. So far, most regulatory efforts, including that of the IMF, to deal with this bad weather has involved ways to strengthen ships and harbors against the dangers we see. Next, we also need to see what can be done to improve underlying conditions – somehow reduce the storms in markets or at least develop better early warnings so financial sailors can avoid the most perilous of rough seas.

What causes the financial storms we see?

- Market liberalization has interacted with information technology and communications to yield a quick pace of financial innovation. Parts of the market subject to recent deregulation have been exposed to particularly sharp surges in credit flows and price volatility. The process taken as a whole has delivered increasing complexity in the form of equity derivatives, credit risk transfer, and fixed income options that are increasingly mainstream components of the liquid markets. New players, from both non-bank as well as non-financial sectors have sought competitive advantage through regulatory arbitrage in ways that distort the allocation and pricing of credit and risk. They, in turn, are subject to significant surprise from new and complex markets and instruments. All these factors have encouraged some financial prices to move more sharply than had been the case years earlier for the same real economic information.
- The more pervasive influence of “short-termism”, that is traders’ increasing approach to trend following and their fast reactions to new developments, is another factor. As an important part of the market begins to focus its attention on

immediate news and less on underlying fundamental factors, two results will follow. The first is that markets will respond to good news with a sequence of short-term price moves, which leads to asset price gains that seem to amplify the stream of good news. The second effect is the sudden realization that some prices are grossly removed from fair value, followed by a sudden and potentially destabilizing price reversals, as we have seen. An unnecessarily severe cyclical disruption to real economic activity may follow.

- Promoted by these factors, a sort of “roving volatility” has moved from market to market during the last fifteen years or so. This roving volatility has entailed several features of market dynamics: a higher frequency of extreme movements, and more instances of under- and over-shooting of asset prices and capital flows (including bubbles). In the 1980s, foreign exchange markets were seen as particularly prone to wide swings and bouts of volatility, particularly in the period surrounding the Plaza and Louvre accords; then, in the early 1990s, fixed-income markets underwent significant bouts of turbulence (notably the junk bond market crash, and in 1994, the US bond markets correction); then, from the mid-1990s to early 2000s, the equity markets experienced a sharp run up and an eventual crash.
- These severe dynamics have not been confined to the mature markets. Increasingly they have involved less developed markets and financial systems that can ill afford, on a human and social level, disruption and instability. Any list of countries experiencing turbulence and/or crises would include Mexico, a number of countries in Asia, Russia, Turkey, Argentina, Brazil. All these countries have experienced sudden capital-flow reversals in the 1990s – as I just noted, sometimes huge in relation to the gross domestic product (GDP) – and severe movements in their currencies, sometimes in tandem with crises in their domestic financial sectors as capital flows dried up. Particularly troublesome has been the withdrawal of trade financing in some cases, which has curtailed exports and added to the disruption. For instance, during the Mexican crisis (1994-1995), there was a reversal of overall capital flows, including trade credits, by 12% of GDP. Reversals of 15% of GDP in Thailand and 9% of GDP in Korea followed.

## **2. The Fund’s response to these challenges**

In response to these rough financial seas, the Fund has sought new ways to manage crises, chiefly by improving the ability of nations and financial systems weather financial shocks on their own. Better information reporting, and a more open Fund dialogue with country authorities are a start. As well, we seek through peer comparisons to advance the standard of financial system regulation and best practice, including issues around the sequencing of deregulation. Lastly, we seek appropriate foreign exchange regimes and sustainable public debt management policies that will give less developed nations the best possible chance of weathering a financial storm, when it comes.

### **2.1. Making Fund policy advice more effective**

Financial crises have reinforced the importance of accurate, comprehensive and timely data for assessment of vulnerabilities. The Fund has been working with member countries to strengthen data provision for the purposes of surveillance. The Special Data Dissemination Standard (SDDS) prescribes reporting for reserves and foreign

currency liquidity and is being extended to the coverage of external debt (as of April 2002, there were fifty subscribers). The General Data Dissemination System (GDDS) has established a framework for countries to improve their economic statistical systems and standards of sound methodology for the dissemination of data.

The Fund has become increasingly open and candid about its policies and its regular dialogue on policy with the country authorities; staff reports (Article IV) are increasingly published on a voluntary basis. The premise is that greater openness can promote orderly and efficient functioning of financial markets, reduce the likelihood of shocks, and importantly, make policymakers more accountable for their actions. The Fund is assessing more carefully the social and political realities that shape economic policy as part of an effort to enhance “ownership” of its recommended policies.

Because financial turbulence seems to have become a fact of life, the Fund has helped countries to build better shock absorbers into the system, as well. In particular, advice is needed on the adoption of appropriate exchange rate regimes, better debt and reserve management, efficient and diversified financial sectors, and the building up of domestic capital markets to avoid relying exclusively on international capital flows.

The work of the Fund in these areas has included the development of Guidelines for good practices in public debt management, and in the management of foreign exchange reserves. In addition, the Fund is providing significant amounts of technical assistance in financial policies and on the development of local financial markets. This includes technical assistance in public debt management, as well as areas of monetary and exchange operations and in sequencing liberalization of the capital account.

## **2.2. Detecting the “fault lines” in global financial markets**

Fund surveillance of global financial markets and of the potential buildup of vulnerabilities in countries is being significantly strengthened.

The Fund is sharpening its tools used in surveillance to detect changes in external circumstances and the implications for macro-vulnerabilities – called “vulnerability assessments” – so that preventative steps can be taken earlier. This includes capturing the influences from the global economy on emerging market countries, including through explicit consideration of adverse scenarios. Where there is a risk that a country’s access to global financial markets may become difficult or be interrupted, detailed estimates of its external financing needs, and prospective sources of funds are assessed. Work on developing models of Early Warning Systems aims to help to detect vulnerabilities and potential for financial crises, thereby giving a flashing light to draw our attention.

Detecting fault lines is also aided through the development of a “balance sheet approach” to assessing risks and vulnerabilities. This approach looks at the balance sheets of the corporate, household and government sectors of the economy to assess risks and vulnerabilities associated with rising external indebtedness, possible exposure to currency mismatches, floating interest rates, and the liquidity risks of short-term debt that were factors in recent crises to a greater or lesser extent.

### **2.3. Strengthening national financial systems**

The Fund, together with the World Bank, has built up its understanding and expertise in the “financial” underpinnings of the economy, and has encouraged countries to strengthen their financial institutions and policies.

The main vehicle for this effort is the Financial Sector Assessment Program (FSAP), which was launched in 1999 and is implemented jointly with the World Bank. In conducting the FSAP, peer review and expertise is a key element. Fifty institutions take part, including central banks, supervisory agencies, and other institutions and standard-setting bodies. By assessing financial systems in a broader macroprudential context as part of the Fund’s Article IV consultations, FSAPs have helped to identify the priorities and best sequencing of regulatory reform and capacity-building. National participants have been helped to formulate immediate priorities in reinforcing stability, and to specify medium-term reforms. Country authorities have been helped to focus on operational and supervisory risks, while also allowing them to evaluate their own systems against international benchmarks.

An important element of this program is the development and assessment of international best practices in key areas of the financial system. These standards have been developed by international standard-setting bodies, including the BIS, IOSCO, IAIS, and the Fund, covering regulation of banks and nonbank financial institutions, payment systems, transparency of monetary and financial policies, and in some cases, accounting and corporate governance. At their heart, these standards are the basic building blocks and foundations for efficient market functioning that underpins sound financial systems and market confidence.

Since the program started, about half the Fund membership (ninety-two countries) has participated or agreed to do so in the near future. Work has been completed for four G 20 members (Canada, India, Mexico, and South Africa); is under way or nearing completion in a further five (Brazil, Japan, Korea, Russia, and the United Kingdom) and the major international financial centers of Hong Kong SAR and Singapore, and will take place in the near future for Germany.

An important follow-up to the FSAP is the Fund’s continuing efforts to make available technical assistance to countries in areas critical for financial system soundness. These areas include (but are not limited to) capacity building in banking system regulation and oversight.

## **3. Broader reforms to dampen pro-cyclical markets**

What can be done to lessen the storms in financial markets? The work that has been done to render nations, financial systems, and financial intermediaries more sea-worthy is worthwhile, but now the time has come to think also about dampening the stormy seas themselves, or at least provide weather forecasting so ships can avoid the worst and most dangerous weather ahead. Here we turn to my personal thoughts about what may be done.

Possible remedies lie in measures that can dampen the interaction of exclusively short-term actions, intensified by financial innovation, and newly deregulated industries. This is the combination that gives rise to a “perfect storm” in finance that can adversely affect businesses, financial intermediaries and, ultimately, whole economies.

- Fuller information reporting and education of investors could allow intelligent differentiation between instruments within an asset class and between asset classes. Information transparency should be increased by every means possible, to reduce the tendency of herd-behavior, to create the conditions that will reward intelligent investor assessments of fundamental factor as opposed to market trends. As more information is available, the impact of surprises will be reduced because there will be fewer major surprises.
- Contrarian investors who look into the available facts should be permitted the rewarded for their diligence and should be encouraged to act as a counter-force to those following the herd behavior around them. The best possible conditions for contrarian positions in the market to emerge should be allowed. The positive role and the contributions of speculators should be recognized at least, including those of hedge funds, that are, in effect, the leading edge of contrarian investing.
- Remuneration of senior executives and other pay should be more closely related to underlying, long-term, business performance. One approach might be to tie management compensation to dividends paid out to shareholders rather than to equity prices and “operating earnings”. If options are indeed granted, they should be long-term and struck significantly out of the money. Directors may be required to hold company equity, and to keep the position for a fixed time after leaving their position. With management incentives aligned more closely with long-term performance, the temptation to stretch accounting rules, to deliver the constant stream of “positive surprises” specifically to bolster short-term trading and a strong factor behind pro-cyclical equity markets, will be lessened.
- The trade-offs in implementing fair value accounting, especially for insurance companies should be recognized. I refer here to the trade-off between the advantages of market transparency together with a level regulatory playing field for all participants, and the costs that such a system could lead to pro-cyclical influences.
  - In the United Kingdom, the Financial Services Authority (FSA) insurance regulator uses a conservative valuation of obligations and a timely valuation of asset values, which can lead to special difficulties. Quoting the FSA’s open letter to insurance company CEOs in January 2003: “One effect of the mechanics of the regulatory minimum margin (RMM) of solvency approach is that it can put life insurance companies under pressure to sell equities (either outright or through derivative contracts) as equity prices fall, even though the firm may reasonably consider holding equities to be prudent and good value for policy holders in the longer term”.
  - The FSA then invited insurance companies to request ad-hoc waivers or relaxations of the rules where institutional fundamentals were strong. So we see that an extremely transparent system with strict fair value accounting apparently requires a flexible and activist regulator to reach a stable outcome.

There can be no perfect answer, but an ideal system will combine reporting transparency and well-designed incentives that foster long-run decision-making at the same time. There will be few surprises, because of transparency. There will be less short-termism because the drivers of management decisions will be all aligned with fundamental, long-term, operating results.

## **Philippe Lagayette**

*Chairman and CEO  
J.P. Morgan (France)*

### **1. Has the financial sphere become more stable?**

We saw this morning that globalisation has probably brought about greater stability to the real economy. However, we only touched upon the fact – although Andrew Crockett raised the issue – that it was certainly not possible to say the same about the financial economy and the financial world at large. We should endeavour to analyse this phenomenon.

Of course, this phenomenon is not new. Large financial fluctuations and speculation have been observed for a long time, but there are probably new phenomena.

First of all, if we refer to one of the issues introduced this morning by Ray Barrell entitled “Has the world become more stable?” and consider the arguments put forward, we can see that they only partially apply to the financial sphere. For example, the decline in inflation and price volatility has undoubtedly contributed to stability, including financial stability. But other factors must be taken into account, such as the fact that the shocks facing the financial economy have not receded over the recent period, as they have in the real economy. They have actually been very serious. We all know about the Latin American, Asian and Russian crises, which were amplified by a psychological phenomenon.

We may wonder whether the new financial instruments are able to act as shock absorbers. Caution needs to be applied when answering this question. It is true that these new instruments spread risks differently, but they remain identical within each category of financial agents and, consequently, do not introduce any new behaviour. Given that there is strong collective behaviour, spreading risk by means of financial innovation does not really reduce the magnitude of volatility.

Policy makers, who strive for greater effectiveness, probably find it harder to be effective in the financial sphere than in the other fields of the macroeconomic sphere. This is particularly true when they seek to restore order in monetary and fiscal policies.

In recent years, the structural changes in the financial world have been far greater than in the real economy. The free movement of capital, albeit being a relatively recent phenomenon, is now reality. The real economy has not experienced a change of the same magnitude. The professionalisation of decisions has also turned into reality. Twenty years ago, a relatively large number of decisions were taken by non-professional individuals in the financial sphere. Increasingly, they are being taken by professionals. The consequence is that decision makers are much more active players, because they are accountable for their decisions, and they tend to act and react in a similar way. They use the same models and have the same way of thinking. They have the same academic background (although universities are located in different countries, their curricula are more or less identical in these fields). And finally, they all receive real-time information through a small number of channels.

The combination of these elements accounts for similar collective behaviour and the importance of short-termism in decision-making, that is often criticised. But, if decision makers are able to react according to professional standards, they must react. A professional, mandated by his customers to manage their funds, who receives information, is able to process it and analyse it, but fails to react, is at fault. He must react without delay.

These factors are now well-established. They have considerably altered the volatility trend, both of immediate and medium-term volatility. Medium-term volatility is the so-called bubbles. They tend to be more numerous. There is not one bubble in the process of constant development, but several bubbles which follow one another. Gerd Häusler mentioned a few, the most recent ones being the real-estate and equity bubbles, but there have been others, such as the emerging markets bubble.

In the medium term, another factor may account for the formation of bubbles. As I mentioned earlier, economic agents tend to adopt a similar behaviour. Someone in charge of managing a portfolio with a specific objective behaves in exactly the same way as his neighbour for 90% of this portfolio. He will differentiate himself in the remaining 10%. What does one do with this remaining portfolio segment? One hunts around for a good idea. That idea will have to be found outside the traditional range of assets, such as fixed-income securities, government bonds or Treasury bills and listed shares of very large companies. One has to turn to marginal assets, such as unlisted shares or emerging market securities, where good ideas are less well known. There too, one should not be surprised that almost everyone will have the same idea and that fads develop. This behaviour fuels bubbles, because the aforementioned 10% are channelled into the same assets.

Supposing this is the case, are there really any disadvantages? This question needs to be addressed, since we demonstrated this morning that the real economy tends to be more stable, anyway.

## **2. Are there any drawbacks to allowing the financial economy to fluctuate?**

If the real economy is indeed more stable, are there any drawbacks to allowing the financial economy to fluctuate? If the financial economy is the preserve of professionals, then it is their problem and it is up to them to deal with it.

One could be tempted to argue along those lines, but the argument is not sound. Excessive volatility, both very short-term and medium-term volatility, poses a genuine problem.

Very short-term volatility, for example, ends up by distorting and blurring information and consequently by distorting prices. As observed on the equity market, volatility tends to increase in a downswing, thereby dissuading a number of potential investors from buying and heightening the downtrend. This phenomenon feeds on itself and pulls the cycle downwards. It is also possible to demonstrate the reverse phenomenon, i.e. traditional speculative movements. In the medium-term, these movements undoubtedly have an impact on the real economy.

When the magnitude of financial cycles is too large, as in Japan, one cannot avoid thinking that these fluctuations exert a long-term dampening effect on the real



economy. If there is a genuine crisis of confidence in the financial system, this will undoubtedly have an impact on the real economy. And excessive financial fluctuations have a direct impact on the soundness of the financial system.

Several steps might be taken. The first thing to be done is to avoid exacerbating volatility-generating factors. This is the case of accounting rules. Big debates are underway, but, in my opinion, expanding the scope of marked-to-market accounting can only increase volatility. We have to allow for the fact that some better informed economic agents are able to absorb risk without having to cover that risk in the form of provisions or losses to be accepted. If we fail to do this, our banking system will only be an instant transmitter of shocks, like the rest of the financial system. Of course, there might be a geographic extension, but, as transmission is very rapid, the shocks will not be absorbed.

We should also promote transparency. Remember Alan Greenspan's comment, which I fully agree with. If information is provided too frequently, the system will eventually reach its limit. Does the quarterly publication of corporate data really represent an improvement on half-yearly publications? This is debatable, at least in the case of certain categories of companies.

Finally, as others have said before, we should promote economic actors with different time horizons. The fact that such actors, pension fund managers for example, are lacking in some countries, such as France, clearly represents a deficiency. This is obviously not the only reason why pension funds should be set up, but it is one of them. We must have long-term management approaches in addition to short-term ones.

I will close my speech by making a few comments on the subject of bubbles.

### **3. Should monetary and prudential authorities be concerned with the question of bubbles?**

This is a tricky question. Bubbles undermine stability, both when they are emerging and when they burst. Bubbles are dangerous because they feed a feeling of wealth. Sometimes, this wealth is real. This generates liquidity and eventually fosters entrepreneurship among certain economic agents. It also creates – and this is more serious – an illusory feeling of solvency, of real wealth, which triggers a credit cycle. A number of studies show that the credit cycle tends to amplify the natural financial cycle.

Consequently, whatever can be done to tame the triggering of a credit cycle is a good thing. Of course, it is easier said than done, because it is not obvious what can actually be done. Certain ideas have been put forward by Professor Hardouvelis, such as margins. In a bubble period, interest rates probably need to be a little higher than normal, in order not to overheat the machine. This argument certainly deserves to be tested quantitatively, but I believe, instinctively, that credit should not be too easy to obtain when this illusory feeling of wealth builds up. It is necessary to find ways of restricting access to credit.

The bursting of the bubble also poses a problem. Once the bubble has burst, some economic and financial agents may face liquidity problems. Of course, it is essential to be able to provide liquidity and this is when central banks step in. But, as we

know, it is particularly difficult to solve a sudden liquidity crisis when one also has doubts about solvency, because the liquidity provider is scared. And it seems to me that liquidity suppliers have a strong case for wishing to maintain a clear view of their clients' solvency. This is normally the preserve of commercial banks. But every time there is a sharp slowdown, they are faced with unexpected bad risks.

As for central banks, which are also liquidity suppliers, the fact that they have studied the consequences and carried out stress tests is certainly an advantage the day the crisis erupts.

These are only a few suggestions, because there is no ready-made answer to the problem of reducing and adjusting to financial market volatility.

## Guillermo Ortiz

Governor

Banco de México

I will comment on three issues: contagion and globalisation, cycles and systemic risk, and very briefly on international financial stability.

### 1. Contagion and globalisation

I am of the view that the fears that contagion has become prevalent as a result of globalisation have been overdone. These fears were nurtured by some experiences of the 1990s, particularly the Asian crisis. However, for a number of countries, more recent periods of volatility have been characterized by less contagion. Contagion, as measured by the average rolling cross-correlations of the EMBI (Emerging Markets Bond Index) was at its highest point during the Asian crisis, when a peak in volatility was reached (Chart 1). Both volatility and contagion have decreased markedly since then. In the case of Mexico, we observe a decline in correlations of EMBI spreads with those of Brazil and Argentina, as can be appreciated in Chart 2. Chile, which also holds investment grade status, has also experienced less contagion in recent episodes of volatility.

Chart 1

**EMBI+ Average Cross-correlation and Volatility**

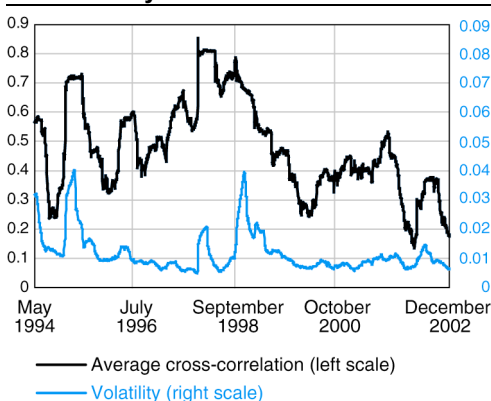
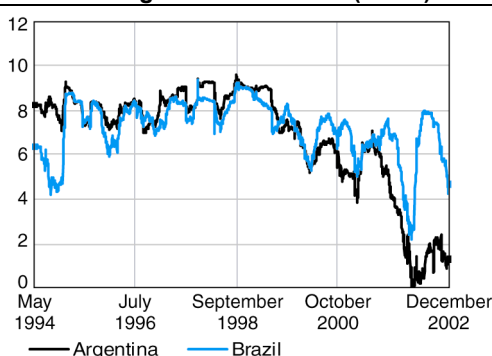


Chart 2

**EMBI+ Average Cross-correlation of Mexico vis-à-vis Argentina and Brazil (Index)**



NB: Average of "rolling" cross-correlations and standard deviations of first differences of daily returns on the EMBI+ for the following countries: Argentina, Brazil, Colombia, Ecuador, Mexico, Panama, Peru, Poland, South Korea, Russia, Turkey and Venezuela. A 50-day window was used.

Source: Bank of Mexico, calculations based on JP Morgan data.

NB: Average of cross-correlations on the daily returns EMBI+ for the Mexico/Argentina and Mexico/Brazil. A 50-day window was used.

Source: Bank of Mexico, calculations based on data JP Morgan data.

Even Brazil was able to do quite well in the initial stages of the Argentinean crisis. Although there was some contamination from Argentina later on, most of the problems Brazil actually faces started with the political uncertainty before the elections.

Why has the risk of contagion receded for some countries? One important aspect is that there is currently much more transparency, analysis, and discrimination among investors. This is a result of the drive on the part of countries and the International Monetary Fund (IMF) to increase information and transparency. In addition, there is much less leverage in the system than before the Asian crisis. While all of these factors have contributed to some degree, lower vulnerability to external events hinges mainly on improving country fundamentals. Indeed, the countries that have strengthened their economic fundamentals are those which have faced a lower risk of contagion.

## **2. Cycles and systemic risks: Mexico's experience during the 1990s**

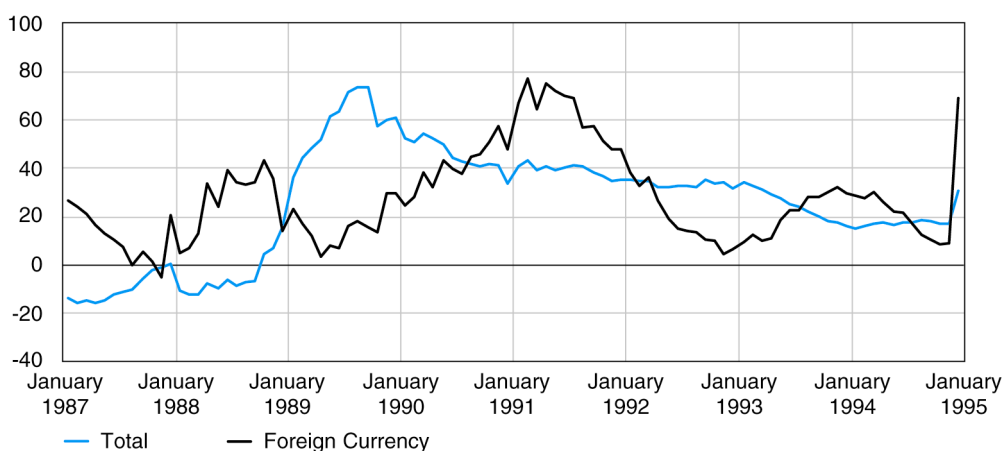
Let me come to my second point and use the experience of Mexico in the mid-1990s to illustrate the links between cycles and systemic risk. There were three main factors that increased the vulnerability of the Mexican economy before the 1995 crisis: a fragile banking system, expectations of an extended period of high growth that led to excessive risk taking, and a lack of developed capital markets in domestic currency (the original sin).

In Mexico, we embarked in the latter part of the 1980s and early 1990s in a very rapid process of financial liberalisation. At the beginning of the 1980s, the banking system was nationalised and most of the credit of the banking system went to finance government deficits. As the government balanced its books, there was a conscious drive to liberalise financial markets. For example, the Bank of Mexico lifted all restrictions on interest rates and reserve requirements were eliminated. At the same time, the banking system was privatised, and the capital market was opened to allow foreigners to invest in government securities. All this was done in a period of about two or three years, in conditions of a weak regulatory environment.

As a consequence of the financial liberalization and the strengthening of public finances, there was an explosion of bank credit to the private sector. Bank credit increased from about 15% of gross domestic product (GDP) to 45% in about five years. This expansion took place under a weak regulatory and supervisory framework. The banks themselves were slow in establishing internal control systems. It is difficult for a bank to extend credit at 30% in real terms, year after year, without over-stretching its risk assessment capabilities and creating more risk on its loan portfolio. There is a lesson in this experience, in the sense that the pace and sequencing of reform in the financial sector must be linked to improvements on the prudential side.

The second factor contributing to create a situation of fragility was the expectation of sustained rapid economic expansion. Success of the reform process of the Mexican economy – which had initiated in the mid-1980s – generated expectations of rising productivity and high rates of return on investment. The market came to expect Mexico's large current account deficit and strong peso to be sustainable over the medium term. Moreover, the government was in the process of negotiating the North American Free Trade Agreement (NAFTA) at the time and there was the hope that greater integration would lead to convergence with the US economy. Therefore, conditions were set for a financial bubble fuelled by very large short-term capital inflows.

Chart 3

**Bank credit to the private sector***(annual growth rates of outstanding balance deflated by CPI, in %)*

Source: Bank of Mexico

A third factor was the lack of developed capital markets in domestic currency, the so-called original sin. During the first half of the 1990s, there was a build-up of foreign currency exposures by the private sector, which made the economy vulnerable to shifts in volatile financial flows. When the peso depreciated, the reversal of the prior real exchange rate appreciation put the corporate sector under stress, and risks for the banking sector materialized as corporate borrowers could not repay loans. In the end, expectations were not fulfilled and domestic fragility led to a deep crisis.

In this context, how has Mexico become more resilient to recent shocks?

After the 1995 crisis, Mexico experienced the effects of contagion from the crises in Asia, Russia, and Brazil. The recent US recession in 2000 and 2001 had also a significant impact on Mexico, given the high correlation between Mexico's business cycle and the US industrial cycle. Although the recession has been mild in the US, it has concentrated mostly in the industrial sector. The US has had two years running of negative industrial production, and that has amplified the cycle in Mexico. We had a nearly stagnant economy in 2002, growing only about 1%. There were heavy losses in employment in the manufacturing sector, and exports – which before the recession began were growing at double digits – practically stalled over the past two years.

Notwithstanding the above, there are many positive aspects in Mexico's recent economic performance: inflation has been continuously coming down, international reserves have risen to record highs and the banking system is solid, with foreign banks playing a major role. Furthermore, nominal interest rates are at their lowest historical levels, despite the fact that the Mexican economy has faced relatively large external shocks. What has changed in Mexico to make the external economy more resilient?

I believe that the explanation lies in a series of institutional developments that have made it easier for Mexico to cope with the perils of globalisation. To start with,

there is a growing consensus about the need for stability. The Mexican Congress has not been controlled by any political party for the last six years, and yet fiscal discipline has been maintained. Congress has endorsed the implementation of a prudent fiscal policy and, as a consequence, debt has been kept at low levels.

Independence of the central bank, coupled with a clear mandate to reduce inflation, is another factor that has contributed to stability. The combination of inflation targeting with a flexible exchange rate has helped anchor long-term inflation expectations, facilitating the development of capital markets. In this context, the Mexican Treasury has been able to issue long term debt in pesos.

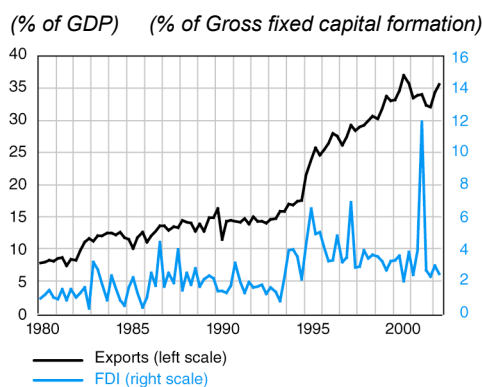
There are two additional institutional developments that have been crucial in making the economy more resilient.

First, the consolidation of the democratic process. In 1994, people were asked whether they thought that fraud would be committed in the presidential elections of that year. 80% of those surveyed answered that there would be a fraudulent election. In the elections of 2000, only 20% considered that there would be a fraud. This puts into perspective the enhanced credibility of the electoral body. The Supreme Court has also improved its credibility.

Second, the signing of NAFTA (see Charts 4 and 5), which has implied a fast expansion of trade and foreign direct investment flows. Short-term capital flows have fallen drastically and, in recent years, practically all of the current account deficit has been financed by direct foreign investment. Furthermore, a long-term horizon for tariff reduction, clear investment rules, a dispute resolution mechanism, as well as other features of NAFTA, have been important components of Mexico's institutional development.

Chart 4

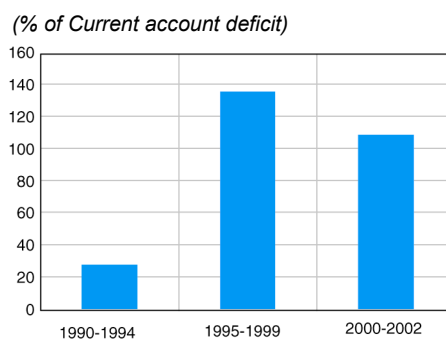
**Exports and Foreign direct investment (FDI)**



Sources: Bank of Mexico and INEGI

Chart 5

**Foreign direct investment**



Sources: Bank of Mexico and INEGI

With the above set of measures, many of the basic building blocks of institutional development that make a market economy work have been put in place in Mexico. Nevertheless, we still face the challenge of making the economy much more flexible and responsive to changing conditions in the international environment. We have been successful so far in avoiding a financial crisis and we have experienced a normal recession for the first time in decades. This is not a remarkable achievement from the perspective of an advanced economy, but in the case of Mexico it is. However, the problem again is that there is a growing resistance at the political

level, not only in Mexico, but practically in every country in Latin America, to undertake what are called second-generation economic reforms.

What is needed the most is to overcome a sense of reform fatigue that is pervasive throughout the region. In Mexico, consensus building is needed in order to advance with the adoption of fundamental reforms in the fiscal area, as well as in the energy and labour markets.

It would be a very long story to go into the reasons for this but, as shown by recent public opinion polls, such as the *Latinobarómetro* poll carried out by a Chilean institute, the electorate is not supportive of reforms. It opposes not only privatisation and the other elements of the so-called Washington consensus, but it is also becoming much more distrustful of the democratic processes throughout the region. This is indeed a worrisome development.

### **3. International financial stability: the road ahead**

The experiences of Mexico and Chile show that progress on the domestic front can reduce the risk of contagion and contribute to a more stable international financial system that is less exposed to systemic risks. However, a reform of the international financial system is also needed, given that several drawbacks are still present: on the one hand, financial flows to emerging market countries have not recovered after 1998, and while foreign direct investment is playing a larger role, it cannot entirely replace financial flows. On the other hand, financial crises have continued to occur, and their resolution implies extremely large costs.

Unfortunately, the changes needed in the international financial architecture are only in their design stage. There has been an increasing interest in pursuing a statutory approach to debt restructuring – an approach that is opposed by many of the large emerging markets and which has been received rather coldly by market participants.

Mexico has recently adopted a course of action based on a market approach. Thus, the most recent issue of government bonds in international markets has included collective action clauses. In the event that a country would have to actually restructure – and hopefully this will not happen – the practical utility of such clauses is limited. But at least this works as a signal. The recently issued bond with collective action clauses was well received by the markets and, according to Mexican Treasury's calculations, without an impact on costs.

An additional option that is being pushed by some, is the design of a voluntary code of conduct for sovereign debt restructuring. I am of the belief that this initiative may contribute to deal with some of the aspects that are of concern for the international financial community, and therefore I hope that it will continue to be sought.

## **Jaime Caruana**

*Governor*

*Banco de España*

This panel has dealt with a lot of different issues. I am not going to attempt to summarise them, but I would like to make a couple of comments.

We have spent the whole day talking about cycles and pro-cyclicality. It would be necessary, from the point of view of the behaviour of financial institutions, to say that some kind of pro-cyclicality is necessary; it is very difficult for us to ask banks to be risk sensitive and, at the same time, tell them that they should not be pro-cyclical. So some kind of pro-cyclicality is necessary, but not too much, and we should try to set in place a procedure so that the system is not too pro-cyclical. But, at least, this is an important consideration.

My impression was that all the panellists basically agreed that there is a role for regulation to try to act on these bubbles or on these cycles. There is a role, but here, too, we should be very careful. When we are wearing the central bankers' hat, we have a lot of problems identifying some of the bubbles. When we are wearing the supervisors' hat, we still have the same problems identifying some of the difficulties. So we should start by acknowledging some important basic principles. The first principle is that it is very important, for regulation, and in order to dampen cycles, to have a sound financial system. At an extreme, for example, credit crunches occur basically when some banks are in weak situations. Having strong financial systems is something that is most helpful for avoiding some elements of pro-cyclicality.

The second thing that regulation can do in my view is – and this has been mentioned by some of the panellists – to provide the right incentives. Some of the incentives would be not to be “short-termist” in their strategy, but to look to longer horizons. This is very important also when banks decide on capital or provisions. They should look over more than one cycle. This is also a way of preventing too much pro-cyclicality on the part of banks.

The third element is transparency. This is the element that we should try to enforce: transparency and good governance on the part of institutions. These are very clear elements. They should be so for regulators, who should try to promote them. Among the regulators, I would also include those that set accounting practices. Accounting practices are very important, and they also influence the way institutions behave, and therefore these kinds of considerations should also be taken into account when preparing these elements.



## Concluding Remarks

**Andrew Crockett**  
*General Manager*  
*Bank for International Settlements*

I would like to start, as have others, by thanking – and this time as the last speaker – Jean-Claude Trichet and Banque de France for organising this very interesting colloquium on a very timely topic. I would also like to thank all of those who prepared papers and the discussants for giving us rich and varied set of opinions on the subjects that have been discussed.

The structure for the conference was a good one. It first took us through the stylised facts: what do we know about cycles? What does the evidence demonstrate about how the characteristics of cycles have changed over time? Then we had the opportunity to talk about the relations between market structures and cycles, some of the underpinnings of cyclical behaviour, and reflect on how those were changing. In the third session we came to how monetary policy and cycles interact, and the very interesting practical questions of what monetary policy, or indeed other policy, should be doing in the face of cycles. Finally, we looked at some of the international implications.

I will take that structure as the basis for some remarks which inevitably will be personal, but I hope, will be related to some of the points that have been made.

I drew from the first session at least one hopeful sign and one cautionary note. The hopeful sign is that, in his very comprehensive and professional presentation, Ray Barrell demonstrated – amongst many very interesting facts – that cycles in recent years have shown less amplitude than earlier on. If we were confident that this could continue, it would be a phenomenon from which comfort could be drawn.

Ray Barrell presented three possible reasons why we are seeing more damped cycles. First, better policies. Secondly, reactions within the economy may have been such as to damp the kinds of shocks that have occurred. Third, we have been lucky. The conclusion I drew from the comments made by Ray Barrell, by the discussants, and by others in the room, is that there is a bit of truth in each of these explanations.

First, we have had better policies, certainly in the area of monetary policy. The fact is that inflation has been lower, and that monetary policy, perhaps through inflation targeting and a better understanding of the monetary policy mechanism, has enabled us to be more successful. That was a point that Lucas Papademos made in a later session, too.

Secondly, it is true that one can think of aspects of private sector reactions that have helped damp some of the shocks that have occurred. For example, the development of new financial instruments makes it easier for households and firms to spread expenditures over time and, therefore, helps damp cycles. Moreover, the greater trade integration in the world economy enables the impact of country-specific shocks to be dispersed more readily than in the past. A point that Christine Cumming made is the greater discipline on private sector actors may prevent them getting into situations in

which they have to react more precipitately or in a more destabilising way to developments in the cycle.

Finally, it is fair to say that there may have been a certain amount of luck. Perhaps cyclical volatility has not been permanently reduced. In other words, like the man falling from the top of the Empire State Building: perhaps we are at the 50th floor – saying “so far so good”. The point that we should not be complacent was made both by Jean-Claude Trichet in his introductory statement and by Olivier Blanchard – and Ray Barrell himself would surely also subscribe to it. For one thing, models do not tell the whole story. He was commendably modest in what he claimed for the work that he had done (more modest than he really ought to have been). Moreover, we have worrying counter-examples of countries that in fact have suffered significantly from crises in recent years. Japan was cited and ought to be a cautionary tale. Later on in the colloquium, we had an interesting description from Yutaka Yamaguchi on some of the causes and the dilemmas that the Japanese bubble in the financial sector had created.

The Conference spent a fair amount of time looking at potential risks inherent in financial imbalances that might subsequently translate themselves into difficult adjustment issues. One of course – and we seem continuously to come back to this issue – is the imbalances in current accounts and the implications that they might have for future adjustments in exchange rates. Interestingly and rather rigorously, in Ray Barrell’s model, there was a discussion of the impact that changes in exchange rates would have on aggregate inflation and in aggregate output across the world. It is worth noting that the impact of exchange rate movements is not necessarily symmetric. Beyond that kind of formal asymmetry, I wonder myself if there is not an additional transmission mechanism through confidence effects when very sharp and substantial adjustments in exchange rates cannot be captured by simply using models that have been generated over periods where exchange rate movements were less sharp. We talked also about the run-up in asset prices, the bubble that has now burst, and whether those effects of bursting the bubble may still be working their way through the system. This could mean that the assumed reduced amplitude of real economic cycles is still a “jury-out” question until we have seen the ultimate effects of recent asset price volatility.

On that note of asset price volatility, I will pass to the second session, which addressed this topic in quite some depth. Patrick Artus presented a lot of slides in his opening presentation, and Mervyn King referred to “good, bad and ugly” volatility. I took from these words that “good” volatility are changes and fluctuations in prices that reflect perceptions of fundamentals. “Bad” volatility is excess movements, that is to say, movements that go beyond what can be justified by fundamentals. And “ugly”, we did not define it, but I take it to mean something that is maybe self-propagating and destabilising, that is to say, movements that not only do not reflect fundamentals, but are exaggerated through market dynamics and create a kind of debt deflation. I do not think we are in that situation now, but it has been graphically described in the writings of, say, Irving Fisher.

That session looked at the differences between short-term and long-term volatility. Personally, I am more concerned with long-term volatility, that is to say, volatility over cycles rather than the day-to-day volatility that was in one of Patrick Artus’s presentations, and even the intra-day volatility that Mervyn King talked about. There is a lot of interest these days in high frequency observations, but if we are talking, as we were today, mainly about the economic cycle – the business cycle – we are probably looking at factors that were underlying longer term volatility. Patrick Artus,

in his presentation, had a really impressive array of potential market causes: the loss of liquidity in markets, the impact of globalisation, the use of similar models by different participants in markets. Philippe Lagayette mentioned this too. It is an important question for us all to reflect on for the future, as we become more and more sophisticated in risk management and in the assessment of prices. Does that mean that instead of the paradigm of a multiplicity of atomistic agents, acting on the basis of different preferences and different information sets, we are now becoming much more monopolistic, in that market participants are reacting in similar ways to a single set of information, and therefore markets are becoming more brittle in the way in which they absorb shocks?

Rating agencies were mentioned, the ones we love to hate. Accounting standards and concentration of risks were also mentioned by several people. Gerd Häusler talked about the “short-termism” in markets. Mervyn King made this point too. Perhaps, with such a large number of possible causes, one needs to think hard about what it is one should be worried about in volatility, and if you act in response to those causes, are you going to be creating unintended consequences? Are these symptoms or factors to which, if you act on them, you will produce results that you had not intended or wanted? I will not say much more about this, except that in the course of this discussion, we obviously came for the first time, in this conference, but not for the last time, to the issue of what should monetary policy do in the face of what is considered to be a bubble.

There are strong arguments for monetary policy to be pretty cautious in tackling bubbles, and those were rehearsed in this session and in later sessions.

First of all, in a general sense, asset prices – it was said – are not necessarily an advance indicator of what is going to happen in the real economy. Even if they were, it is pretty hard for central banks to know better than the generality of market participants whether what they are seeing is an unsustainable asset price movement or is simply a reflection of changes in relative scarcities. The moral hazard argument, the transparency argument, all of these are pretty strong arguments. Mervyn King also made the point that if you see a boom or a bubble, in equity prices, you may not have a bubble in other prices, or house prices may go up but others do not. So you would have to answer the question – and this is a difficult question and a challenge – which of the asset prices you are concerned with. Nevertheless, I personally come down on the side of those who believe that there are potential dynamics in financial markets that can create asset price movements that take you away from equilibrium in dangerous ways. Therefore it is appropriate for stability authorities to think about how they might deal with that. You can get support for that notion from game theory and from behavioural finance as well as from empirical observation. There are factors that will cause, in certain circumstances, prices to move away from equilibrium, and then they will have to, of course, revert to equilibrium, and that can be a destabilising process.

One example of potentially destabilising pressures that was mentioned in this session is the requirements that banks face either from internal economic capital management or from their regulator to react when values in their portfolios decline. The same thing sometimes happens in the management of assets by insurance companies. These can create a natural requirement to sell into a falling market and, by the way in which leverage works, incentives to buy into a rising market. I do not have an answer to this, but I just want to signal that it is something that needs to be thought about.

Interestingly, as Gikas Hardouvelis pointed out, in the last session, there is a search for mechanisms to dampen such pressures. Margin requirements are one. I know not everybody favours them and I have some doubts myself. But the idea that one should look, through prudential norms, at ways in which you can somehow circuit-break these tendencies to exaggeration and excess in adjustments in asset price markets is obviously something that people are thinking about.

I now come to economic cycles and monetary policy as discussed in Lucas Papademos's interesting paper. When he got up, we all were listening hard for clues as to what the European Central Bank might be doing in the short term (or in the longer term) with their policy or their policy framework. Lucas Papademos did a pretty good job of being inscrutable in that, but not a good enough job because clearly both Stanley Fischer and Jürgen von Hagen heard in his remarks some hints of changes. And I guess others of us also questioned whether he was hinting at that.

Nobody would greatly dissent from his central proposition that the focus should be on price stability. Activism, of course is to be avoided, for two reasons I took from Lucas Papademos's presentation. Firstly, there is less need for an activist monetary policy if one actually believes that cycles have become more damped. Secondly, the causes of the kinds of cycle that we have had have not really been such as can be addressed by an activist monetary policy. But as Stanley Fischer said: what is activism and what is fine-tuning? There is a degree of tuning that you expect from monetary policy that is somewhere between doing nothing and reacting on a daily basis. I do not suppose there is any hard and fast rule that one can put down that says exactly how activist policy should be. What caused some people to see the potential for change in Lucas Papademos's remarks was the "but" that came after his statement that policy should not be activist: namely, that there will be circumstances in which it will be appropriate for policy to react. I am not sure if he was talking about reacting to asset prices or reacting to threats of deflation. That of course has to be true too. There will be extreme circumstances in which monetary policy does not proceed in the way in which it does most of the time. The real question, and the one that is ultimately a matter of judgement, is when do you determine when you have got into such an extreme circumstance and when you are in something that could be considered normal.

Jürgen von Hagen was concerned that central bankers might take too many opportunities to declare the circumstances to be unusual and therefore be too activist. My experience in Basel leads me to think that this concern is not the greatest risk, but anyway, it is one that was expressed and it is certainly legitimate to think about.

Monetary policy and asset prices: we revisited this argument, and I do not think came any closer to a strong conclusion on it. Nobody believes that monetary policy should target a particular asset price or the generality of asset prices. Where I sense a beginning of a consensus is in redefining the time horizon of price stability to be long enough to take into account the playing out of an asset price cycle. Two or three years ago, central bankers would have said the appropriate horizon is one to two years, because that is the conventional period over which we expect monetary policy to have an effect on the economy. That incidentally is the maximum extent of the models forecasting price developments that we can have any confidence in.

Now – and I sense this from the points made by a number of central bankers – we are more willing to say that perhaps we should be looking ahead three or four, or five years. Nobody made precise the period of years, I should say, but looking ahead a little

further to the implications of financial imbalances for inflation, or even for financial stability, and through financial stability, for inflation in the longer term. So if I were to be optimistic about consensus, I would say that we are going to find it by thinking about the consequences of monetary policy and the consequences of price stability objectives over a slightly longer time horizon.

Lastly and very briefly, cyclical and the international financial system. I will not say very much about this except that there are some very important and unresolved questions there. We have had in the last decade several very disturbing international financial crises. They were mentioned: Mexico, East Asia, Russia and Brazil. Admittedly there is a silver lining in that more recently we seem to have seen less contagion. Guillermo Ortiz made this point in his presentation, and it is true.

The fundamental problem is that we have not yet got away from what I sometimes call the “feast-famine syndrome” of international capital flows to countries like Brazil. But Brazil is far from being alone in this. When a country embarks on positive economic reforms and the international environment is stable and conducive, it finds itself receiving very large quantities of capital inflow, perhaps more, in retrospect, than it can easily absorb. It finds its exchange rate relatively strong, and it can borrow internationally at relatively low interest rates. So its net borrowing to gross domestic product (GDP) or to exports rises without any apparent difficulties, because with low interest rates, the debt can easily be serviced. Then something happens. It may be something in the international business cycle, it may be something in the domestic political cycle, that causes markets to raise a question mark about the sustainability of the debt position. We all know what happened in the case of Brazil. But you can paint that picture on a broader canvas and see it happening across a larger number of developing countries. That question is one of the most fundamental questions in the international financial architecture. How can you induce markets or the official community for that matter, to have a consistent view over time of debt sustainability, and not one that is so volatile as to cause the kind of variations in capital flows that we have seen.

With respect, I would see debates on the Sovereign Debt Restructuring Mechanism (SDRM) and the collective action clauses as only a small subset of that broader question. As Guillermo Ortiz said, the SDRM is something that is not widely favoured, to put it mildly, by the borrowing countries or by the issuers. It is going to be a difficulty to construct it in such a way that it can make a positive contribution. But as I say, that is a subset of the problem because that addresses the pathology of the situation when we have a crisis, rather than dealing with the underlying problem of volatility in capital flows.

I have not commented on the very interesting and characteristic presentation by Chairman Greenspan, except I did remark to Jean-Claude Trichet, on hearing Chairman Greenspan’s strong endorsement of the virtues of risk transfer technology, that an interesting debate at next year’s Banque de France colloquium would be one between Alan Greenspan and Warren Buffett!!

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