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International Symposium
GLOBALISATION, INFLATION AND MONETARY POLICY
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Chairman, Group of Thirty

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(March 2008)
BOLLARD Alan
Governor
Reserve Bank of New Zealand

Dr. Alan Bollard was appointed as Governor of the Reserve Bank of New Zealand in September 2002. The Reserve Bank carries out monetary policy, oversight of the financial system, and provision of New Zealand’s currency.

Dr. Bollard’s previous positions include:

- Secretary to the Treasury (1998-2002). The Treasury manages the Crown’s finances and is the Government’s principal economic adviser.
- Director of the New Zealand Institute of Economic Research (1987-1994). The Institute provides advice on applied economics and forecasting.
- Dr. Bollard has also worked as an economist in a variety of positions in the United Kingdom and in the South Pacific.

Dr. Bollard has written a number of books on the New Zealand economy, has produced a computer simulation game called Oikonomos where one plays at being the Minister of Finance, and has helped rebuild the famous Phillips hydraulic economic simulation model “the Moniac”.

CHANEY Eric
Managing Director and Chief Economist for Europe
Morgan Stanley

Eric Chaney, 56, is Managing Director and Chief Economist for Europe at Morgan Stanley. A former associate professor of Economics at the École nationale d’Administration (ENA), he is a member of the Commission économique de la Nation, an advisory board to the French Minister of Economy and Finance, since 1997. He is also member of the panel of economists consulted by the Governors of the Bank of France, Jean-Claude Trichet and now Christian Noyer. He has recently testified on issues such as productivity developments in Europe or Italy’s competitiveness in EU Commission panels. He contributes to the Wall Street Journal Europe and Newsweek as Op-ed editor.

Before joining Morgan Stanley in 1995, Eric Chaney was chief forecaster for the French economy at INSEE, the French Institute for Statistics and Economic Studies. He was previously chief forecaster for the global economy at the Economic Policy Unit of the Ministry of Finance.

Eric Chaney began his career as a Mathematics Professor (professeur agrégé) and was the editor of L’Ouvert, an academic journal of Mathematics and Epistemology of the University Louis Pasteur of Strasbourg. He holds a MSc in pure Mathematics from the University Claude Bernard of Lyon, and a diploma in Economics and Econometrics from the École nationale de la Statistique et de l’Administration économique – ENSAE. He seats at the Board of the French Economic Association (AFSE – Association française de Science économique) and is a member of the Political Economy Society.
FISHER Richard W.

President and Chief Executive Officer
Federal Reserve Bank of Dallas

Mr. Fisher attended the US Naval Academy, graduated with honors from Harvard University in Economics, read Latin American politics at Oxford and received an M.B.A. from Stanford University. He has maintained his academic interests, teaching graduate courses and serving on several university boards. He was a Weatherhead Fellow at Harvard in 2001, is an Honorary Fellow of Hertford College at Oxford University, and is a Fellow of the American Academy of Arts and Sciences.

Mr. Fisher is former Vice Chairman of Kissinger McLarty Associates, a strategic advisory firm chaired by former Secretary of State Henry Kissinger.

Mr. Fisher began his career in 1975 at the private bank of Brown Brothers Harriman & Co., where he specialised in fixed income and foreign exchange markets. He became Assistant to the Secretary of the Treasury during the Carter administration, working on issues related to the dollar crisis of 1978-79. He then returned to Brown Brothers to found their Texas operations in Dallas.

In 1987, Mr. Fisher created Fisher Capital Management and a separate hedge fund management firm, Fisher Ewing Partners. He sold his controlling interests in both firms when he rejoined the Government in 1997.

From 1997 to 2001, Mr. Fisher was deputy US trade representative with the rank of Ambassador. He oversaw the implementation of NAFTA, negotiations for the Free Trade Area of the Americas, and various agreements with Vietnam, Korea, Japan, Chile, Singapore, Australia and New Zealand. He was a senior member of the team that negotiated the bilateral accords for China’s and Taiwan’s accession to the World Trade Organisation.

FRENKEL Jacob A.

Vice Chairman, AIG
Chairman, Group of Thirty

Dr. Jacob A. Frenkel is Vice Chairman of American International Group, Inc. (AIG) and Chairman of AIG’s Global Economic Strategies Group. He is also the Chairman and CEO of the Group of Thirty (G30). Dr. Frenkel holds a B.A. in Economics and Political Science from the Hebrew University of Jerusalem, and an M.A. and Ph.D. in Economics from the University of Chicago.

Prior to joining AIG, Dr. Frenkel served from 2000 to 2004 as Chairman of Merrill Lynch International Inc. Between 1991 and 2000 he served two terms as the Governor of the Bank of Israel. He is credited with reducing inflation in Israel and achieving price stability, liberalising Israel’s financial markets, removing foreign exchange controls, and integrating the Israeli economy into the global financial system. Between 1987 and 1991, he was the Economic Counselor and Director of Research at the International Monetary Fund, and between 1973 and 1987 he was on the faculty of the University of Chicago where he held the position of the David Rockefeller Professor of International Economics and served as Editor of the Journal of Political Economy.

He is a Fellow of the Econometric Society, a Foreign Honorary Member of the American Academy of Arts and Sciences (AAAS), a Member of the Board of Directors of the National Bureau of Economic Research (NBER), a member of the International Advisory Board of the Council on Foreign Relations and a member of the Trilateral Commission. He is also a member of the Board of Directors of the Institute for International Economics (IIE).

Dr. Frenkel is a Laureate of the 2002 Israel Prize in Economics. He is also a recipient of several honorary doctoral degrees and other decorations and awards, including the “1993 Economic Policy Award” by “Emerging Markets” and the “1997 Central Banker of the Year Award” by “Euromoney”.

During 1995-1996, Dr. Frenkel served as Chairman of the Board of Governors of the Inter-American Development Bank and, during 1999-2000, as Vice Chairman of the Board of Governors of the European Bank for Reconstruction and Development.

Dr. Frenkel is the author of numerous books and articles in the fields of International Economics and Macroeconomics.
KOHN Donald L.
Vice Chairman
Board of Governors of the Federal Reserve System

Donald L. Kohn originally took office on August 5, 2002, as a member of the Board of Governors of the Federal Reserve System for a full term ending January 31, 2016. On June 23, 2006, Dr. Kohn was sworn in as Vice Chairman of the Board of Governors of the Federal Reserve System for a four-year term ending June 23, 2010.

Dr. Kohn was born in November 1942 in Philadelphia, Pennsylvania. He received a B.A. in Economics in 1964 from the College of Wooster and a Ph.D. in Economics in 1971 from the University of Michigan.

Dr. Kohn is a veteran of the Federal Reserve System. Before becoming a member of the Board, he served on its staff as Adviser to the Board for Monetary Policy (2001-02), Secretary of the Federal Open Market Committee (1987-2002), Director of the Division of Monetary Affairs (1987-2001), and Deputy Staff Director for Monetary and Financial Policy (1983-87). He also held several positions in the Board's Division of Research and Statistics: Associate Director (1981-83), Chief of Capital Markets (1978-81), and Economist (1975-78). Dr. Kohn began his career as a Financial Economist at the Federal Reserve Bank of Kansas City (1970-75).

Dr. Kohn has written extensively on issues related to monetary policy and its implementation by the Federal Reserve. These works were published in volumes issued by various organisations, including the Federal Reserve System, the Bank of England, the Reserve Bank of Australia, the Bank of Japan, the Bank of Korea, the National Bureau of Economic Research, and the Brookings Institution.

He was awarded the Distinguished Achievement Award from The Money Marketeers of New York University (2002), the Distinguished Alumni Award from the College of Wooster (1998), and the Honorary Degree, Doctor of Laws, from the College of Wooster (2006).

Dr. Kohn is the Chairman of the Committee on the Global Financial System (CGFS), a central bank panel that monitors and examines broad issues related to financial markets and systems.

KRISHNAMURTHY Arvind
Professor of Finance
Kellogg School of Management – Northwestern University

Arvind Krishnamurthy is the Harold L. Stuart Professor of Finance at the Kellogg School of Management of Northwestern University, where he has been since 1998. He has held visiting positions at the London School of Economics and the International Monetary Fund.

Dr. Krishnamurthy obtained his B.Sc at the University of Pennsylvania, and his Ph. D. at the Massachusetts Institute of Technology where he won the Zannetos dissertation prize. Prior to receiving his Ph. D., Dr. Krishnamurthy worked in the financial industry as a risk manager and bond trader.

Dr. Krishnamurthy’s research addresses the causes and consequences of liquidity crises. He studies the connections between financial markets and macroeconomic performance. He is currently researching liquidity in bond markets and the role of Knightian uncertainty in financial crises. Dr. Krishnamurthy has published extensively in academic journals.
LIPSKY John
First Deputy Managing Director
International Monetary Fund

John Lipsky assumed the position of First Deputy Managing Director of the International Monetary Fund on September 1, 2006.

Before coming to the Fund, Mr. Lipsky was Vice Chairman of the JP Morgan Investment Bank. In this position, he advised the firm’s principal market risk takers, published independent research on the principal forces shaping global financial markets, was actively engaged with JP Morgan’s key clients, and represented the firm around the world with senior public and financial sector decision makers.

Previously, Mr. Lipsky served as JP Morgan’s Chief Economist, and as Chase Manhattan Bank’s Chief Economist and Director of Research. He served as Chief Economist of Salomon Brothers, Inc. from 1992 until 1997. From 1989 to 1992, Mr. Lipsky was based in London, where he directed Salomon Brothers’ European Economic and Market Analysis Group.

Before joining Salomon Brothers in 1984, he spent a decade at the IMF, where he helped manage the Fund’s exchange rate surveillance procedure and analysed developments in international capital markets. He also participated in negotiations with several member countries and served as the Fund’s Resident Representative in Chile during 1978-80.

A graduate of Wesleyan University, Mr. Lipsky earned a bachelor’s degree in Economics. Subsequently, he was awarded an M.A. and a Ph.D. in Economics from Stanford University.

MARTIN Philippe
Professor
University of Paris I – Panthéon-Sorbonne

Philippe Martin is a professor at the University of Paris I Panthéon-Sorbonne and holds a chair in Economics at the Paris School of Economics. He is a junior member of the Institut universitaire de France, a co-director of the macroeconomics research programme at the Centre pour la Recherche économique et ses Applications (CEPREMAP) and a research fellow at the CEPR in London.

Before teaching in France, he worked as an economist at the Federal Reserve Bank of New York and was an assistant professor at the Graduate Institute of International Studies in Geneva. He also taught at the École polytechnique, the London School of Economics and the London Business School. He was a visiting researcher at Stockholm University and Princeton University. In 2002, he was awarded the Prize for “Best young Economist” in France.

Philippe Martin is managing editor of Economic Policy and has published a number of papers on international macroeconomics and international trade in particular in the American Economic Review, the Review of Economic Studies and the Journal of International Economics. He is also the co-author of a book published by Princeton University Press.

Philippe Martin is a graduate from the Institut d’Études politiques in Paris and holds a Ph.D. from Georgetown University (Washington DC).
NOYER Christian
Governor
Banque de France

Christian Noyer was born in 1950 near Paris, France. Having graduated in Law at the universities of Rennes and Paris, he holds the diploma of the Institut d’Études politiques de Paris, and completed his education in the École nationale d’Administration.

After a military service as a French naval officer, he entered the French Treasury in 1976, and spent two years in 1980-82 in Brussels as a financial attaché to the French Delegation to the European Union. Back to the Treasury, he held various positions, dealing both with domestic and international affairs, and was appointed as Director of the Treasury in 1993. He also served as an adviser to Mr Balladur, then Minister of Finance, in 1986-88, and as chief of staff for two other Finance Ministers (Messrs. Alphandéry and Arthuis) in 1993 and in 1995-97. He was appointed as the Vice-President of the European Central Bank in 1998, when the Bank was set-up in Frankfurt, where he served until 2002. He is governor of the Banque de France since 1 November 2003.

His European and international experience include membership in the European monetary committee, in key working groups in the OECD, G7, and G10, the position of alternate Governor in the IMF and the World Bank, and the chairmanship of the “Paris Club” of creditor countries during the years 1993-97.

He has been awarded several honors by various countries, including Officier de la Légion d’Honneur and Chevalier de l’Ordre national du Mérite in France, Commander of the Ordre national du Lion in Senegal, and Great cross of the Orden del Merito civil in Spain.

ORTIZ Guillermo
Governor
Banco de México

Guillermo Ortiz became Governor of the Bank of Mexico in January of 1998. He was ratified as Governor for another six-year term beginning in January 2004. From December 1994 to December 1997, Dr. Ortiz served as Secretary of Finance and Public Credit in the Mexican Federal Government. Prior to heading the Finance Ministry, he served briefly as Secretary of Communications and Transportation at the outset of the Zedillo Administration.

His past professional experience includes having served as under-secretary of Finance and Public Credit from 1988 to 1994. Before that position, he was Executive Director at the International Monetary Fund (IMF) (1984-1988) and Manager, as well as Deputy Manager, in the Economic Research Bureau of the Bank of Mexico (1977-1984), and an Economist in the Ministry of the Presidency of Mexico.

Dr. Ortiz has also taught at universities in Mexico and the United States. He has written and published two books and numerous papers on Economics and Finance in specialised journals in Mexico and abroad. He has received several honors and awards. He is a member of the Board of Directors of the Bank of International Settlements (BIS) and chairs the Central Bank Governance Forum of the BIS. He was a member to the committee of eminent persons in charge of studying sustainable long-term financing of the IMF (2006). He is also a Director of other International Fora, and a member of the Group of Thirty. On February 2008, Dr. Ortiz was appointed to the advisory board for the Globalisation and Monetary Policy Institute at the Federal Reserve Bank of Dallas.

Dr. Ortiz earned a Bachelor of Arts degree in Economics from the Universidad Nacional Autónoma de México and later a Ph.D. in Economics from Stanford University.
reddy yaga venugopal

Governor
Reserve Bank of India

Dr. Yaga Venugopal Reddy took over as the Governor of the Reserve Bank of India, for a five year term, on September 6, 2003. He is the twenty-first Governor of the Reserve Bank.

Dr. Reddy is the Chairman of the BIS Asian Consultative Council (ACC) for a term of two years from March 2007. He is also currently the Chairperson of SAARCFINANCE, a Group of Governors of the central banks of SAARC member countries.

Dr. Reddy was born on August 17, 1941. He took his M.A. in Economics from the Madras University, India; Ph. D. from the Osmania University, India; and Diploma in Economic Planning from the Institute of Social Studies (ISS), Netherlands.

Dr. Reddy was awarded Doctor of Letters (*honoris causa*) by Sri Venkateswara University, India; and Doctor of Civil Law (*honoris causa*) by the University of Mauritius.

Prior to his appointment as the Governor, Reserve Bank of India, Dr. Reddy was Executive Director for India, Sri Lanka, Bangladesh and Bhutan on the Board of the International Monetary Fund from July 2002.

reddrado martin

Governor
Central Bank of Argentina

In 1994, Martín Redrado founded the *Fundación Capital*, an institution devoted to economic research and public policy design, where he was Chief Economist until 2001. A Harvard University M.A. in Public Administration, he specialised in Finance and International Economy.

While he pursued his private sector career, he was invited by the Government on several occasions to act as a civil servant.

In 1991, he was appointed President of the National Securities Commission where, among other achievements, he designed the new regulatory framework for the Argentine capital market. He was elected Chairman of the International Organisation of Securities Commissions (IOSCO)'s Emerging Market Committee.

Between January 2002 and September 2004 he acted as Secretary for Trade and International Economic Relations.

He took the first steps in his professional career in 1985 as a member of Jeffrey Sachs' team, implementing the Bolivian stabilisation program.

In the following five years, he worked in the United States, most importantly for Salomon Brothers, where he provided advisory services during the privatisation and placement of shares of British Airways, British Gas and *Compagnie financière de Suez* and helped arrange the first placement of warrants of a Spanish company on the international market. He was also a Managing Director at Security Pacific Bank, where he directed the Employee Stock Ownership Program for ENERSIS and the placement of major Mexican private companies' eurobonds on international capital markets and provided consultancy services for the restructuring of *Teléfonos de México* SA.

He wrote several books; among the most recent ones, it is worth mentioning "Cómo sobrevivir a la globalización" (*How to survive globalisation*, 2002), published by Prentice Hall, and "Exportar para crecer* (*Exports for growth*, 2003), published by Planeta.
REY Hélène
Professor
London Business School

Hélène Rey is Professor of Economics at London Business School.

She received her undergraduate degree from ENSAE, a Master in Engineering Economic Systems from Stanford University and her Ph.Ds from the London School of Economics and the École des Hautes Études en Sciences Sociales.

Until 2007, she was at Princeton University, as Professor of Economics and International Affairs in the Economics Department and the Woodrow Wilson School. In 2005, she was awarded an Alfred P. Sloan Research Fellowship. She received the 2006 Bernácer Prize (best European economist working in macroeconomics and finance under the age of 40) for "her important research on the determinants and consequences of external trade and financial imbalances, the theory of financial crisis and the internationalisation of currencies. Her contributions help to improve our understanding of the connections among globalisation, exchange rates and external markets". She has published widely in top journals (Journal of Political Economy, American Economic Review, Review of Economic Studies, Quarterly Journal of Economics, Journal of International Economics, Review of Financial Studies). She is associate editor of the International Journal of Central Banking, Journal of the European Economic Association and of the Economic Journal. She is on the board of the Review of Economics Studies and a member of the Council of the European Economic Association. She is a CEPR Research Fellow and an NBER Research Associate. She is a member of the Scientific Council of the Fondation Banque de France and a member of the Bellagio Group on the international economy. She writes a regular column for the French newspaper Les Échos.

ROGOFF Kenneth
Professor
Harvard University

Kenneth Rogoff is Thomas D. Cabot Professor of Public Policy and Professor of Economics at Harvard University.

From 2001 to 2003, he served as Chief Economist and Director of Research at the International Monetary Fund. He is also a former Director of the Center for International Development at Harvard. Professor Rogoff's research covers global economic issues, including international trade and financial flows, as well as sovereign default. His treatise “Foundations of international macroeconomics” (joint with Maurice Obstfeld) is the standard text used in graduate courses throughout the world, and his monthly syndicated column on global economic issues is published in 13 languages. He is on the Economic Advisory Panel of the Federal Reserve Bank of New York and the Swedish Riksbank.

Professor Rogoff is an elected member of the American Academy of Arts and Sciences, as well as a member of the Council on Foreign Relations and the Trilateral Commission. He is also a fellow of the Econometric Society and the World Economic Forum, and has been invited to give numerous named university-wide lectures at colleges around the world. He holds the life title of international grandmaster of chess.
ROTH Jean-Pierre
Chairman
Swiss National Bank

Jean-Pierre Roth, born in 1946, completed his doctorate in Economics at the Institut universitaire de hautes Études internationales (Graduate Institute of International Studies), Geneva. Following postdoctoral studies at the Massachusetts Institute of Technology in the United States, he held lecturerships at the University of Geneva and at the Institut universitaire de hautes Études internationales.

Jean-Pierre Roth joined the Swiss National Bank in 1979 and worked in various sectors of the Bank in Zurich and Berne. On 1st May 1996, the Federal Council appointed him Vice-Chairman of the Governing Board and head of Department II in Berne (capital market, banknotes, business relations with the Confederation, administration of gold holdings). On 1st January 2001, he was appointed Chairman of the Governing Board and head of Department I in Zurich (economics, international affairs, legal and administrative).

Jean-Pierre Roth is Governor of the Washington-based International Monetary Fund (IMF) for Switzerland. He was appointed Chairman of the Board of Directors at the Bank for International Settlements (BIS) in Basel with effect from 1st March 2006. At the end of March 2007, he was designated Switzerland’s representative in the Financial Stability Forum, an international body of representatives of ministries of finance, central banks and regulatory authorities to promote cooperation in overseeing the international financial system.

STARK Jürgen
Member of the Executive Board
European Central Bank

Jürgen Stark is a member of the Executive Board and the Governing Council of the European Central Bank (ECB). Within the framework of the collective responsibility of the Executive Board for the overall functioning of the business areas of the ECB, he is responsible for Economics and Information Systems.

Before joining the European Central Bank, Jürgen Stark was Vice-President of the Deutsche Bundesbank, where he held responsibility for European and International Affairs. Prior to this position he served as State Secretary at the German Federal Ministry of Finance and Personal Representative of the Federal Chancellor in the preparation of G7/G8 Economic Summits for four years. Before that he held various positions at the Ministry of Finance, the Federal Chancellery and the Federal Ministry of Economics dealing with national and international monetary and financial issues.

Since 1999 he has been Deputy Chairman of the Administrative Council and of the Board of Trustees of the ifo Institute in Munich and, since 2003, Chairman of the Board of Trustees of the University of Hildesheim Foundation (Lower Saxony).

Jürgen Stark serves as a Member of the Economic and Financial Committee of the EU (from 1999 and from 1995 Member of the then Monetary Committee). Until 2006, he was a Member of the G7-, G10- (from 1995) and G20-Deputies (from 1999), of the ESCB’s International Relations Committee as well as a Deputy Member of the Board of Directors of the Bank for International Settlements (from 1998). Furthermore, he was Member of the Financial Stability Forum and Member of the Committee on the Global Financial System (1998-2006).

His publications include many articles and papers in professional journals on public finances, European monetary integration, institution building and the global financial system.

Jürgen Stark was born in Gau-Odernheim (Rhineland Palatinate) in 1948. He studied Economics at the Universities of Hohenheim and Tübingen and graduated in 1973. He gained a Doctorate in Economics 1975 and was appointed honorary Professor by the University of Tübingen in 2005.
**CONTRIBUTORS**

*About the contributors (March 2008)*

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**TRICHET Jean-Claude**

*President*

European Central Bank

Born in Lyon, Jean-Claude Trichet is an *Inspecteur général des Finances* and *Ingénieur civil des Mines*. He is a graduate of the *École nationale supérieure des Mines de Nancy*, the *Institut d’Études politiques de Paris*, the University of Paris (Economics) and the *École nationale d’Administration*. He worked in the competitive sector from 1966 to 1968 and was appointed to the General Inspectorate of Finance in 1971. He was subsequently appointed to various posts at the Ministry of Finance, the General Inspectorate of Finance and later the Treasury Department, where in 1976 he became Secretary General of the Interministerial Committee for Improving Industrial Structures (CIASI).

Jean-Claude Trichet was appointed economic adviser in the Private Office of the Minister of Economic Affairs, René Monory, in 1978, and then adviser to the French President, Valéry Giscard d’Estaing, in the same year. In this capacity, from 1978 to 1981 he worked on issues relating to energy, industry, research and microeconomics. He subsequently became Deputy Director of Bilateral Affairs (1981-1984) and Head of International Affairs at the Treasury Department. Jean-Claude Trichet was Chairman of the Paris Club (sovereign debt rescheduling) from 1985 to 1993. In 1986, he became Head of Private Office of the Minister of Economic Affairs, Finance and Privatisation, Édouard Balladur, and in 1987 was appointed Director of the Treasury. The same year, he was appointed Censor of the General Council of the Banque de France and Alternate Governor of the IMF and the World Bank. He was Chairman of the European Monetary Committee from 1992 until his appointment as Governor of the Banque de France in 1993. He was the Chairman of the Banque de France’s Monetary Policy Council as of 1994, a member of the Council of the European Monetary Institute from 1994 to 1998 and subsequently a member of the Governing Council of the European Central Bank. In 1999, at the end of his first term as Governor of the Banque de France, he was reappointed for a second term.

Jean-Claude Trichet was elected Chairman of the Group of Ten (G10) Governors on 29 June 2003. He was appointed President of the European Central Bank on 16 October 2003 by common accord of the Heads of State or Government of the Member States that had adopted the euro for an eight-year term of office starting on 1 November 2003.

Jean-Claude Trichet was nominated “Person of the Year” by the *Financial Times* (2007), “Policy maker of the year” by *The International Economy Magazine* (twice, in 1991 and 2007) and has received a number of prizes including the “Zerilli-Marimo” prize from the *Académie des Sciences morales et politiques* (1999), the international “Pico della Mirandola” prize (2002), the *Prix franco-allemand de la Culture –Deutsch-Französischer Kulturpreis* (2006) and the “Ludwig-Erhard” gold memorial coin (2007). Several universities have awarded him honorary doctorates. He is a *Commandeur de la Légion d’honneur* and has received many foreign decorations.

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**TAYLOR John B.**

*Professor*

Stanford University

John B. Taylor is Professor of Economics at Stanford University. He is also a Senior Fellow at the Hoover Institution, and currently serves as Member of Governor Arnold Schwarzenegger's Council of Economic Advisers.

Mr. Taylor received a B.A. in Economics *summa cum laude* from Princeton University in 1968 and a Ph.D. in Economics from Stanford University in 1973.

Prior to joining the Stanford Faculty in 1984, he was Professor of Economics at Columbia University from 1973 to 1980 and at Princeton University from 1980 to 1984. He also served as Senior Economist on the US President's Council of Economic Advisers in 1976-77 and as a Member of the President's Council in 1999-2001. For four years from 2001 to 2005, he served as Under Secretary of the United States Treasury where he was head of the international division.

Professor Taylor has published over 150 articles and books in economics, and is best known for his research on monetary theory and policy – including the Taylor rule – which has been applied by central banks around the world. His latest book is “Global financial warriors: the untold story of international finance in the post 9/11 world”. Professor Taylor has received numerous awards including the Rhodes Prize and the Hoagland Prize for undergraduate teaching at Stanford University, the Adam Smith Award from the National Association for Business Economics for his contributions to research, the Medal of the Republic of Uruguay, the Alexander Hamilton Award, the Treasury Distinguished Service Award, and the George P. Shultz Award for his public service.

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WELLINK Arnout H. E. M.

President
De Nederlandsche Bank

Dr. Arnout H.E.M. Wellink, who was born in 1943, is President of De Nederlandsche Bank (since July 1997) and a member of the Governing Council of the European Central Bank since January 1999. He also is the Chairman of the Basle Committee on Banking Supervision (since July 2006).

He studied Dutch law at Leyden University from 1961 to 1968 and earned in 1975 a Ph.D. in Economics from the University of Rotterdam.

Dr. Wellink joined De Nederlandsche Bank as an Executive Director in 1982. Before, he worked for the Ministry of Finance from 1970 to 1981. He served from 1975 as the head of Directorate General for Financial and Economic Policy and was appointed in 1977 the Treasurer General. Between 1965 and 1970, he was a teaching assistant and staff member in the department of Economics of the Leyden University.

Dr. Wellink has published several books and a range of articles and speeches. He has been awarded the Knight of the Order of the Netherlands Lion. He was Extraordinary Professor of monetary and banking issues at the Free University of Amsterdam and a Member Monetary Committee of the European Communities. He is a member of the Board of Directors of the Bank for International Settlements since 1997 and served as Chairman between 2002 and 2006.

WHITE William R.

Economic Adviser and Head of the Monetary and Economic Department
Bank for International Settlements

William R. White joined the Bank for International Settlements (BIS) in June 1994 as Manager in the Monetary and Economic Department, and was appointed to his present position, Economic Adviser and Head of the Monetary and Economic Department (MED), in May 1995. As Economic Adviser, Mr. White continues to publish regularly on topics pertaining to monetary and financial stability, and both contributes to and oversees the preparation of the BIS Annual Report. As Head of the MED, he takes overall responsibility for the department’s output of research, data and information services and the organisation of meetings for central bank Governors and staff around the world. Mr. White is also a member of the Executive Committee which manages the BIS. In this capacity, he contributes to various subcommittees which establish policies to guide the Bank’s overall activities, including those of the Banking Department and Risk Control.

Born in Kenora, Ontario in 1943, Mr. White was educated at the University of Windsor and received his Ph.D. from the University of Manchester in 1969.

Mr. White’s early career was spent at the Bank of England, where he was an economist from 1969 to 1972. Subsequently he spent 22 years with the Bank of Canada. His first six years at the Bank of Canada were with the Department of Banking and Financial Analysis, first as an economist and finally as Deputy Chief. In 1978, Mr. White became Deputy Chief of the Research Department and was made Chief of the Department in 1979. He was appointed Adviser to the Governor in 1984 and Deputy Governor of the Bank of Canada in September 1988.

In addition to these permanent positions, Mr. White spent six months (1985-86) as a Special Adviser to the Canadian Minister of Finance and six years as a member of Statistics Canada’s Advisory Panel on the National Income Accounts. Since the late 1980s, he has been an active participant in many international committees including the EPC (Economic Policy Committee) and WP3 at the OECD and the Bellagio Group.
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Martin Wolf is Associate Editor and Chief Economics Commentator at the Financial Times, London.

He was awarded the CBE (Commander of the British Empire) in 2000 “for services to financial journalism”. Mr. Wolf is an associate member of the governing body of Nuffield College, Oxford, Honorary Fellow of Corpus Christi College, Oxford University, an Honorary Fellow of the Oxford Institute for Economic Policy (Oxonia) and a special Professor at the University of Nottingham. He has been a Forum Fellow at the annual meeting of the World Economic Forum, in Davos, since 1999 and a member of its International Media Council since 2006. He was made a Doctor of Letters, honoris causa, by Nottingham University in July 2006. He was made a Doctor of Science (Economics) of London University, honoris causa, by the London School of Economics in December 2006.

Mr. Wolf was joint winner of the Wincott Foundation senior prize for excellence in financial journalism for 1989 and 1997. He won the RTZ David Watt memorial prize for 1994, granted annually “to a writer judged to have made an outstanding contribution in the English language towards the clarification of national, international and political issues and the promotion of their greater understanding”. He won the “Accenture Decade of Excellence” at the Business Journalist of the Year Awards of 2003. He won the Newspaper Feature of the Year Award at the Workworld Media Awards 2003. On 1st December 2005, he was given First Magazine’s “Special Advocacy Award” at its annual “Award for Responsible Capitalism”. His most recent publication is “Why globalisation works” (Yale University Press, 2004).

YELLEN Janet L.
President and Chief Executive Officer
Federal Reserve Bank of San Francisco

Janet L. Yellen took office as President and Chief Executive Officer of the Federal Reserve Bank of San Francisco on June 14, 2004. In this role, Dr. Yellen participates in meetings of the Federal Open Market Committee, the nation’s monetary policymaking body, bringing her District’s perspective to policy discussions in Washington.

Dr. Yellen is Professor Emeritus at the University of California at Berkeley where she was the Eugene E. and Catherine M. Trefethen Professor of Business and Professor of Economics and has been a faculty member since 1980.

Dr. Yellen earlier took leave from Berkeley for five years starting August 1994 when she served as a member of the Board of Governors of the Federal Reserve System through February 1997, and then left the Fed to become Chair of the Council of Economic Advisers through August 1999. She also chaired the Economic Policy Committee of the Organisation for Economic Cooperation and Development from 1997 to 1999.

Dr. Yellen is a member of both the Council on Foreign Relations and the American Academy of Arts and Sciences and a research associate of the National Bureau of Economic Research. She also serves on the Board of Directors of the Pacific Council on International Policy, and in the recent past, she served as President of the Western Economic Association, Vice President of the American Economic Association and was a Fellow of the Yale Corporation.


An Assistant Professor at Harvard University from 1971 to 1976, Dr. Yellen served as an economist with the Federal Reserve's Board of Governors in 1977 and 1978, and on the faculty of the London School of Economics and Political Science from 1978 to 1980.

Dr. Yellen has written on a wide variety of macroeconomic issues, while specialising in the causes, mechanisms and implications of unemployment.
Yi Gang  
Deputy Governor  
People’s Bank of China

Mr. Yi Gang has been the Deputy Governor of the People’s Bank of China since the end of 2007. Mr. Yi Gang studied from 1978 to 1980 in the Department of Economics of Peking University, graduated from the Hamline University in 1982 and holds a B.A. degree of Business Administration. From 1982 to 1986 he studied in the University of Illinois and gained Ph. D. in Economics in 1986.

Mr. Yi Gang was Assistant Professor in Economics of the Indiana University from 1986 to 1992, and Associate Professor with tenure of Indiana University from 1992 to 1994. From 1994 to 1997 he was Professor and Ph. D. Advisor of Economics in the Peking University. He was appointed in 1997 Deputy Secretary General of the Monetary Policy Committee of the People’s Bank of China, and the Secretary General of the Monetary Policy Committee of the People’s Bank of China from 2002 to 2003. Mr. Yi Gang subsequently became Director General of the Department of Monetary Policy of the People’s Bank of China in 2003. Mr. Yi Gang has been the Assistant Governor of the People’s Bank of China from 2004 to 2007.

The Banque de France organised its fifth biennial international symposium on 7 March 2008 in Paris on “Globalisation, inflation and monetary policy”. This highly topical issue attracted more than 250 participants from very diverse circles: almost sixty central banks were represented; ten representatives of international institutions, almost thirty prominent academics and twenty high-ranking managers of private banks from all regions of the world were also in the audience.

In his opening speech, Christian Noyer emphasised that, contrary to what has been said on several previous occasions, monetary policy is currently very “challenging” from both the operational and the conceptual points of view and hence not at all “boring”. Throughout the day, participants exchanged views on the three main topics of interest that emerged:

- Has globalisation created a favourable background for monetary policy?
- What role should be assumed by central banks in the current financial crisis?
- To what extent have these developments changed the tasks of central banks?

### Globalisation seems to have created a favourable background for monetary policy

Globalisation may have helped monetary policy through several channels.

First, with the integration of hundreds of millions of workers from emerging countries in the world market economy, globalisation has amounted to a succession of positive supply shocks and has probably contributed to the boost in productivity, as acknowledged by many participants, including Christian Noyer, Richard Fisher and Yi Gang.

Second, globalisation has reduced the monopoly power of firms and workers by increasing competition in goods and labour markets, as emphasised by Kenneth Rogoff, John Lipsky and Janet Yellen. These developments may have exerted downward pressures on margins and unit labour costs.

Third, as suggested by William White, the savings glut, which has favoured the surge of liquidity, has also reduced global demand *ex ante*, hence alleviating inflationary pressures.

Fourth, as shown by Kenneth Rogoff’s research, globalisation may strengthen monetary policy credibility through its impact on the Phillips curve. Moreover, as suggested by Richard Fisher and Martin Redrado, greater international capital mobility may well have induced central banks to conduct sound monetary policies.

All these developments have contributed to the stylised facts described by William White: inflation has become less persistent, the exchange rate and commodity prices pass-through have decreased, inflation expectations have stabilised at a low level, the Phillips curve has flattened and global supply has gained importance in determining inflation.
In conclusion, globalisation may have provided a valuable implicit support to central banks. As suggested by Kenneth Rogoff, strong productivity growth may even have masked some weaknesses of the monetary policy framework.

However, this favourable background should not be over-emphasised

Many speakers, including Christian Noyer, Richard Fisher, Martin Redrado and John Lipsky, reminded the participants that in order to have a direct impact on inflation, globalisation should affect the general price level and not only relative prices. Moreover, there is no or limited evidence of variations in the general price level due to globalisation. The direct impact of globalisation on inflation has been estimated to be around a quarter of a percentage point per year by the International Monetary Fund.

The indirect impact of globalisation on inflation occurs principally through competition on goods, services and labour markets, while its direct impact mainly consists in the price of imports. Janet Yellen made it clear that the empirical evidence on the indirect impact is subject to ample controversy and that this effect may thus be limited.

Philippe Martin also argued that globalisation may not have lowered the sacrifice ratio, which measures the short run trade-off between inflation and activity, and may have even participated in its increase.

Finally, Janet Yellen and Martin Redrado insisted on the pre-eminent role of monetary policy in the decrease and subsequent stabilisation of inflation. Credible monetary policies should be viewed as the primary contributors to the “Great Moderation”.

Furthermore, this background has become less favourable

“Some say the world will end in fire, some say in ice”. Kenneth Rogoff quoted Robert Frost to illustrate the diversity of opinions regarding the main current threats to the global economy. In his metaphor, the “ice” represents the increasing inflationary pressures worldwide, while the “fire” refers to the financial turmoil initiated by the subprime crisis.

First, as stressed by Jean-Claude Trichet, Richard Fisher and John Lipsky, commodity prices, including energy, are historically high, mainly due to the incapacity of supply to adjust upwards to meet demand. The current decoupling of emerging countries from the United States’ cycle is contributing to the persistence of high commodity prices.

Second, the global capacities utilisation outlook is becoming less favourable: William White and Janet Yellen pointed out that global slack is decreasing; Kenneth Rogoff and Martin Redrado emphasised the subsequent upward pressures on costs and prices in Asia; Yi Gang cited the ongoing medium run process of convergence in emerging countries.

Third, as explained by Philippe Martin, the future impact of emerging countries' trade on industrial countries' terms of trade depends on the nature of trade growth: if trade growth is mainly due to an increase in emerging countries' productivity, which corresponds to the “intensive” margin, the industrial countries’ terms of trade are improving. However, if emerging countries are essentially exporting new products, which corresponds to the “extensive” margin, the industrial countries' terms of trade may deteriorate.

As hinted by Kenneth Rogoff, Yi Gang and Martin Wolf, the accommodative monetary policy stance during the past years may have contributed to the current pressures. Janet Yellen put forward counter-arguments to that view, maintaining that in terms of real equilibrium interest rates, monetary policy had not been particularly accommodative.

William White mentioned a potential opposite risk of deflation, which would stem from a disorderly resolution of global imbalances.

Recent, more challenging circumstances will serve to stress test the new monetary policy frameworks. As emphasised by John Lipsky, Christian Noyer, Martin Redrado and Richard Fisher, among others, central banks will have to deal with the macroeconomic consequences of financial instability. Meanwhile,
they cannot just rely on forecasts pointing to a decline in inflation through the year, since commodity prices are difficult to predict and second round effects may appear.

2| How should central banks interpret and react to the current financial crisis?

While in his introduction Christian Noyer had stressed the urgent necessity to understand the relationships between monetary and financial stability in a more volatile financial environment, the new situation created by the recent crisis was also portrayed by Kenneth Rogoff as a transition for the US economy. Indeed, the United States is now threatened by the “fire” of the financial turmoil initiated by the subprime crisis – additionally to the “ice” of the upsurge in inflation, as mentioned previously.

Three issues were considered by the participants: the origin of the current financial crisis, its main characteristics and the response of central banks.

2|1 The origin of the crisis

Regarding the origin of the crisis, several factors were mentioned. Among them, international capital flows into countries were seen not only as a major factor in small open economies by Alan Bollard, but also as a major and recurrent feature of crisis events by Kenneth Rogoff and Martin Wolf.

A crisis-prone environment was fostered by a situation of abundant liquidity, against a background of excess savings (the “savings glut” hypothesis) and accommodative US monetary policy, according to Kenneth Rogoff and Martin Wolf.

But Hélène Rey and Nout Wellink also mentioned structural institutional weaknesses as the failure of the “originate-to-distribute” model of financial intermediation which led to moral hazard and the overexpansion of credit.

2|2 Main characteristics of the crisis

The participants also attempted to describe the unfolding of the crisis and its main characteristics, indicating that some were new, but others were more traditional. The crisis indeed contains several new features in the sense that it affects mature markets, notably the United States and the United Kingdom, several markets at the same time, and that it may even extend further. According to Martin Wolf, “the losses keep bleeding out”. But some features appear to be more traditional, as indicated by Kenneth Rogoff on the basis of recent research showing that banking crises often follow the bursting of a house-price bubble.

In addition, a wide consensus emerged on the role of “uncertainty” (in the “Knightian” sense, where the probability distribution is unknown, as opposed to “risk”, which banks are used to managing). As shown by Arvind Krishnamurthy, this may arise from the complexity of financial instruments in a period of intense financial innovation. Uncertainty affects behaviours and the functioning of financial systems.

The lack of robustness of some instruments to crisis events and liquidity shortfalls (as evidenced by the Northern Rock case) may also increase uncertainty, leading to the “globalisation of doubts”, as coined by Hélène Rey. But this situation was also largely aggravated by amplification effects due to “nonlinearities” and “vicious circles”, as also described by Hélène Rey. Pointing to the responsibility of accounting rules (mark-to-market), she quoted Claude Bébéar who had said that “it is not because your neighbour sells his house at a distressed price that your house is worth a distressed price if you don’t need to sell it!”

2|3 Response of central banks

On the one hand, central bankers acknowledged the gains from financial globalisation. In particular for emerging countries, Governor Reddy stressed clear benefits on the equity side, as well as from the gradual liberalisation of the capital account. On the other hand, participants emphasised that the current crisis created new challenges.
For Arvind Krishnamurthy, in a situation where uncertainty is prevalent, central bank policy may take the form of a pre-commitment to a Lender of Last Resort intervention, in order to offer more certainty to market participants. But Nout Wellink warned of the risks of moral hazard created by such a policy. Actions should be co-ordinated among central banks for liquidity provision. In addition, both Arvind Krishnamurthy and Nout Wellink advised central banks and supervisors to concentrate their attention on “pressure points” in risk and liquidity management, in order to prevent the triggering of future crises and the aforementioned “nonlinearities”.

Regarding regulatory changes, Martin Wolf expressed his concern that there might be a risk of overregulation. Christian Noyer mentioned that the IMF might have a role to play in order to foster the convergence of financial systems, currently organised or regulated on the basis of very different principles.

Finally, Jacob Frenkel, regarding the marking to market practice as the main ingredient impeding the restoration of liquidity, urged the regulators to communicate to the market the notion that the current markdown is imprecise and is wrong and that there are considerations to deal with that matter.

First, globalisation has made the interpretation of some key stylised facts (lower exchange-rate pass-through in some countries, flattened Phillips curve, and lower inflation) more difficult, as each of them may be due either to globalisation or to the higher credibility of monetary policies. This difficulty in interpreting those facts does matter because their implications for the conduct of monetary policy crucially depend on the interpretation considered, as pointed out by John Taylor.

Second, globalisation has made domestic economies more sensitive to foreign shocks, so that central banks need to commit resources to analyse and closely monitor foreign developments, as acknowledged by Richard Fisher, Donald Kohn and Jürgen Stark. It is for instance very important for the conduct of monetary policy, as stressed by Donald Kohn, to assess whether the recent increase in oil prices will be permanent or transitory.

Third, globalisation has affected the economies structurally and therefore has changed the mechanism of propagation of shocks, as noted by Jürgen Stark.

Fourth, globalisation has affected the monetary policy transmission mechanisms and made them more uncertain, as stressed by Donald Kohn, Christian Noyer and Jürgen Stark, in particular by making the determination of domestic asset prices more dependent on conditions in financial markets worldwide and by strengthening the role of the exchange rate in the monetary policy transmission mechanism. However, as pointed out by Jürgen Stark and Richard Fisher, central banks retain the ability to control short-term interest rates and inflation.

The third main issue addressed during the symposium concerned the possible implications of globalisation for the conduct of monetary policy.

At first sight, one could think of many possible ways in which globalisation may call for a change in monetary policy strategies, as stressed by Guillermo Ortiz: for instance, globalisation might call
for a reassessment of central banks’ price-stability objectives, their economic and monetary analyses or their degree of reaction to diverse variables that become more important in global markets, such as the exchange rate.

However, all things considered, the general consensus was that globalisation should not fundamentally change monetary policy strategies for the following four main reasons.

First, globalisation does not change the rules of monetary economics: as stressed by Jürgen Stark, inflation is still a monetary phenomenon over the medium to longer term and flexible exchange rates remain a sine qua non condition for price stability.

Second, and more precisely, globalisation does not call for a monetary policy reaction to exchange-rate developments beyond their effect on domestic inflation, as argued by John Taylor, with whom Eric Chaney and Jürgen Stark agreed. That said, John Taylor suggested, on the basis of the results of a simple econometric analysis, that some central banks (including the ECB) might have recently reacted to exchange-rate developments per se—which he regretted. Eric Chaney and Jürgen Stark disagreed on that point (the latter partly on the basis of “inside knowledge”) and pointed to alternative interpretations of his results.

Third, especially in an environment of ongoing globalisation, monetary policy must aim at robustly anchoring inflation expectations, as argued by Jürgen Stark. Many other participants, including Richard Fisher, Martin Redrado, Kenneth Rogoff and Janet Yellen, stressed in different ways that the credibility of the determination of central banks to achieve their price-stability objective remain key in the success of their monetary policies.

Fourth, globalisation does not call for further international monetary policy co-operation beyond the co-ordination in the provision of liquidity and an open exchange of views and information, as argued most notably by John Taylor, with whom Donald Kohn and Jürgen Stark strongly agreed.

For all these reasons, Christian Noyer and Jürgen Stark stressed that, in particular, the ECB monetary policy strategy, with its clear mandate for price stability, its definition of price stability in terms of total inflation (as opposed to underlying inflation) and its two-pillar framework, was well-equipped to cope with the challenges that globalisation brings for monetary policy.

This general consensus notwithstanding, there were essentially two main points raised by individual participants in favour of a change in monetary policy strategies in the face of globalisation.

First, Eric Chaney used a price stickiness asymmetry argument to suggest that the price stability objective of central banks be lowered during periods when the net effects of globalisation are disinflationary and, conversely, raised when these net effects turn inflationary.

Second, Martin Wolf argued that one lesson of the current financial turmoil (itself perhaps partly due to financial globalisation) is that monetary policy should consider reacting to the perceived development of asset-price bubbles, even if this may imply pushing inflation temporarily below target.
I am delighted to open this 5th international symposium of the Banque de France, which is an opportunity to bring together heads of central banks and international institutions, leading academics and directors of private banks, as well as representatives of industrialised and emerging countries, in order to address a topical issue of common interest and concern to us all. Today's debate will be rich and intense. The first session, chaired by Jean-Claude Trichet, President of the European Central Bank, will present the main concepts and stylised facts of globalisation and world inflation. The second session, chaired by Jean-Pierre Roth, President of the Swiss National Bank, will focus on the links between globalisation and the determinants of domestic inflation. The third session, which will take the form of a round table chaired by Nout Wellink, Governor of the Nederlandsche Bank, will examine the impact of financial globalisation on growth and asset prices. Lastly, the fourth session, chaired by Guillermo Ortiz, Governor of the Bank of Mexico, will assess the implications for the conduct of monetary policy. Jacob Frenkel has agreed to take on the difficult task of making the concluding remarks for this symposium. Jacob, like a number of others here today, epitomises the diversity of the origins of the participants in this symposium since he has served on the faculty of the University of Chicago, was the Economic Counselor and Director of Research at the International Monetary Fund and the former Governor of the Bank of Israel, and is now the Chairman of the Group of Thirty and Vice Chairman of American International Group (AIG).

I will now simply make a few brief introductory remarks.

Our colleague Mervyn King often says that monetary policy should be “boring”. This is certainly not the case today. Monetary policy is interesting. But it is also, and above all, difficult. In many respects, to put it informally, the good times are behind us. Globalisation has no doubt considerably helped central banks over the past decade. Today, this is less clear cut.

We are facing a combination of two difficulties.

First, at present, for all countries, the risks for growth are on the downside and for inflation on the upside. Beyond the diversity of their mandates, this represents a common challenge for all central banks.

Second, we are all affected, to differing degrees, by the turmoil of the past eight months in the credit markets. In the coming hours we shall hold an in-depth debate on the relationship between financial stability and price stability. But I believe that we will all agree that the conduct of monetary policy is more difficult and more uncertain in a less stable and more volatile financial environment.

I would briefly like to develop these two points.

The past two decades have been characterised, on the one hand, by an increasing integration at the global level of goods, services and capital markets and, on the other, by a reduction in inflation that has stabilised at low levels. Given the coexistence of these two phenomena, a number of observers have concluded that there appears to be a causal link. Where exactly do we stand today?

For over ten years, with the growing integration of our economies in the past few decades, powerful forces, throughout the world, have been acting to enhance price stability. Each year, the arrival of tens of millions of people on the world market increases global production capacity, in particular for tradable goods. For monetary policy in developed countries, this process is equivalent to a sequence of positive supply shocks that take the form of a spontaneous decline in the import prices of manufactured goods. All other things being equal, this terms-of-trade gain allows for a lower inflation rate for a given capacity utilisation rate.

More fundamentally, and although things seem to be less straightforward in this area, it is possible that the increasing openness of our economies may have
structurally changed the wage and cost formation process in a manner that favours price stability. Heightened competition triggered by imports reduces the market power of firms at the national level. However, other more indirect effects are also detectable. According to studies carried out at the Banque de France, the disinflationary impact of imports appears to be relatively independent of import volumes: the mere existence of potential competition renders the markets, in the words of experts, more "contestable" and influences behavioural patterns.

These disinflationary forces are still present. However, there are now other more powerful forces that have the opposite effect. The growth of emerging market economies and the rise in the living standards of their populations are leading to a surge in the demand for natural resources, food and energy, which logically has a strong and permanent impact on inflation. Furthermore, by strengthening the magnitude of global shocks in relation to more specifically domestic shocks and favouring the international transmission of the latter, globalisation introduces a much greater synchronisation of inflationary cycles between countries, with the ensuing risks of amplification.

Overall, the effects of globalisation have ceased –probably in the long term– to be spontaneously disinflationary.

The second topic that I wish to discuss concerns globalisation and financial innovation.

There is, in my mind, no doubt about the long-term benefits of the financial innovation process that we have been witnessing over the past twenty years. However, we can also see that it may be accompanied by cyclical developments and structural changes that could potentially prove to be disruptive for monetary policy. Monetary and financial conditions are simultaneously influenced by central bank decisions, but are also increasingly affected by sometimes exogenous trends in asset prices and the pricing of risk. The monetary policy transmission mechanism is more fraught with uncertainty and less “linear” than it used to be, as shocks on asset and risk prices introduce discontinuity into financing conditions.

These developments underscore two interesting issues in particular that I would like to briefly consider.

The first concerns monetary policy responses. It will have escaped nobody’s attention that these responses are not identical across all countries. In my view, this reflects different situations more than divergent approaches. All of the world’s economies are not affected in the same way by property market shocks or developments on credit markets. In particular, we can observe that the distribution of credit remains very dynamic in Europe and that, in most euro area countries, property markets remain relatively stable.

More fundamentally, it seems to me that developments in the economic and financial context of globalisation bear out and reinforce the importance given to what, in Eurosystem parlance, we call monetary analysis, i.e. the examination and analysis of the main monetary and financial aggregates. We derive three major benefits from our monetary pillar. First, it favours the anchoring of long-term inflation expectations, which is essential when, as is currently the case, instantaneous pressures are strong. Second, it constitutes an integrated framework for the analysis of financial and monetary developments, which is particularly useful in times of structural change and turmoil on credit markets. Lastly, it is an indicator of underlying inflationary pressures –something that is indisputably necessary.

It is possible, indeed, that globalisation reduces the sensitivity of inflation to domestic demand owing to the possibility of increased use of external supply. This leads to a degree of decoupling of the capacity utilisation rate and the level of inflation. Under these circumstances, Phillips curves flatten and the monitoring of instantaneous inflation is no longer sufficient to detect underlying pressures. Monetary analysis therefore provides an indispensable insight into inflation developments.

The second issue concerns future developments in the world financial system. We are honoured to have among us today high-ranking policymakers and experts from both so-called industrialised countries and emerging economies. It seems clear that not everyone shares the same vision or the same approach to the processes of liberalisation and financial innovation. Yet our economies are increasingly interdependent and our financial markets ever more interconnected. It seems that the time has come to ask how, in the future, financial systems organised and regulated on

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such different bases and principles can co-exist, and what the systemic and macroeconomic consequences of this diversity will be. At a time when we are all reflecting on the role and future of the International Monetary Fund, this, it seems to me, is a major challenge that could be taken up by this institution.

It remains, Ladies and Gentlemen, for me to hope that this symposium gives rise to fruitful exchanges and a deeper understanding of the links between globalisation, inflation and monetary policy. I wish you an enjoyable and productive day, and give the floor to President Jean-Claude Trichet.
Stylised facts of globalisation and world inflation

Chairperson: Jean-Claude TRICHET, President, European Central Bank

Speaker: Kenneth S. ROGOFF, Professor, Harvard University
“Globalisation and monetary policy: overview, recent issues”

Discussants: Richard W. FISHER, President and Chief Executive Officer, Federal Reserve Bank of Dallas
John LIPSKY, First Deputy Managing Director, International Monetary Fund
Philippe MARTIN, Professor, University of Paris 1 – Panthéon-Sorbonne
I would first like to thank the organisers of this Banque de France international symposium for their invitation to chair this panel on “Stylised facts of globalisation and world inflation”. I am particularly glad to have the opportunity to participate in this panel, as discussions regarding the conduct of monetary policy in a global economy are a constant feature of our policy analysis and research at the ECB.

We are fortunate to be joined today by Professor Kenneth Rogoff, who will be talking about globalisation and monetary policy, providing a general overview and looking at some recent issues. Professor Rogoff has produced remarkable research in the area of international macroeconomics and monetary policy and is therefore the ideal speaker for this morning’s presentation. Kenneth Rogoff started his career at the Federal Reserve, was Chief Economist and Director of Research at the IMF and is now a Professor at Harvard University.

Richard Fisher will be the first discussant. Richard Fisher was Deputy US Trade Representative from 1997 to 2001 and is now President of the Federal Reserve Bank of Dallas. Our second discussant will be John Lipsky, who was Chief Economist and Vice Chairman at JPMorgan before being appointed First Deputy Managing Director of the IMF. And Professor Philippe Martin will be our third discussant. Philippe Martin, whose research in the field of international macroeconomics has been published in numerous leading journals, is a Professor at the University of Paris I – Panthéon-Sorbonne and a Membre de l’Institut.

I look forward to listening to the contributions of this very distinguished panel to the ongoing debate regarding the links between globalisation and inflation. Over the last 15 years the world has witnessed a substantial and continuous decline in the level of inflation that has coincided with the advent of the global economy. The natural question to ask is therefore whether globalisation has been one of the main factors driving price moderation. With the development of international trade, competitive pressures from low-cost countries have indeed helped to control prices and wages, especially in the manufacturing sector. Pressure to innovate has probably also boosted productivity, with beneficial effects for inflation.

The question is therefore whether these channels have indeed given rise to the recent moderation in prices and, if so, whether they are likely to continue to perform this stabilising role in the future. The current surge in commodity prices, including food more recently, which is resulting, in particular, from supply being unable to match higher demand from emerging markets, reminds us that globalisation can also lead to upside risks to world inflation. Furthermore, global events could become so important in driving inflation that they affect the conduct of monetary policy. For instance, it could be that the traditional links between inflation and “domestic” variables – particularly the level of unemployment – have become obsolete in a world where emerging Asia as well as previous communist countries provide such a large amount of labour at low cost.

Although it remains difficult to reach firm conclusions on the overall effects of globalisation, the most recent developments in manufacturing import prices suggest that globalisation continues to have a dampening effect on inflation of manufactured goods prices. First, extra-euro area manufacturing import price inflation originating from low-cost countries remains lower than average import price inflation from other euro area trade partners. Second, with price levels of imports from low-cost countries remaining substantially lower than those of imports from high-cost countries, the size and persistence of the dampening effect on euro area import prices depends predominantly on the “share effect”. Although there are some signs that this effect is weakening, the share of imports from low-cost countries in the euro area has continued to increase.
A number of other challenges can be mentioned. Globalisation is associated with possibly epochal changes of demand and supply, the structural part of which is difficult to assess. The progressive completion of global financial integration has created a set of sophisticated networks that link the fortunes of markets, asset classes and financial institutions around the world. We, in the Eurosystem, are very closely monitoring the ongoing significant market correction we have experienced since the middle of last year, taking into account all their possible consequences including on inflation. Over time, globalisation may have complex indirect effects on inflation beyond the more traditional links I have just mentioned.

I look forward to listening to your views about all of these issues.
I want to thank Bank of France for organising this conference, and the Governor for inviting me. It's certainly a privilege to speak on this extraordinary panel with the President at the ECB, Jean-Claude Trichet, John Lipsky, Richard Fisher and Philippe Martin.

Clearly we're meeting at a time of extraordinary uncertainty, and I think in addition to discussing the conjuncture, as I have no doubt everyone will today, it's useful to have a conference like this to also talk about the fundamentals: what do we really think underlies the current situation, what is the long run haul for us?

If you can forgive me, I have to think of a poem. It's my favorite poem and it reminds me of the current situation. It's by the American poet, Robert Frost, called “Fire and ice”. It goes something like this:

Some say the world will end in fire,  
Some say in ice.  
From what I've tasted of desire  
I hold with those who favor fire.  
But if it had to perish twice,  
I think I know enough of hate  
To know that for destruction ice  
Is also great  
And would suffice.

So if I had to describe the current conjuncture, I suppose the Fed is worried about fire and the ECB about ice.

The theme of this topic is globalisation and inflation. For most of the 1990's and certainly the first part of the 2000's, I don't think there's any question that central banks were helped by globalisation. We only have to ask how much; that's what we could debate about. If I had to put my finger on the fundamental, on what has really, really been important, it is that globalisation has helped raise growth. Now, is it globalisation or technology or the interaction of globalisation and technology? I think it's a moot point. The combination has been increased growth, and that's made it easier to sell low inflation to the public. I know that central bankers, all of us here, understand that the central bank can't affect long run growth. But I think it's fair to say that much of the public and most politicians don't understand that. So of course it's easier, if growth's pretty good, to keep inflation lower. Of course, there are channels through which globalisation has had an effect on inflation. It has reduced monopoly power in many places. That helps lower prices by itself and also affects the pass-through of inflation.

I think it's also fair to say that, at least in the rich countries, globalisation has weakened labor. Labor's share has been declining steadily around the world. It's hard to measure, but it certainly appears to be the case. At the same time, globalisation has probably made wages more flexible; inflexible wages are one of the root problems that monetary authorities face. So that, too, has probably made life easier in terms of having lower inflation obviously. Falling wages are a big problem politically. It's a huge redistribution of income. I'm not trying to be unsympathetic to the distributional issues, but just talking about low inflation. But all of these things combined have helped make low inflation more credible. I won't go into detail, but there are a number of theoretical underlying issues that underscore that globalisation has made it easier to make low inflation credible, and therefore to anchor inflationary expectations.

Now, turning to where we are in the current conjuncture. Globalisation has been helpful, but we're at a point in the cycle where with or without globalisation -but maybe exacerbated by globalisation- there are clearly increasing inflation pressures world wide. This is the danger from ice. Commodity prices and food prices are the most
obvious culprits. But there are also upward price pressures in Asia that are likely to lead to greater cost pass through, whether or not the Asian currencies eventually appreciate, which is one of the most controversial and central questions on financial globalisation today. I think it's fair to say that one of the reasons that there are inflationary pressures world wide is that, not looking at individual central banks, but looking at all of you collectively, interest rates have been kept pretty low for a long time; real interest rates, nominal interest rates. And that's a core reason why there are upward inflationary pressures.

The idea that it's just commodity prices or it's just food prices is, I think, wrong because we're looking at the whole world. Everybody is experiencing this. If you had one region having high inflation from terms of trade shock and another low inflation, that would be one story, but the inflation surge is universal. At the same time, through most of the world, we're still seeing pretty strong growth. If this were not broadly inflationary, in the reason that overall inflation wasn't balanced is because some prices were richer downward and not canceling out the commodity prices, we would see lower growth in those sectors, in the sticky price sectors. But we're not seeing this in much of the world. So there's a pretty good case to be made that the broad global inflation, not looking at individual regions and countries, is simply a result of having fairly low global interest rates. You can decide what you want to do about it, but I think they're clear markers of the problem.

Now, I was asked to talk about some facts of globalisation. The first fact I list there is that there's already a saturation of facts about globalisation! So I'm going to be very brief about that. Clearly the number one issue is the integration of China and India, and there's a lot of hyperbole about exactly what that means. My colleague, Richard Freeman, speaks of three billion people having been added to the global labor force. That may be coming, but certainly a few hundred million have been added, and we have improved communications and the Internet. If I were to just show you one fact that might be known to you, but somewhat less familiar, it is from a paper by Philip Lane and Gian Maria Milesi-Ferretti which shows indeed it's the case that the advanced countries' share of gross cross border goods trade has gone down. But at the same time, the advanced countries' share of cross border asset holdings has gone up. So although in trade the rich countries have become progressively smaller in the world, that's not the case for financial flows. Many of the issues surrounding the current conjuncture go around this fact. Indeed, one of the interesting questions will be how this affects what happens as the US current account rebalances and Europe possibly takes up more of the deficit, which I'll say more about in a moment.

The new age of globalisation is just not new and with all due respect to wonderful books like “The world is flat” by Thomas Friedman, I think that we can just point at many, many earlier eras that are similar with great inventions. If we had had communism and socialism in the 1960's or 1970's, I'm sure that we would have seen something similar to what we have today.

So just picking up on the theme that this has been helpful to central banks, we have until now had a really wonderful world in terms of low inflation, stable high growth. It's been helped by many, many factors which speakers can talk about, but certainly better macro policies everywhere, much better monetary policy everywhere, financial markets mostly better everywhere; we may have our doubts about that later today. There have been many, many positive factors and as a result of these and better central bank policy, we've had nearly a universal decline in inflation.

Virtually every central bank, until recently, was pretty happy with itself and convinced that it had a wonderful framework for reducing inflation. But the fact is that the decline in inflation has been universal. Let's look at the Republic of the Congo, which still has the record for cumulative inflation since 1970, having three hyper inflations under its belt (Zimbabwe is on track to challenge this record.). In recent years, inflation has gone below ten percent and it's a little above it now. Brazil is worried about four and a half percent inflation, and this is a country that's had two hyper inflations, and stands just after the Congo for cumulative modern inflation. Disinflation has been really quite universal. If one looks at 1992, 44 countries had inflation over 40 percent. But today it's quite rare. Nevertheless, inflation today is sharply on the up tick. The United States had CPI inflation of over 4 percent last year. I personally believe that China has a very good shot at having inflation over 5 percent in 2008, perhaps much higher. Again, this comes to the commodities and monetary policy question: is inflation in China really about having too little pork or too much money? I would say it's much
more likely the latter. Then you can turn to countries like Argentina (well looking at the real inflation rate and not the one that they get after they fire their statistical office). Venezuela, Vietnam, Russia; we see rising inflation everywhere. Zimbabwe is breaking some kind of modern day record, having claimed to hit 66,000 percent last year, although I have a student from Zimbabwe, who says there's actually nothing for sale in the stores. She's not sure how the government measured the 66,000 percent inflation, but it does seem to be very high.

If we look at today’s monetary policy, we’re really seeing the first moment at which new monetary policy frameworks are going to be stress tested. If I could point to just a couple of the risks, there’s of course the United States; there’ll be much discussion of that. But I would also point to China, as China starts to face problems with its current paradigm. The most immediate is inflation, but I think there are many other problems that China is facing. There’s a question of how the authorities are going to react and whether we might see instability also emerging out of China.

Certainly the rebalancing of the US current account is upon us. There are many who have argued that this is not an important issue. It’s much debated in academics. I don’t think there is necessarily a clear answer. We’ll know more in many years. I personally, however, think it’s a problem and see the current account as being at the heart of many of the problems that the United States has today, at least being an integral part, if not necessarily being the main driver.

Then, finally, I have to say something about fire. I’m going to refer to a paper of mine with Carmen Reinhart. It’s part of a book project that we’re nearing completion of, with the title “This time different?” It’s supposed to be sarcastic, looking at the history of international financial crises. I think you can look at the US subprime crisis and really ask that question. If you look at a lot of the genesis of the crisis, at indicators of the run up to the crisis, they look a lot like other banking and financial crises, not just from developing countries, but those that we’ve seen in rich countries and industrialised countries around the world. Some of the leading indicators that people look at in this literature include housing and equity price run ups, capital inflows, and the rise in indebtedness. And even the inverted V shape in growth –the slowing down in growth that the United States has experienced– is fairly characteristic of the lead in to previous financial crises. Moreover, the housing price run up in the United States is fairly typical of those of the big five crises, the worst ones post World War II, and those of 19 major and intermediate financial crises. We’re going to have a discussion later about is the United States different, so let me just jump to my conclusions.

There are many who argue that globalisation does not substantially change the calculus of monetary policy. Michael Woodford has exposited that view recently. I strongly disagree with that. I think this assumes away the political economy issues. These political economy pressures were masked by the good times, were masked by the phenomenal growth that technology and globalisation gave us. When globalisation is creating downward pressures on costs, upward pressures on growth, it is much easier to maintain stable monetary policy. I think at this point in the conjuncture, probably the most important thing is for central banks to clearly communicate that they can’t do it all, that they’re not magicians, that they can’t always keep output high when you’re facing epic shocks such as what’s happening in houses prices in the United States, Britain and other countries, what’s happening in productivity and elsewhere.

Something we can discuss over the course of the day is how critical is globalisation to monetary policy? Is it really true, as some central bankers maintain, that we just aren’t going to have any problem keeping inflation low as the cycle turns against us because our institutions are so strong? Or are there other factors that might make it more difficult? We can debate these issues throughout the day. I apologise if my fire and ice poem is somewhat melodramatic. Perhaps we just have smoke and frost for the moment. But surely the poem captures the dilemma that central banks face today.
Let me start by thanking Governor Noyer for the invitation to participate in this conference. The topic could not be more timely, and it is one that is close to my heart. When I took office as president of the Dallas Fed three years ago, I made it clear that I wanted our signature research issue for the coming years to be the study of the implications of globalisation for the conduct of monetary policy in the US. To this end, we have created a Globalisation and Monetary Policy Institute and have assembled a blue-ribbon advisory board that includes Ken Rogoff among its members.

Let me start by posing a rhetorical question. Should the default framework for thinking about monetary policy in a country like the US or, indeed, in the euro area, be an open economy where capital flows across national borders, goods and services are sourced from the cheapest global suppliers, interest rate movements in one country impact rates in another, and exchange rates factor in firms’ pricing and production decisions? Or can we get by thinking in closed-economy terms, where domestic investment is financed with domestic savings, we only consume what we produce, interest rates are determined at home and exchange rates are irrelevant? Nobody who has lived on the planet since the fall of the Berlin Wall and the ascendancy of Deng Xiao Ping would likely testify to the validity of the second proposition. Globalisation means that we can no longer guide policy by ignoring trade and capital flows or the invisible but nonetheless effective links between countries that have been forged through cyberspace. Yet it appears to me that the default framework for thinking about monetary policy continues to be the closed economy model.

Now on to Professor Rogoff’s paper. Ken’s paper starts with a review of some of the salient facts about globalisation and segues to a discussion about the seeming resilience of the globalised world economy and the important role that better monetary policy plays in ensuring that resilience. He then proceeds with a discussion of the central role that China seems to be playing in the recent acceleration of globalisation, assesses its impact on global commodity prices and then wraps up with a very nice discussion of whether the recent subprime crisis is all that different from previous banking crises.

Globalisation means different things to different people. To the Chinese peasant it may mean the prospect of an end to poverty and steady improvement in his living standards. To the American or French factory worker it may mean the threat of cheap imports and the potential outsourcing of his or her job. To the environmental activist it may mean the despoliation of the Earth’s atmosphere as more countries industrialise and pour pollutants into the atmosphere. To the public intellectual it may mean the loss of national identity and the Americanisation of culture. There are many important dimensions to globalisation, but as a central banker, I am most interested in the economic dimensions, namely the greater integration of national economies through increased trade of goods and services, investment, migration, and task allocation. All of these facilitate the spread of ideas and technologies that are another key manifestation of globalisation, and indeed contribute to its spread.

However, it is extraordinarily difficult to get a good handle on just how rapidly the world is globalising. As Ken notes, there is a lot of hype out there about how many new workers and consumers have become part of the global economy as a result of the demise of communism and the opening of China, India and other economies. The raw numbers in terms of population are huge – we are talking billions with a “b” – but the true extent to which the workers in these countries are, for want of a better word, substitutable for workers in advanced economies is an open question. It is this substitutability that determines how the coming on line of this new labor force will impact the wages of workers in the advanced economies. It would appear that the number of workers in countries like China and India who possess skills comparable to those found among the workforces of the US, Europe and other advanced nations is a small subset of the headline numbers. It is worth keeping in mind that the nominal per capita income of the average Chinese citizen today is, in inflation-adjusted terms, roughly equivalent to that of an American worker in the early 1900s. And yet, for those workers who possess the skills demanded by a modern economy, wages have rapidly approached advanced economy levels. There are abundant anecdotal reports that the salaries of top programmers in Mumbai are quickly converging...
Globalisation is not new. Some of the key technical innovations that make today’s globalisation possible are a half century old or older. But it is perhaps worth emphasizing that much of the globalisation that went on in the immediate post-World War II period was simply getting us back to where we were on the eve of World War I. As is well known, by the early 1970s, trade flows had gotten back to where they were in 1913, but other key dimensions of globalisation, capital flows and migration, were still well below their pre-World War I levels. Indeed, the reversal of globalisation in the interwar period is something we should never forget and serves as a reminder that we cannot take a liberal international economic order for granted.

By some measures, financial globalisation has proceeded even more rapidly than the “real” – for want of a better word – globalisation that is rooted in trade flows. In some sense, this is not too surprising. While innovations in transportation technology – such as the inventions of container shipping and the jumbo jet that Ken mentions in his presentation – have helped reduce the effective geographic distance between countries, making it easier to trade goods, distance in a very fundamental sense still matters for trade. However, the information technology revolution has effectively eliminated the idea of geographic distance in financial and several other service transactions. Financial trades can be executed at any time of the day in any part of the world at the click of a mouse. Architectural renderings can be performed thousands of miles from the firm that commissions them. X-rays and CAT scans of patients in Dallas or Paris can be analysed in Sydney or Delhi while their Texan or French doctors sleep. As long as the Earth rotates on its axis and satellite and Internet connections are maintained, technology never sleeps in a globalised world, nor does the production of other goods and services.

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Writing shortly after the end of World War I, John Maynard Keynes commented on how thoroughly “internationalised” (his expression) the world was in 1913. It is worth repeating what he said, which was as follows: “The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his door-step; …[and] at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages; or he could decide to couple the security of his fortunes with the good faith of the townspeople of any substantial municipality in any continent that fancy or information might recommend. He could secure forthwith, if he wished it, cheap and comfortable means of transit to any country or climate without passport or other formality, could dispatch his servant to the neighboring office of a bank for such supply of the precious metals as might seem convenient, and could then proceed abroad to foreign quarters, without knowledge of their religion, language, or customs, bearing coined wealth upon his person, and would consider himself greatly aggrieved and much surprised at the least interference”. Most important of all, this average inhabitant of London “...regarded this state of affairs as normal, certain, and permanent, except in the direction of further improvement, and any deviation from it as aberrant, scandalous, and avoidable”. That rather bucolic description of globalisation as it once was practiced was penned by Keynes in “The economic consequences of the peace” in 1919. It seems unlikely that the unique set of circumstances that led to the collapse of globalisation between the great wars of the twentieth century will ever be repeated, but newer twenty-first century challenges could just as easily impede the progress of globalisation.
Taking a very long-term perspective on globalisation, looking at it from the perspective of centuries and not just decades, also teaches us something about the role of the monetary standard in promoting international economic integration. The nominal stability associated with the gold standard played an important role in fostering globalisation in the nineteenth century. The transition to a fiat, or “faith based,” standard created some challenges for central bankers, but in recent years central bankers have come to a better understanding of how they need to conduct monetary policy under a fiat standard and have done a good job at delivering price stability. Ken is right: high inflation is much rarer now, with only two countries currently experiencing what might be considered very high or hyperinflations. This greater nominal stability is a key factor underlying the surge of globalisation over the past decade and a half and remains vital to continued progress.

But how resilient are the new monetary frameworks? Is the adoption of formal or informal inflation targeting the key to central bank successes in recent years, or have they been the beneficiaries of a dollop of good luck in the form of higher productivity growth? Better monetary policy helped make greater globalisation and faster productivity growth possible, but globalisation and faster productivity growth also made the jobs of central bankers easier. The more challenging circumstances that have developed over the recent past—as the tailwinds that ensued from the addition of new workers to the production side of global output have morphed into headwinds of demand for scarce resources—will serve to stress test the new monetary policy frameworks in ways they have not been tested before.

No discussion of globalisation would be complete without some mention of China's extraordinary growth over the past decade. The raw numbers are staggering, from the rapid urbanization of its population, to the extraordinary increases in output year after year, and the voracious demand for raw materials as it becomes the workshop of the world. Ken asks what would happen to the favorable inflation and productivity environment if internal stresses in Chinese society were to cause the authorities to slow down or even reverse some of the recent market reforms. There can be little doubt that the Chinese authorities face a gargantuan task in managing the transition of the economy to a free-market system. Recent strains have manifested themselves in higher inflation, and the ability of the authorities to control that inflation is clearly hindered by the exchange-rate regime. Greater exchange-rate flexibility will enhance the ability of the People's Bank of China to deliver price stability, the surest contribution any central bank can make to improvements in living standards over the long term.

Globalisation does matter for inflation, but not in the ways that are often suggested in the media. The most common fallacy is of course the confusion of relative price with price level changes, the idea that a flood of cheap imports from China must of necessity lower the price level and the inflation rate. The channels whereby globalisation affects inflation are much more subtle, and not always necessarily benign. Furthermore, I believe that different dimensions of globalisation affect the dynamics of inflation in fundamentally different ways.

Let’s start with trade. The availability of cheap imports from China and other countries does have a direct and indirect impact on domestic prices and inflation. There has been a significant amount of work in recent years trying to document the size of this effect. The estimates vary, but they are generally significant. But the mechanism whereby the price changes are realised is subtle. Yes, there is a direct effect through the availability of cheaper imports. When these cheaper imports are inputs into the production process, we know they directly lower prices at home. The price effect is not just relative, but absolute. But that will be offset to some extent as consumers use their enhanced purchasing power to buy more of other products, putting upward pressure on their prices. The threat of competition also has an effect on the pricing decisions of domestic firms, both for firms producing products that are close substitutes for the imported goods and for firms that use those imports as inputs. Cheaper imports will also have an impact on the wage demands of workers who consume those goods. Of course the effect is not all in one direction, as Ken notes in his paper. The downside of the rapid growth in production in low-wage countries is the upward pressure that this growth has put on commodity prices worldwide. Faster growth in incomes is having a significant effect on global food prices, although some of the recent increases have been driven by policy changes encouraging the production of biofuels and supply-side developments as well.
The thirst of the emerging-market economies for raw materials and the relative inefficiency with which they use these raw materials has propelled industrial commodity prices to record levels. The fact that these increases have been persistent and not quickly reversed has raised difficult questions about traditional measures of core inflation and made it increasingly difficult for central bankers to separate signal from noise in the inflation data. We in Dallas look at not just the traditional measure of core inflation that simply excludes food and energy prices, but also a trimmed mean measure that we think gives a better sense of where trends may be headed. While an improvement on the traditional measure, it too has some shortcomings, and I believe that over the long term, the price stability that matters most to the people who pay our salaries, since they do eat and they do drive, is stability of a comprehensive measure of prices.

Globalisation of labor markets also matters for inflation dynamics. Now, one of the key differences between the current era of globalisation and the one that preceded WWII has to do with the greater restrictions on international movement of labour. We don’t see the same mass movements of people as characterised the late nineteenth and early twentieth century, and with more countries providing social safety nets, and the equivalent of “virtual immigration” through cyberspace, we are unlikely to see such mass migrations ever again. Nevertheless, for some countries, recent movements of workers have been quantitatively large enough to affect prices. The recent expansion of the European Union and the freeing of labor mobility has clearly made a difference to wage and price dynamics in Europe. Whether this is a one-off effect associated with a permanent reallocation of labor from low-wage to high-wage countries or a longer-term development whereby workers are more willing to move in search of job opportunities in response to the business cycle, it is too early to say.

The third key dimension of globalisation –that of capital markets– also matters for inflation, but in a way that fundamentally differs from trade flows and migration. Greater international capital mobility seems to have a disciplining effect on policymakers worldwide by making it costly to engage in reckless fiscal or monetary policies. But again, I think there is two-way causation. Sounder monetary policy in more countries has contributed to the willingness of investors to venture abroad, but the ease with which capital can take flight has also made it more costly for central banks to deviate from the new orthodoxy of price stability.

The fourth dimension is the least understood. That is the global assignment of tasks through nontraditional channels. The US is a high-value-added, services-driven economy; services represent over 80% of our economy. The growth of service sector trade, particularly through fiber optic cable and satellite connections, poses significant measurement issues. It is not as if we can just go down to the docks and count containers coming and going in order to quantify the impact of service sector trade. And, what implication does the increasing trade in tasks with cheap labor pools around the globe pose for pricing of services and, in turn, for inflation?

Ken’s final point has to do with the scepticism of some academics about the implications of globalisation for monetary policy. He cites a recent important paper by Michael Woodford as a representative example, so let me conclude with two observations related to that paper. First, I think there is an element of talking at cross purposes in some of the exchanges that have taken place on what globalisation may or may not mean for monetary policy. I am in substantive agreement with Woodford that globalisation does not undermine the ability of the Fed, or any other central bank for that matter, to control inflation over an appropriate time horizon, but it does challenge us–you might say it disciplines us–to conduct monetary policy more prudently. In today’s world, where investors can move their funds instantly from one currency to another to avoid depreciation, the price central bankers pay for high inflation is much higher than in the past. Understanding this, you can see why I am a steadfast inflation-fighting owl.

Globalisation also makes us change the way we should interpret some of the indicators that have traditionally played such an important role in monetary policy deliberations. Globalisation indeed warrants the examination of a broader array of data in arriving at monetary policy decisions. For example, understanding global capacity utilisation in an industry may be more useful than equivalent measures of domestic capacity. Second, the elegance of Woodford’s exposition
notwithstanding, we are still some way from having a consensus model of how the domestic and international economy works. Enormous progress has been made in recent decades, due in no small part to the work of scholars like Ken Rogoff and Michael Woodford, but a lot more remains to be done, and we are spending an enormous amount of time doing it at the Federal Reserve Bank of Dallas. At times of rapid structural change, it is important to keep an open mind and challenge old assumptions and paradigms, within a framework of disciplined, evidence-based scientific inquiry.
I would like to begin by thanking the Banque de France for organising this timely symposium. It is also a great pleasure to comment on Ken Rogoff’s presentation. Ken brought to the fore the international dimensions of the global disinflation of the 1990s and earlier this decade in his widely-cited 2003 Jackson Hole speech.

The combination of surging oil, commodity and food prices—alongside slowing global growth—suggests that the challenges facing central banks are becoming more complicated. In my intervention, I will highlight some key points in Ken’s presentation today and then offer some thoughts on commodity price prospects and inflation from a global perspective.

Turning to the presentation, Ken makes three main points.

- First, the two main features of globalisation of relevance for our topic today are the revolution in information and communications technology and the integration of China and India (and smaller Asian countries) into the global market economy. Not just because we are in Europe, I would also emphasise the rapid market integration of the countries of the former Soviet Union and allied countries. Clearly, as Ken notes, industrialisation take-offs and integration of developing economies into the international trading system have occurred before, but few prior episodes of rapid integration have been on the scale we have experienced over the past two decades. The implication for inflation is that the global supply of manufactured goods has increased rapidly, especially that of durable ones. The resulting fall in their relative price—a relative price shock—has had an important disinflationary effect, directly through import prices and indirectly through increased competitive pressures on domestic producers, especially—but not only—in the United States and other advanced economies.

- Reflecting these factors, global productivity growth over this period has been impressive, contributing to a global growth surge during 2003-07 that was stronger than during any other 5-year period since the early 1970s. Nevertheless, and this is the third main point of Ken’s presentation, strong productivity growth may have made macroeconomic policy frameworks appear to be deceptively strong. And despite better policy frameworks, recent developments have highlighted that significant weaknesses and fragilities remain, including the explosive growth of cross-border capital flows and persistent imbalances in domestic demand gains among key economies. Both of these factors raise questions about sustainability.

Ken’s work dovetails well with continuing research at the IMF on the role of global factors in the inflation process. But it is striking how the story line is changing. Until recently, globalisation was widely viewed as providing valuable support to central banks by keeping import prices low. More recently, however, the focus has shifted to inflationary pressures stemming from surging commodity prices that may constrain monetary policy flexibility at the onset of a global slowdown. This is a reminder that the impact of globalisation on price pressures can run in either direction, as global demand factors are important, in addition to global supply trends.

In the latest World Economic Outlook, we have examined both forces. One important finding is that the disinflationary effects of non-fuel import price declines have only been large and economically significant at times of global spare capacity. Our estimates suggest that at the time of the Asian financial crisis of a decade ago, these “globalisation” effects shaved more than 1 percentage point off “headline” inflation in some advanced economies. On average, however, disinflationary supply pressures, as measured by the trend decline in the relative prices of non-fuel goods imports, has been
very small. Our estimates, which are similar to those of others, suggest that globalisation-related supply effects have reduced inflation over 1996-2005 by an average of a ¼ of a percentage point per year in the advanced economies. Such small effects should not come as a surprise; after all, relative price shocks should not have large effects on average inflation.

In the context of the past few years’ very strong global growth and the presumed narrowing of spare capacity margins, the demand side of the globalisation story has come to the fore. Rapidly increasing prices of primary commodities and intermediate goods have added to inflationary pressures since 2005. This is not a new phenomenon. Broad-based commodity price booms and price pressures have emerged toward the end of previous long global expansions, notably in 1973 and again in 1999-2000. This time, however, there is an important difference. While many indicators suggest that growth in advanced economies has begun to slow, commodity prices are still booming. This has led to concerns about potential challenges to policy makers, reflecting a possible decoupling of commodity and raw material prices from the advanced economies’ business cycle.

Such a potential decoupling could derive from two sources. First, if emerging economies resist the current slowdown in the major advanced economies, commodity markets could remain strong if emerging economies continue to drive growing commodity demand. Second, sluggish supply increases could keep commodity prices high or increasing, even if commodities demand gains slowed in tandem with global growth.

Let me start by discussing this prospect by examining whether emerging economies can decouple from industrial economies. This is a key issue, as emerging economies have accounted for most, if not all, of the heightened demand growth for key commodities in recent years. Their increasingly important role reflects not only their rapid expansion but also the commodity intensity of their growth. For every percentage point of growth, their commodity demand increases by a greater percentage than that of advanced economies. This explains why news about worsening advanced economy prospects has had less of an effect on commodity prices in recent weeks and months than might have been expected. Indeed, many indicators still point to robust demand gains from emerging economies.

Several factors are helping emerging economies to sustain their growth momentum.

- First, these economies have been less exposed to direct losses from the financial market turmoil than the US economy or Western European economies.
- Second, domestic demand momentum, reflecting the productivity gains of long-run trade integration and industrialisation, has remained very strong.
- Third, with more credible policy frameworks and lower vulnerabilities, many emerging economies appear to be less exposed to sudden stops of capital flows than in the past, and some among them may even have space for counter-cyclical macroeconomic policies.

Nevertheless, emerging economies will be affected by what we are expecting to be a notable growth slowdown in the advanced economies.

- First, trade spillovers will be important. Net exports to advanced economies remain an important source of growth for these economies, even though trade among emerging economies is growing rapidly.
- Second, financial spillovers through equity, bond, or bank market will still play a role, as we have seen in emerging equity markets in recent weeks. Moreover, there are pockets of potential vulnerabilities in countries with large external financing needs, especially in emerging Europe.

On balance, we expect that growth in emerging economies will moderate in 2008-2009, but to a pace that would still be strong by historical standards. What does this imply for commodity prices? Our current projections assume a modest decline in both fuel and non-fuel prices during this period. The underlying reasoning is that while the significant growth slowdown in the industrial countries will lead to further declines in their demand for commodities, demand from emerging countries will continue to increase at a robust pace, given expected growth.

As a result, the generally tight market balances for many commodities will improve only slightly.

This brings me to a second key question. Could supply problems sustain commodity prices even in the face of softening demand? Reflecting very rapid demand growth, markets for many commodities have been
beset by chronic capacity shortages in addition to the usual temporary supply problems that range from weather conditions to facilities outages. For some commodities, inventories are at multi-year lows.

Capacity expansion in oil markets has been much slower than expected. Escalating costs and the complex geology of increasingly important nonconventional sources have led to project delays, particularly in non-OPEC producers. At the same time, decline rates in major fields have been faster than expected, partly because production peaks have been reached earlier. This implies that more investment will be needed just to replace declines from existing fields. OPEC production decisions are yet another supply factor to take into account.

As a result, supply problems represent another reason why commodity price declines in the near term are likely to be limited. At the same time, they also create considerable upside risks to prices, as illustrated by the recent rebound in metals prices that were associated with production outages in China.

We still expect commodity prices to recouple eventually with the advanced economy cycle as emerging economy demand moderates. Nonetheless, the current commodity price boom is unlikely to be fully reversed. According to our base case forecast, inflation pressures should abate gradually over the year ahead, at least those stemming from commodity sources.

However, it would be too early to disregard inflation risks, for two reasons.

• First, second round effects on inflation remain a concern. They are most immediate in emerging and developing countries where food expenditure shares are high and where monetary policy credibility is not yet firmly established. Spillovers from food price increases into core inflation also remain possible in advanced countries, given the large magnitudes of recent increases and limited slack in labor markets. And if near-term price rises deteriorate inflation expectations, the task of restoring credible price stability will be more difficult.

• Second, commodity prices are both volatile and difficult to forecast. In many cases, their behaviour is close to being a random walk, especially over 1 to 2 year periods. With commodity markets small relative to global capital markets, recent increases in financial commitments by market participants to position taking in commodities may have contributed to increased price volatility and price overshooting on occasion, notably when inventories are at low levels. This complicates inflation forecasts at the decision horizons relevant for central banks. The implication is that banking on early relief from commodity price declines could be a risky strategy.

Our main preoccupation today is dealing with the macroeconomic consequences of financial turbulence. At the same time, we must recognise that some of the disinflationary benefits of globalisation have faded and that strong growth in emerging economies and the related high commodity prices can create at least the temporary appearance of an apparent inflation dilemma. While we do not think that emerging and developed economies can remain decoupled for an extended period, nor that commodity prices could remain unaffected by an extended growth slowdown in the advanced economies, we need to bear the shorter-term risks in mind when considering macroeconomic responses to global financial problems.
Philippe MARTIN
Professor
University of Paris I – Panthéon-Sorbonne

I would like to thank the Banque de France for inviting me and giving me the opportunity to discuss this paper.

So Ken told us that we are saturated with facts on globalisation. I’m actually going to add to this saturation and talk about, at least at the beginning, two stylised facts on trade. I’d like to talk about stylised facts on trade, beyond trade growth. We know that trade has grown, but I want to talk about a vast change that has occurred in the composition of international trade. This vast change has gone towards differentiated goods, which are typically characterised by imperfect competition, and these are goods with high mark ups and high prices. If you look at the United States, for example, the share of imports in this type of goods increased from less than half to 75% from 1979 to 2000. This was also the case for US exports (see Table 1).

So I think this is an interesting fact about the nature or characteristic of trade growth in itself, and it has also some implications on the issue of the relation between globalisation and inflation. One possible implication for the debate on globalisation and inflation is that it contradicts, I think, an argument that has been heard that globalisation has had little effect on competition (and inflation) because mark ups on traded goods have not fallen. My point here is simple, this may just be a composition effect: you have more trade in high mark up goods.

So the next stylised fact I want to talk about is that growth in trade actually comes in two ways. You can have trade growth because you have growth in sales of existing goods; that's the usual way we think about trade growth. And you can have growth because you have growth in the number of traded goods, that you’re entering new sectors, that there are new firms that are coming into the market.

Table 1  Change in composition of international trade towards differentiated goods (high markup goods)

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<th></th>
<th>1979</th>
<th>2000</th>
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<tbody>
<tr>
<td>In % of US imports</td>
<td>47</td>
<td>75</td>
</tr>
<tr>
<td>In % of US exports</td>
<td>62</td>
<td>79</td>
</tr>
</tbody>
</table>

So the first one is the standard way we think of trade growth. And in some sense, when we teach our students about trade, that's the way we think about growth in trade. That's what we call the intensive margin of trade, growing sales of existing goods. The surprising result from recent academic work is that only one third of trade growth comes from the standard intensive margin.

The second one, the extensive margin, that is the fact that there are new goods, new varieties of goods which are entering the market, is actually the largest share in the growth of world trade.

I think again this is an interesting fact about globalisation and it has some implications for our debate on globalisation and inflation because it alters the standard story that we have on the way globalisation may affect relative prices. And again, obviously, the important point here, the important word is “relative”.

The standard story is basically the following. Suppose you have a productivity increase in China. Marginal costs of production go down in China. Chinese exports grow because the price of Chinese goods fall. That means terms of trade improve for countries that import those goods, and that means import prices fall in those countries.

Now, if China exports not because sales of a given number of goods increase, but because it exports new goods, this changes a little bit the story. It’s not exactly the standard story. In fact, there’s some theoretical work that has been done with my colleagues, Giancarlo Corsetti and Paolo Pesenti, that shows that in this case, there is less or no effect, or even reverse effect in terms of the terms of trade. In this case, if China increases its exports through this extensive margin, our terms of trade as the importing countries may actually deteriorate and importing prices may actually increase. Hence, globalisation, if it takes the extensive margin form, more goods being exported, may not lead to imported deflation as in the standard story.

So are we importing low inflation from the rest of the world? We certainly import more goods and services from low cost countries. Cheap imports certainly have an effect on inflation and it’s quite remarkable.
Chart 1 shows the relative price of non-oil imports for the United States on the very long period, and this decrease has been very remarkable. And obviously if you look at headline inflation, you see some kind of relation between the two.

So it’s an impressive downward trend in, again, relative import prices, and the important word here is “relative”. Relative prices cannot go down forever. In fact, import prices may have already bottomed out. I think this is something that we’ve already heard this morning, but this is an important point.

So the last question I want to ask is the following: does globalisation make the central banks’ job easier, which I guess is an interesting question for many of you in this room. One way to ask this question is what is the impact of globalisation on the sacrifice ratio? So let me remind you of the sacrifice ratio. To bring down inflation by one percent, we need to accept higher than average unemployment, at least for some time, certainly not in a permanent way, and this is the sacrifice ratio. So a low sacrifice ratio means we are able to achieve price stability without much sacrifice for the real economy, at least in terms of high unemployment and negative output gap.

So how does globalisation affect the sacrifice ratio? Obviously, when the sacrifice ratio is higher, that means politically the job of central bankers is more difficult. There are two offsetting effects. More trade increases competition and makes the economy more flexible, and this is something on which Ken has already talked about. In this case, the sacrifice ratio is smaller because a small, cyclical downturn has big negative effect on prices.

There’s a second effect. More trade increases the share of imports, and consumption and production, and that makes inflation more sensitive to global production, and less sensitive to the domestic real activity. This actually generates a higher sacrifice ratio. Globalisation makes monetary policy more difficult in some sense, or the job of central bankers, at least from a political point of view, a bit more difficult because you need a larger and longer domestic downturn to bring down inflation.

To estimate the sacrifice ratio, economists put inflation as a function of the domestic output gap and many, many other factors; several studies have looked at this equation:

\[ \text{Infl}_t = \text{Const} + \beta_1 \text{Infl}_{t-1} + \beta_2 \text{Domestic Gap}_{t-1} + \beta_3 \text{Other}_{t-1} + \epsilon_t \]

Here, a high coefficient on the output gap means a lower sacrifice ratio because a small decrease in the domestic output gap generates a big decrease in inflation. The job of central bankers from that point of view is made easier.

Here are the recent estimates of the sacrifice ratio, from a paper by Stefan Gerlach and Cedric Tille, which is not yet published (see Table 2). They look at 18 OECD countries and what they find is that this estimate has gone down, which means, remember, that the sacrifice ratio has increased. But there is contradictory evidence on this. Maybe for the United States this is not true. But at least from these estimates, and we’ll talk more about this this afternoon when we talk about the Phillips curve and the flattening of the Phillips curve, if anything, the sacrifice ratio seems to have increased over time, which may be related with globalisation.

Table 2 Recent estimates of the sacrifice ratio

<table>
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<tr>
<td>18 countries</td>
<td>0.27</td>
<td>0.09</td>
</tr>
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</table>

So let me just report on the latest estimates on this sacrifice ratio from a paper by Stefan Gerlach and Cedric Tille, which is not yet published (see Table 2). They look at 18 OECD countries and what they find is that this estimate has gone down, which means, remember, that the sacrifice ratio has increased. But there is contradictory evidence on this. Maybe for the United States this is not true. But at least from these estimates, and we’ll talk more about this this afternoon when we talk about the Phillips curve and the flattening of the Phillips curve, if anything, the sacrifice ratio seems to have increased over time, which may be related with globalisation.

So as a concluding point, I would say that globalisation obviously changes the environment in which central banks have to operate, but I’m afraid I have to report that there’s no strong evidence that it makes the job of central bankers easier today and in the future.
Globalisation and the determinants of domestic inflation

Chairperson: Jean-Pierre ROTH, President, Swiss National Bank

Speaker: William R. WHITE, Economic Adviser and Head of the Monetary and Economic Department Bank for International Settlements “Globalisation and the determinants of domestic inflation”

Discussants: Martin REDRADO, Governor, Central Bank of Argentina

Janet L. YELLEN, President and Chief Executive Officer, Federal Reserve Bank of San Francisco

Yi Gang, Deputy Governor, People’s Bank of China
If we consider changes in the general level of prices over the past 50 years, it has to be acknowledged that this short chapter in the monetary history of industrialised countries has been marked by the fight against inflation. In 1944, the Bretton Woods Conference had nonetheless attempted to establish common monetary rules to ensure collective stability. In reality, the aim was, above all, to try and make sure that the monetary constraint did not prevent a recovery in growth and encourage protectionism. We now know that the Bretton Woods mechanisms did not have a disciplinary effect; the post-war period was characterised by balance of payments imbalances, numerous devaluations and rising inflation rates.

As of the mid-1970s, there was a growing awareness that inflation did not bring the desired benefits in terms of employment and that it even constituted a hindrance to growth. Consequently, the fight against inflation became a priority. Some countries allowed their currencies to float and adopted quantitative liquidity control strategies. Others pursued regional monetary cooperation with a view to creating areas of stability. Over the years, monetarism disappeared and made way for more sophisticated monetary strategies but the price stability objective was not abandoned. In fact, new governance standards were adopted with a view to better defending price stability. For instance, in the 1990s, monetary authorities increasingly gained independence from political authorities and most central banks received the explicit mandate of maintaining price stability. The chapter opened by Bretton Woods is drawing to a close: the ideal of multilateralism is giving way to the tough reality of the national or regional fight for monetary stability.

And, as if by magic, the inflation problem is vanishing! Since 1993, average price inflation of OECD countries stood at 3.5%, compared with 8.6% in the 15 preceding years. In Switzerland, the annual inflation rate fell below the 2%-mark in 1993, and has remained beneath this level since then. Progress in France has been just as remarkable: its average annual inflation rate has been 1.6% since 1993, whereas it was 6.8% for the 15 preceding years.

Has monetary wisdom prevailed at long last? Are economists enjoying their hour of glory? The time correlation between the new monetary order based on inflation targeting and price stability is nonetheless striking. But can we speak of causality? Has the price stability seen in recent times been the result of 15 years of appropriate monetary policy action by central banks or rather of favourable exogenous factors, temporary in nature, related to the increased globalisation of the world economy?

In view of this success in maintaining price stability, it may be tempting to conclude that policies must have been wise. But the rapid development of monetary aggregates and other liquidity indicators paints a more nuanced picture. Since the creation of the euro in 1999, the broad monetary aggregate M3 has grown at an annual average rate of 7.6% in the euro area. Over almost the same period, in the United States and the United Kingdom, the increase in these aggregates has been of the same order of magnitude, i.e. around 8-9% according to the definition used. If inflation is always a monetary phenomenon, are these developments compatible with price stability? And if the answer is no, why hasn't the inflationary impact of this rapid growth in liquidity been seen yet? Does the old thinking no longer apply? Or, put more scientifically, has globalisation changed the way that our economies function, introducing unprecedented flexibility and adjustment capacity in labour and product markets?

In order to answer our questions, we have the honour of benefiting from the experience of Bill White, Economic Adviser and Head of the Monetary and Economic Department of the BIS. Bill has been closely monitoring, from this privileged observatory, the implementation of monetary policy for over 10 years now. We are grateful to him for agreeing to make the main speech. We will then hear the reactions of the representatives of three countries where the problem of inflation is perceived in very different ways: first, Martin Redrado, Governor of the Central Bank of Argentina; then Janet Yellen, President of the Federal Reserve Bank of San Francisco and lastly Yi Gang, Deputy Governor of The People’s Bank of China.
Economic forecasts are often widely off the mark, particularly at cyclical turning points. This would seem to indicate that macroeconomics is not yet a science. Moreover, recent structural changes in the real, financial and monetary spheres should in principle have made forecasting even more difficult. On the real side, a combination of deregulation, technological advances and globalisation have revolutionised production processes. On the financial side, a whole host of new instruments, new players and new attitudes have been equally revolutionary. And on the monetary side, an increasing number of central banks are now committed to controlling inflation and are communicating their objectives and intentions in quite different ways from those used prior to their being such a commitment. At the worst, the implication might be that we may for a considerable period live in a fundamentally uncertain world, where probabilities are effectively impossible to calculate, rather than a world that is simply risky. At best, we have to recognise that the forecasting business is no longer business as usual.

These general comments about macroeconomics apply with equal force to explaining and forecasting inflation. The Great Inflation of the 1970s took most commentators completely by surprise, as did the subsequent pace of disinflation and the ensuing economic recovery. Indeed, there was for a long time a great unwillingness to confront the inflation problem, on the grounds that inflation expectations (then at high levels) were very sticky, and that the short-run Phillips curve was very flat, and that the short-run Phillips curve was very flat. This combination in effect implied that the costs of reducing inflation would be very high, and led many to conclude that it would make more sense simply to learn to live with it. In the event, both of these assumptions proved wrong. As inflation expectations ratcheted ever upwards, it became clear that living with inflation meant accepting ever higher rates with ever higher costs. And once robust disinflationary policies were put in place, it also became clear that expectations could ratchet down as well as up, and that short-run sacrifice ratios were not as great as feared. This experience of past errors should not be forgotten today when it is once again being suggested that inflation expectations are sticky (now at low levels) and also that the short-term Phillips curve has become increasingly flat.

To make the same point rather differently, producing an accurate inflation forecast using traditional “gap” methodologies requires that at least five separate questions be answered correctly. What is the best way to measure excess capacity in the domestic economy? Subject to the chosen methodology, how does one determine the trend rate of growth of productivity? Are global influences limited to the prices of tradeable goods alone, or are there other influences on wages and productivity as well? Are wages driven primarily by forward-looking expectations, or by backward-looking price developments with implications for real wages and catch up processes? And if expectations are dominant, are they driven by the targets established by the monetary policy regime, or by measured, or even perceived, inflation? The answer to each of these questions is highly contentious, and errors with respect to each are as likely to interact cumulatively as they are to offset each other. Finally, it bears mentioning that all of the major structural changes noted above should also affect the inflation process, contributing still further to our lack of understanding.

NB: The views expressed in this paper are those of the author and not necessarily those of the Bank for International Settlements (BIS). The author benefited greatly from comments and other material provided by David Archer, Claudia Borsa, Dietrich Domanski, Andy Filardo, Már Gudmundsson and others at the BIS. Thanks also to Philippe Hainaut for statistical support.
2 A distinction, of course, first made by Knight (1921). For a similar degree of scepticism about our capacity to understand and predict, using empirical methodologies, see Hayek (1975) and Summers (1991).
3 The possibility that measured and perceived inflation might be different has recently been getting increased attention, particularly in Europe. So too has the possible gap between perceived inflation (which would certainly include food, energy and shelter costs) and core inflation (which generally does not). For a full discussion of such issues, see IFC (2006).
Against such a background, this paper undoubtedly will promise more than it will deliver. Nevertheless, three issues can be considered. In section 1, a brief overview is given of some of the facts about inflation that need to be explained. While some observations are made about the rise and fall of inflation in the 1970s and 1980s respectively, the real focus is on the surprising persistence of low global inflation in recent years. In this section, an overview is also given of the current empirical literature on the role of global explanatory variables in the domestic inflation process; and some possible shortcomings of this empirical methodology. In section 2, a number of hypotheses explaining the behaviour of domestic inflation are independently evaluated, in particular micro arguments concerning how globalisation might plausibly affect domestic inflation. While all these competing hypotheses are found individually wanting, taken as complements (“all of the above”) they do seem to point to a plausible explanation for recent developments pertaining to inflation. Indeed, they also offer clues to the broader puzzle of how low inflation, rapid global growth and persistently low real interest rates have been able to coexist over the last few years. Finally, a third section looks at inflationary prospects and other exposures looking forward. The conclusion drawn is that a horse race seems to be under way, between “flow” forces raising inflationary pressures and “stock” forces that could potentially lead to outright deflation.

No attention is paid in this paper to the implications of all of this for monetary and other policies. Suffice it to say here that the difficulties now facing policymakers – to maintain simultaneously real growth, price stability and financial stability – seem as great today, if not greater, than at any other time in the post-War period.

Facts about inflation

Before turning to explanations, it pays to be clear about what needs to be explained. Having risen in the 1970s, both the level and the variability of inflation have fallen almost everywhere. Moreover, there is a growing body of evidence that the inflation process has changed in significant ways in recent years. Much of this evidence was referred to in the thirty papers prepared by central bank economists for the BIS Autumn Economists’ Meeting in October 2005. The papers were then summarised by Galati and Melick (2006).

Chart 1 indicates that inflation has come down to low levels in both the industrial countries (ICs) and emerging market economies (EMEs). It is notable, however, that this downward trend emerged in the ICs in the early 1980s whereas it began only a decade later in the EMEs. In both sets of countries, once the trend had been set in train, it was commonly associated with an overprediction of future inflation on the part of professional forecasters. In the ICs, the pattern of inflation seems to have been broadly driven by the business cycle, with the peaks in the mid-1970s and late 1970s affected as well by oil price increases. While this indicates that “gaps” have historically had an influence on the inflation level, it should be noted that identifying and using such gaps in real time (indeed, for policy purposes a forecast is required for a year or two in advance) is significantly harder than doing so after the event. The volatility of inflation has also trended downwards, with its

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4 The output gap in 1975 for the G10 was estimated at the time to be around 10% of GDP. More recent estimates would put this figure at less than 3%. See BIS (2005), pp. 70.
cyclical movements broadly matching those in the level of inflation itself. As for the inflation process, the overview paper prepared for the BIS conference mentioned above identified five stylised facts.

First, shocks to inflation (treated as a time series) are less persistent than previously. Upward shocks to prices thus have increasingly temporary effects on prices. It is estimated that in the G10 countries between 1970 and 1989 more than 80% of the price increases in the previous six months persisted into the next six months. After the 1990s, this ratio dropped to less than 50% in the United States and fell sharply as well in Canada, Japan and the United Kingdom. More anecdotal evidence suggests a similar if more recent trend in many EMEs.

Second, and closely related, the pass-through of energy and food price increases, as well as exchange rate changes, appears to have fallen sharply in recent years for many countries. Perhaps the best documented of these changes has to do with exchange rate pass-through, as summarised in Chart 2 which is based on econometric investigations using IC data (as noted in the Annex). For EMEs the evidence is less rigorous. Nevertheless, it is surely remarkable that, in the case of the Brazilian and Argentine devaluations of 1998 and 2000 respectively, inflation stayed so muted after the event. In both countries, the earlier fierce resistance to depreciation was premised on the belief that it would quickly lead to hyperinflation as in the past. In both cases, this stunningly failed to happen.

Third, these developments might be explained by the fact that inflation expectations now seem to have shifted down to a much lower level than seen earlier and are much more stable around that lower level. Consider, for example, expected inflation as measured by the survey of household expectations in the US (see Chart 3a), which is much lower than in the 1980s. Moreover, broadly similar trends emerge from corporate surveys (Chart 3b), and from market based measures of inflation expectations (see Chart 3c). Expectations in the United States now appear much better anchored than before, as indicated by the various panels of Chart 4. Perhaps most notably, the Survey of Professional Forecasts (Chart 4b) shows that the 10-year-ahead expectation of inflation has been essentially constant at 2½% since 1998. In Europe, the five-year-ahead expectation of inflation based on the ECB survey of professional forecasters has also stayed very stable at just below 2% over the last few years.

Fourth, and perhaps more contentiously, it is concluded in the Galati and Melick paper that the

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Note: AU = Australia; BE = Belgium; CA = Canada; CH = Switzerland; DE = Germany; FR = France; GB = United Kingdom; IT = Italy; JP = Japan; NL = Netherlands; SE = Sweden; US = United States.

1) The arrows indicate a change in the exchange rate pass-through from the first sample to the second sample from each of the following studies.
   1 = Gagnon-Ihrig (2004); 2 = BIS (2005); 3 = Heath et al (2004); 4 = Hofmann et al (2004); 5 = Adolfson and Söderström (2003).

Sources: all these references are provided in Galati and Melick (2006).

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See BIS (2006), pp. 16.
See also Sekine (2006).
Chart 3  Indicators of inflation expectations

a) Consumer survey

b) Corporate survey

c) Financial market-based

Chart 4  Indicators of US inflation expectations

a) Inflation expectations

b) Volatility of inflation expectations

c) Dispersion of inflation expectations

1) Expected change in consumer prices, in per cent.
2) Figures are normalised by mean and variance of actual HICP inflation rate.
3) Expected change in output prices; an increase indicates higher inflation expectations, normalised data, measured as the difference between the indicator and its average, expressed in points of standard deviation.
4) Difference between 10-year nominal and index-linked yield on government bonds.
5) Implied inflation expectations at the 10-year maturity derived from zero-coupon yield curves of nominal and index-linked government bonds.

Sources: European Commission, University of Michigan, central banks, Datastream, national data, BIS calculations.

2) Standard deviation of inflation rates using a 20-quarter moving window.
3) Based on Blue Chip forecasts for CPI, approximately 6 to 11 years ahead.

The slope of the short-run Phillips curve has fallen in many countries, as indicated in Chart 5. It is commonly believed that this implies more stable inflation in the face of excess demand, but also that there would be a higher sacrifice ratio should disinflation be required.\footnote{See Mishkin (2007).} In fact this second conclusion must be qualified in that it very much depends on the data period being sampled. In fact, most of the data have been drawn from a period where excess demand seemed to be in evidence but inflation did not rise. If this was rather a product of positive and persistent supply shocks, a topic investigated below, then needed disinflation might actually be easier to achieve, assuming of course that these shocks persisted.

Fifth, and perhaps most controversial, a paper prepared for the BIS conference by Borio and Filardo (2007) concludes that measures of “global slack” are of increasing importance in driving domestic inflation in a number of countries. Indeed, they often dominate domestic measures when introduced into inflation equations simultaneously. Providing some support to the Borio and Filardo conclusion is work by Ciccarelli and Mojon (2005), who look at 22 OECD countries and find that the average inflation rate explains 70% of the variance in national inflation rates over the period 1960 to 2003. Moreover, they find that the global inflation rate moves largely in response to global real variables over short horizons and global monetary variables at longer horizons. However, they do not test directly the hypothesis that global slack increasingly dominates domestic slack as a driver of inflation. Also supportive, Pain et al (2006) find that import prices (presumably driven by foreign slack) have played a growing role in explaining domestic inflation in OECD economies in recent years. Again, however, there is no direct comparison of the relative importance of domestic and global drivers, nor do they investigate the possibility that other channels of international transmission than import prices could be important.

In contrast, a number of empirical studies do not support the Borio-Filardo results. Ball (2006) concludes very strongly that globalisation has played no role in the disinflationary process in the United States. Ihrig et al (2007) estimate standard Phillips curves for 11 industrial countries and use them to test several predictions arising from the globalisation and inflation hypothesis. They generally conclude, “Our results provide little support for that hypothesis”. Looking in particular at the effects of foreign gaps on domestic inflation, they also fail to find any significant relationships.

One overriding problem with all such empirical work is that of assembling decent data for global aggregates, a task already daunting enough at the domestic level. Another is specifying the model to be tested in such a way as to avoid inadvertently biasing the conclusions. Such difficulties imply that, in addition to empirical studies of the sort referred to here, competing hypotheses might also be evaluated in less rigorous but potentially still compelling ways.\footnote{This approach is in the spirit of McCloskey (1985).} This task is turned to below.

\textbf{Chart 5 Flattening Phillips curves}

\begin{quote}
\begin{center}
\includegraphics[width=\textwidth]{chart5.png}
\end{center}
\end{quote}

\textit{Note: The arrows indicate a change in the estimate of the sensitivity of inflation to the domestic output gap between 1980–92 and 1993–2005; the estimated equation is $\Delta \pi_t = c + \gamma \text{GAP}_t + \varepsilon_t$. Source: BIS calculations.}
Competing or complementary explanations?

In this section, four separate explanations for the fall in inflation and its subsequent maintenance at low levels are investigated for their plausibility. Two of these hypotheses point to domestic causes: more effective disinflationary policies by domestic central banks, and increased domestic deregulation and competition. Two other hypotheses have a more international flavour: a global savings "glut", and the effects of the increased globalisation of markets for both products and factor inputs. For the advanced industrial countries, empirical evidence suggests that the largest part of the decline in the level and variability of inflation can be explained by a single statistical factor. Unfortunately, it is concluded here that none of the individual hypotheses considered in this paper is fully satisfactory in economic terms. In each case, acceptance of the hypothesis reveals other puzzles or contradictions that cannot be easily accepted.

In contrast, it is concluded that treating these domestic and international explanations as complements provides a more satisfactory explanation of what has been going on. This more eclectic approach also provides some insight into how low global inflation, high global growth and low real interest rates could coexist for such an extended period of time.

This complementary approach also helps address the problem that the assumption of "competing" hypotheses, while analytically useful, fails to recognise that they are in practice often interdependent. Consider, for example, that globalisation raises the economic and social costs of measures designed to protect individual industries and workers. In this way, globalisation could encourage domestic deregulation. Another example was suggested recently by Rogoff (2006), who noted that globalisation could alter the behaviour of domestic monetary policymakers. In particular, through making wages and prices more flexible, thus reducing the stimulative effect of monetary shocks on the real economy, globalisation might help instil more monetary discipline. Finally, positive supply shocks could well enhance the credibility of central bankers, if continuing low prices were assumed by an undiscriminating public to be the results of good monetary policies.

More effective domestic monetary policy?

How plausible is it that more effective central bank policies have been responsible for both the downturn in inflation in the early 1980s and continuing low inflation in recent years? The basic argument would be that central banks in the ICs learned in the 1970s that there could be no "living with inflation". They resolved to bring it down, and keep it down, and they have succeeded. Moreover, with the dead weight losses due to inflation reduced, and with inflation expectations firmly anchored, economic growth rates have risen and the amplitude of cycles in the ICs has fallen. Moreover, observing the improved performance of the ICs, a growing number of EMEs resolved to go down the same path and, albeit with some delay, they too have succeeded.

As will be discussed below, there seems little doubt that the downturn in inflation in many countries owed a great deal to central bank policies. Nevertheless, two puzzles remain. The first one is that the dramatic decline in inflation was shared by a diverse set of economies with different institutional setups, different degrees of economic and financial development, different monetary policies, different degrees of central bank independence and, perhaps above all, different attitudes to exchange rate movements. Indeed, a number of countries had their exchange rates effectively pegged to the dollar, which, assuming the absence of capital controls, would imply that there were significant limits to their capacity to conduct an independent monetary policy at all. Global trends in the face of all this diversity naturally lead one to search for a more unified global explanation.

9 See BIS (2006), pp. 17. The table has been updated and gives essentially the same results.
10 Of course, globalisation also increases the risks faced by individual industries and workers, which could increase the benefits of regulation measures.
11 This possibility is also extensively discussed in BIS (2006), Chapter IV.
12 While providing a simple and academically respectable theory of global disinflation, the underlying assumption concerning the incentive for central bankers to inflate might appear implausible, especially to central bankers. In fact, as noted below, there could be some similarities between what they seem to have done in practice and the time-inconsistency problem highlighted by Kydland and Prescott (and for which they won the Nobel Prize). A perhaps stronger counterargument to the Rogoff hypothesis is, as will also be discussed below, that globalisation appears to have made prices less flexible, not more; that is, the short-run Phillips curve seems to have become flatter, not steeper. Perhaps even more potent, global monetary policies appear to have been extraordinarily loose in recent years, rather than more disciplined.
13 For a fuller description of this "orthodox" interpretation of recent history, see Buss and White (2004).
The second puzzle is even more intriguing. While the original disinflationary shock in the ICs in the 1980s was associated with relatively tight monetary conditions, in recent years the stance of monetary policy has been extraordinarily accommodative almost everywhere. Chart 6 provides some illustrative figures for the ICs. As seen on the panel at the top, real policy rates trended downwards from the early 1990s, with an inflection point around 1997. The more recent increases in policy rates have been significant but still leave real rates in the ICs below most estimates of the potential rate of growth. The middle panel shows a similar pattern of rapid growth in the ICs for both money and credit. Finally, on the bottom panel, some figures are provided to illustrate the broad consistency between movements in asset prices and the underlying movements in the financial aggregates. Complementing these observations, it can be noted that there is evidence for recent years that policy rates in a number of OECD countries have been significantly below the levels that might seem suggested by Taylor-type rules.

Turning to EMEs, a similar pattern presents itself. Chart 7a shows the recent behaviour of real policy rates, while Chart 7b indicates how rapidly credit to the private sector has been growing. More disaggregated data in fact show that credit growth has exceeded 20% per annum in every major region in the developing world in recent years. Behind this growth lurks the defensive attitude of most EMEs towards their own exchange rate vis-à-vis the exchange rates of the ICs and particularly the dollar. Relatively accommodative policies in the ICs led to general downward pressure on their currencies and upward pressures on the currencies of the EMEs. Clearly, since 2001 the United States has been at one end of this spectrum and China has been at the other. However, confronted with such upward pressures, most EME countries chose to resist them with some combination of easier monetary policies and overt intervention in the foreign exchange markets. This accounts for the explosion of foreign exchange reserves also noted in Chart 7b. While there has been a growing willingness since around 2003 to allow their exchange rates to rise against the dollar, the exchange rate in many EME countries remains well

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14 This further easing in real rates occurred more or less at the same time as perceptions of potential growth in the United States (the New Era) were being revised upwards. From a Wicksellian perspective, this would imply that the gap between the financial rate (falling) and the natural rate (rising) was widening even more.

15 As will be discussed further below, the movements in the monetary and credit aggregates reflect not only the stance of monetary policy over the period, but also financial innovations which seem to have increased substantially the “elasticity” of the financial system.

16 See BIS (2005), OECD (2007b), and Taylor (2007).
below where it was in 1998. Moreover, the degree of depreciation would be materially greater if measured in effective terms.

Milton Friedman once said, “Inflation is always and everywhere a monetary phenomenon”. One need not agree totally with this view to still perceive a disconnect between what central banks have actually done in recent years and the inflation outcome. Given the now standard assumption that monetary stimulus manifests itself as inflation in around two years, it is hard to see how the global convergence of inflation around low levels could be solely the by-product of more effective monetary policy. This strongly suggests that some other influences were also at work, and that central banks had in fact to use their policy instruments in an unusually aggressive way to successfully prevent an undershooting of their inflation objectives.

Increased domestic deregulation, competition and productivity?

In many industrial countries, there has been an ongoing process of product deregulation and privatisation (eg utilities and telecommunications). As well, advances in productivity, especially in the retail and wholesale trade areas, have been widespread, as has been the increasing monopsonistic power of “assemblers” who actually sell the products to the clients. Companies like Wal-Mart, Tesco and General Motors, each subject to intense competitive pressures, have all been insisting increasingly that suppliers provide higher quality at lower prices. Such pressures provide incentives for productivity increases all the way down the value chain, and improvements in technology allow producers to respond to those incentives.

In many ICs, labour markets have also begun to function more effectively. In Europe, steps to deregulate the labour market lowered estimates of the natural rate of unemployment by almost one full percentage point between 2000 and 2004. Many industrial countries, though certainly not all, have reduced unemployment benefits and have scaled back employment protection laws, resulting in higher expected losses given job separation. These changes are, moreover, consistent with the evidence of lower union density, more decentralised collective bargaining, greater reliance on temporary workers and lower administrative costs when firing workers. In Japan and Germany, where domestic wage growth has been particularly weak, certain cultural shifts seem to have abetted the effects of domestic regulatory changes. In Japan, reliance on part-time workers has skyrocketed. And in Germany, workers have also begun to cooperate much more flexibly with the individual companies that hire them, against a backdrop of increased reliance by companies on both part-time workers and workers provided through agencies.

17 Ihrig and Marquez (2003) conclude, “we find that productivity advancements were the main structural factor reducing inflation in the United States. For foreign countries persistent labour market slack was the main factor exerting downward pressure on inflation. This persistence stemmed in part from structural reforms that lowered the NAIRU while the unemployment rate was declining”.

18 ECB (2005). See also OECD (2007b) which indicates a similar result for the OECD countries as a whole. It should be noted, however, that to the extent estimates of the NAIRU are inferred from the actual behaviour of inflation they reflect all the shocks affecting the inflation process, not just domestic structural reforms.
But again, certain puzzles present themselves. These reforms and changes have been highly idiosyncratic, and have occurred at different times in different countries. 19 Perhaps most notably, domestic changes of the sort described have been much less in evidence in EMEs than in the ICs. Moreover, they seem unlikely to have been of sufficient magnitude to explain the phenomenon of sharply lower inflation worldwide. Consider, for example, that in Europe the general sentiment remains that the process of deregulation of domestic product and factor markets still has a long way to go. And finally, to return to a point made above, to what extent is it really possible to separate domestic reforms and changes in behaviour from the international environment that might have encouraged them?

**A global saving glut?**

It has been suggested that the massive US current account deficit is simply a by-product of an increase in the global saving rate, largely a by-product of an increased saving rate in Asia. 20 A corollary to this argument might have been that this saving glut also contributed to lower global inflation by reducing global demand (ex ante) relative to global supply (ex post).

As with the other hypotheses, there is certainly an element of truth in this demand shortfall argument. However, IMF statistics seem to indicate that the underlying driver was less a rise in the aggregate saving rate than a fall in the rate of investment in many countries after periods of very rapid growth. There was a virtual collapse of corporate investment in Germany after the expansion fuelled by German reunification. The same outcome materialised in Japan after the “Bubble period” of the 1980s. It is notable that in both countries, investment levels have only recently begun to recover significantly. In Southeast Asia, investment levels fell sharply after the Asian crisis and, with the clear exception of China, have not yet recovered fully. Finally, as a proportion of GDP, corporate investment in the United States has stayed very weak since the end of the technology/media/communications-fuelled expansion at the end of the 1990s. These lingering effects on corporate investment were evident in spite of a generally rising share of corporate profits in total factor incomes and, as noted above, exceptionally easy financing conditions.

The puzzle associated with this hypothesis is that a global saving glut might have been expected to lower global growth overall. Yet, IMF statistics for global growth indicate that the last four years at least have seen the fastest growth in the post-War period. Moreover, it is also puzzling that those countries presumed to be the cause of the slowdown, particularly in Asia, have in fact generally been the fastest growing. Here again, it seems that the single hypothesis being proposed to explain the global change in inflationary conditions is deficient.

**Increased global competition?**

Globalisation is defined here as a worldwide process of more intensive cross-border movements of goods, services, factors of production (labour and capital) and financial instruments. Chart 8 provides some evidence in this regard. The process of globalisation seems to have accelerated since the early 1990s, reflecting a number of underlying factors: the declining use of capital controls, falling communication costs due in part to advances in technology, and policy liberalisation in both ICs and EMEs. Looking forward, this trend seems likely to continue, though its pace is hard to predict. Some of the underlying factors encouraging globalisation might be expected to persist almost indefinitely, whereas the sudden liberalisation of previously state-controlled economies might have had front-loaded (if massive) effects that would be expected to diminish with time. However, as long as the process of globalisation continues, the implication would be a concomitant increase in competition that might be expected to put downward pressure on prices and underlying factor costs. 21

For many years, corporations have been complaining that they have lost “pricing power”. Since at the same time corporate profits have been rising to ever higher levels, this could imply that underlying factor costs have been under even more pressure. In the following paragraphs, consideration is given in turn

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19 For a wide-ranging survey of what has been done, and what still needs to be done, in the individual OECD countries, see OECD (2007a).

20 Capital outflows associated with these savings went primarily into US dollar denominated assets. Prior to 2001, this pushed up the dollar, which contributed to the trade deficit through substitution effects. As well, these inflows led to lower US interest rates which also contributed to the trade deficit through absorption effects.

21 Binyamini and Razin (2007) also demonstrate how each of the globalisation channels referred to in the text might be expected to have separate effects that would lower the slope of the short-run Phillips curve.
to two issues: the extent to which prices determined internationally seem to affect domestic prices; and how a vastly expanded global workforce might affect wages and working practices in the IC countries in a variety of ways. With respect to “proving” the influence of increased global competition through each of these channels, a logical problem must be highlighted. In each case, the threat of things happening (contestability) might be enough to affect domestic developments even in the absence of such developments themselves.22

Large movements in relative prices over the last number of years support the view that global forces are having a material impact on some prices at least. Consider (Chart 9a) how much the prices of core goods (largely tradable) and services (largely domestic) have diverged in the major industrial countries. Indeed, the price of imported consumer durables fell almost

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22 A good example, reflecting my Canadian roots, is the price of Canadian beef. Although there is essentially no trade in cattle between Canada and the US, the price of Canadian beef is the Omaha price (adjusted for transportation costs) times the USD/CAD exchange rate.
continuously after 1997, reflecting strong increases in exports from Asia in particular, and has only recently begun to recover (Chart 9b). Note that the growing role of imports in most economies would in itself seem to point in the direction of a bigger impact on the aggregate domestic CPI. In contrast, commodity prices have risen strongly in recent years (Chart 9c), coincident with booming demand in EMEs. These shifts in relative prices contrast sharply with developments in the late 1970s, when oil prices last rose strongly; at that time, all prices in the ICs were increasing sharply and more or less at the same rate.

In principle, more global competition should lower profit margins and lead to the law of one price prevailing everywhere. As a corollary, we might expect the pass-through from cost increases to rise to one over the longer run. Yet, as implied by the previous discussion about exchange rate pass-through, the global economy is not only far from this situation but also appears to be moving even further away from it; short-term pass-through has in fact been falling. What seems to be the case is that exporters increasingly prefer to keep the price constant in local currency, and are in a position either to change their margins or to force local distributors to do so. Chart 10 provides a good illustration of what has been going on in the United States. As the US dollar rose through to 2001, foreign exporters kept their dollar prices constant but improved their margins substantially. Subsequently, as the dollar has fallen, they have been able to maintain US dollar prices by allowing their margins to shrink again. In this latter period, they have also been aided by still more rapid declines in unit production costs, a subject to which this paper now turns. Whether there might not be a sudden shift upward in pass-through, as profit levels do eventually become unacceptably low, is considered in the next section.

From Chart 11 it is clear that the secular decline in inflation in the ICs has been coincident with a period of great restraint in nominal wage growth and that unit labour costs also moderated commensurately. The share of wages in total factor incomes has also been trending downwards for a long period of time, albeit subject to the influence of cyclical factors. Among the EMEs, it is notable that a similar pattern can be seen in China, where wages have in recent years been rising very rapidly, but productivity growth has to date been rising even faster. In addition to the restraining effect on wages in the ICs of cheap labour embodied in exports from EMEs, immigration and the possibility of redirecting investment from ICs to EMEs both could have played a significant role.

It does seem to be the case that the greater contestability of markets for goods by EME producers has forced domestic firms in ICs to cut their costs. One key element of this has been the reduction of wage bills, while another has been to do away with restrictive practices that hamper productivity.

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23 See Razin and Loungani (2007), who show that domestic inflation and international liberalisation of trade are significantly negatively correlated in large OECD economies with floating exchange rates.

24 Indeed, for such a long period that it seems implausible to link all of this trend to expansion of the global labour supply, since this is a more recent event. See Ellis and Smith (2007).

25 Certain stylised facts can be suggested. In a cyclical upswing, wages generally lag productivity gains. They tend to catch up near the cyclical peak and then to keep rising for a while after the peak, before falling off under the influence of the cyclical slowdown.
growth. Chart 12 provides some evidence that wage shares have actually fallen more in those specific Japanese and US industrial sectors that have faced higher import penetration. The examples of the textile and electronics industries are well known. In many ICs domestic production of such goods has effectively ceased altogether, whereas in others foreign competition has forced a complete reorientation of earlier business strategies.

Increased international labour mobility may also have played a role, affecting in particular the wages for low-skilled workers in countries where immigrants are either welcomed or cannot in practice be kept out (see Chart 13a). In the United States, immigration increased the number of working males by 11% between 1980 and 2000. In Europe, the annual average ratio of immigrants to domestic population essentially doubled after the collapse of the communist regimes in Central and Eastern Europe, and may also have been influenced by the enlargement of the EU in 2004. As to evidence supporting the views that immigration has had an effect on inflation, there is a developing literature recently surveyed by Nickell (2007, pp. 15). He concludes that the evidence is rather mixed, but more supportive in the case of the United Kingdom and Spain in recent years. In the latter case he notes: immigrants have raised effective labour supply and reduced the natural rate of unemployment. This has helped macroeconomic policy to bring down the overall unemployment rate by almost 7 percentage points since 1999 with minimal inflationary consequences.

The increasingly credible threat of the relocation of factories and production facilities (offshoring) to lower-cost foreign jurisdictions may also have had a restraining effect on wages in ICs. In Germany, a number of large firms have negotiated both real wage cuts and changes in working practices in exchange for shelving plans to relocate plants to central and eastern Europe. In Japan, wage shares have been reduced most aggressively in those industrial sectors that have most actively expanded their production potential in Southeast Asia (see Chart 13b). It is also a fact that the growth rate of international trade in parts and components has significantly outpaced the growth of trade more generally. This indicates the extent to which there has been a growing vertical integration of production processes worldwide. It could as well indicate the growing confidence of assemblers in the quality of foreign labour, thus increasing the credibility of threats to move parts of the production chain abroad.

While all of this evidence suggests that globalisation has played a role in influencing domestic inflation in ICs and EMEs as well, one must again be careful not to push a good argument too far. A secular rise in global integration since the 1970s, which accelerated sharply in the 1990s, may have helped push inflation down, but it leaves unexplained what pushed inflation up in the first place. Moreover, secular trends in globalisation cannot explain the sharpness with which inflation receded in the early 1980s in the industrial countries, nor the long delay before inflation began to move down in the EMEs. Rather, these phenomena seem much more likely to have a domestic monetary explanation. As with the other hypotheses, it seems that puzzles remain when we postulate that only one influence has been at work. A more comprehensive explanation seems required.

Perhaps the key to a better understanding is to recognise that the character of the shocks hitting the global economy has changed over time, and that some forces affecting inflation have been more important at some times than others. Demand side factors, driven largely by domestic monetary policies, seem to have been central to macroeconomic developments in the 1970s and 1980s. Gradually, however, supply side elements, arising from both domestic deregulation and globalisation, have risen in importance. Consider both the early period and the later period in turn, using as the basic analytical framework a global model of the traditional IS/LM sort, with a vertical real output line at full capacity. While the assumption of a global model is evidently extreme, it is supported by the observation above that, for a number of years, some important countries have effectively been following a fixed exchange rate regime.

Note: X-axis: Production ratio in East Asia; Y-axis: Wage share
1) Changes, in percentage points.
2) From 1990 to 2000. HSD = high school dropouts; HSG = high school graduates; SC = some college; CG = college graduates.
3) From 1994 to 2004. Based on nine manufacturing industries (excluding transportation).
4) Production in East Asia by Japanese manufacturers as a percentage of their total manufacturing production.
5) Wage payments as a percentage of sales.

28 Some of the limitations of this model are noted below, in particular its static character when the phenomena to be explained are dynamic.
29 See in particular Reinhart and Rogoff (2004). They show that since 1971 only 4% of all country-year movements in exchange rates seem consistent with the hypothesis of free floating. As well, see Dooley et al (2003, 2004). Note that to accept the latter authors’ contention that a Bretton Woods II regime has been in operation is not at all to say that such a regime could be maintained almost indefinitely, as they also contend. See White (2005).
It seems generally agreed that the rise in inflation in the ICs in the late 1960s and 1970s was a by-product of excessive demand, fuelled in many countries by expansionary monetary policies and a failure to recognise how easily inflation expectations might rise. In effect, the LM function shifted to the right, raising aggregate demand and pushing up inflation. While oil price increases are commonly thought to have arisen from supply side shocks, in fact the sharp increases in prices in the early and late 1970s were in large part discrete upward adjustments to re-establish earlier relative prices that had been eroded by generalised inflation. Inflation was brought down quite rapidly in the early 1980s by a sudden, sharp tightening of monetary policy. In both the expansionary phase and the contractionary phase of policy, real growth and interest rates moved in a fashion consistent with nominal forces being behind the observed outcomes. That is, inflation rose when demand exceeded potential (estimated on the basis of earlier “normal” growth rates) and fell when growth receded. Interest rates also rose as the expansion proceeded, first only in nominal terms (real rates actually fell) but then rose sharply in real terms as well. After inflation did begin to decline in the early 1980s, nominal rates fell as did real rates, but with the latter declining more slowly.

Explaining the more recent phenomenon of continuing low inflation, in spite of rapid real side growth and continuing low interest rates, demands recourse to all of the arguments above. In effect, it is necessary to postulate changes in all three functions of the model to obtain all three of the observed results. For simplicity, assume here that inflationary expectations are fixed although they would most likely be biased downwards during any period of excess supply. Begin by accepting the assumption of disinflationary pressures arising from some combination of increased domestic deregulation and competition, increased global competition and higher productivity. This provides an explanation for a rightward shift in the real output (aggregate supply function). Then consider the “saving glut” hypothesis, or perhaps more accurately the “investment strike” hypothesis. This constitutes a downward shift in the IS curve, leading to a transitional phase of output being below potential, thus accentuating the disinflationary pressures arising from supply side developments. Finally, in response to these developments, one must postulate a rightward shift in the LM function. In effect, more effective (expansionary) monetary polices lower interest rates, inducing an expansion of demand, determined by the slope of the IS curve, until in equilibrium aggregate demand and supply are once equal at full employment. This occurs at a higher level of output, with no further pressure on prices, and with the real interest rate at a lower level than previously.

While the assumption of a simple global model has some advantages, the reality of different countries and massive trade imbalances must also be admitted and explained. One significant possibility is that easy monetary conditions have different effects across countries due to significant differences in the character of their financial systems. Consider the United States and the United Kingdom on the one hand, with each having a massive trade deficit, and China with its massive surplus on the other. In the former cases, low interest rates have mostly spurred consumption, whereas in China the effect has been mostly on investment.

The financial systems of the US and UK are among the world's most advanced, although recent developments in the United States indicate that not all these “advances” should be welcome. In particular, they have well developed financial markets which allow loans made by financial institutions to be securitised and taken off the balance sheet. In both countries this has increased the willingness of institutions to respond to the increased demand for credit by households generated by low interest rates. In turn, this capacity to borrow has strongly encouraged consumption, which has a very strong import component. In contrast, China's financial system is almost wholly based on banks, with credit to households being only a very small part of their business. For this reason, and of course many others, the household saving rate in China has stayed quite high while the national saving rate has been further augmented by high corporate profits. Low interest rates in China, allied with easy access to credit for those with political connections, have rather resulted

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30 As noted above, over the 1970s and 1980s we did not observe major changes in relative prices like those we have seen more recently.
31 While the following discussion focuses on the role of the financial system in explaining these differences, other forces were also at work, not least initial endowments of labour and capital.
32 This propensity to import has been further encouraged by the terms of trade gains implicit in the downward shift in the relative price of imported consumer goods, referred to above, and (for a time) by exchange rate appreciation as well.
33 The saving rate in China has stayed very high for a number of possible reasons. First, there may have been a failure of perceived permanent income to keep up with the reality of sharply higher real growth. Second, it could well be a precautionary response to the effective dismantling of previously existing safety nets. Many Chinese received health, education and other benefits from state owned enterprises which have been either closed down or privatised and restructured. As well, the one child policy in China has evidently reduced the capacity of the family to support parents in their old age.
in a remarkably high level of investment.\textsuperscript{34} While this initially had a high import component as well, this propensity has fallen sharply in recent years. Moreover, it is notable that much of this investment has been in sectors where production is specifically directed to export markets. This combination of circumstances helps explain why China only began to have trade surpluses very recently, and why they have widened so rapidly.\textsuperscript{35}

Prospects and potential exposures

If one accepts the “complementary” explanation for continuing low inflation suggested above, and the model behind it, then two potential problems emerge looking forward. One is that inflation might re-emerge on a global scale, since demand and supply seem once more in equilibrium. We are perhaps seeing aspects of this in the recent sharp increases in the prices for food and energy. A second problem is that various “imbalances”, built up over the long period when credit conditions have been very accommodative, could unwind. We are perhaps seeing aspects of this in the current turmoil in financial markets, with significantly tighter credit conditions being increasingly seen as a real threat to growth. Indeed, in a worst case scenario, rising inflation could prompt tighter monetary conditions, or impede easing, so as to aggravate the unwinding of the financial imbalances. In such a case, a dangerous deflation might well be the end game.

As for the prospects for inflation, it seems to be the case that global excess capacity has, for a time at least, essentially disappeared. This is certainly the case for food and energy products. Chart 14 (a & b) provides some indication of this declining gap for the OECD countries. Rising domestic prices in EMEs and rising prices for their manufactured exports indicate that the earlier positive supply shocks they provided to the ICs might also be coming to an end. In some countries, many in Europe but also China\textsuperscript{36} and other EMEs, wage pressures are also beginning to be felt. On the one hand, the fact that labour’s share of factor incomes has fallen so much implies increased pressure for higher wages and potentially prices. On the other hand, the fact that profit margins are still high might imply that increased wages need not have such inflationary implications.\textsuperscript{37} In many EMEs the fact that food is such a large part of the CPI

\begin{footnotesize}
\begin{enumerate}
\item While close to 45\% of GNP, it is still substantially exceeded by the national rate of saving, thus accounting for the current account surplus.
\item To summarise: it takes a lot of steel to make a steel plant, but steel plants make steel.
\item In Germany, initial public sector wage demands have been very high. In China, recent legislation governing labour markets will provide sharply better benefits and working conditions, thus raising costs.
\item It is important to distinguish among sectors. While financial institutions have been very profitable until recently, manufacturing has generally not been.
\end{enumerate}
\end{footnotesize}
A useful definition of “imbalance” might be a significant and sustained deviation from historical norms in important economic and financial variables; for example, asset prices and household saving rates. The supposed danger would be that these series might mean-revert, with effects on the economy and financial markets that could prove disruptive, perhaps seriously so. In the traditional IS/LM framework discussed above, such concepts play no role because it is a single-period model based on an equilibrium defined solely in flow terms. By definition, stocks and cumulative processes are not considered. In contrast, cumulative processes were at the heart of pre-War business cycle theory, particularly as embodied in the work of those of the Austrian school of thought. The crux of their thinking was that credit growth had the potential to lead to spending misallocations, particularly for capital investment, which would in the end have to be redressed in a disruptive way.

Charts 6 and 7 above indicated clearly how credit has been both cheap and easily available over the last number of years. Given that the global economy, as modelled above, was operating for an extended period at below full capacity, generalised inflationary pressures were absent. This meant in turn that policy had to be tightened less during upturns and could be eased more vigorously during downturns. Moreover, over the last decade or so, the financial system has itself become much more “complete”, implying an increased diversity of credit channels. For all the advantage this brings, it also brings an increased danger that credit will be extended for purposes that in the end prove unproductive, or imply debt levels too great to be serviceable. In sum, over recent years, the fundamental credit factor required to generate imbalances does seem to have been very much in evidence.

Prior to the period of financial turmoil that began in August of last year, there were many financial and economic series in many countries that had deviated significantly from historical norms. Consistent with the premise of this being a credit- (or liquidity-) driven phenomenon, the prices of virtually all illiquid assets were driven to record highs. Consider the associated “conundrum” of low yields on US treasuries, low spreads on high yield and sovereign bonds, high house and equity prices and record prices at global auction houses for antiques, stamps, fine wines and other collectibles. Moreover, it was also the case that the price of buying liquidity (rather than selling it) also fell significantly. Implied volatility in many markets had fallen to record lows by mid-2007,
as the costs of buying insurance against all sorts of extreme events plummeted.42 While it is true that valid, idiosyncratic arguments can be put forward to help explain developments in each of these markets individually, applying the principle of Occam’s razor would seem to have some merit here.

And to these financial imbalances must be added some economic ones. Most notable, the household saving rate has fallen to very low levels in a number of countries as easy access to credit has fostered more borrowing and rising household debt levels. Closely related, the resulting increased demand for housing services has led to a boom in construction which has pushed up that sector’s share of GDP well above normal levels.43 A number of the countries most affected by these phenomena have also been running large current account deficits, as described above. Finally, while corporate balance sheets have generally improved in recent years, many companies that have recently been merged or acquired have been left with very heavy debt loads.

While these credit-driven imbalances might or might not reverse, history indicates that they often do. One possibility is that the reversal begins in the financial markets with a so-called “Minsky moment”.44 Another is that spending spontaneously falters as some catalyst forces borrowers to reassess their exposures to debt and debt service. Where the reversal first manifests itself is less important than the character of the reversal itself. In the same way that real and financial forces interact in the expansionary phase of the credit cycle, they are also likely to interact in the contractionary phase.

For example, as seems to have been the case in recent months in the United States, a sudden loss of confidence in credit markets could lead to a tightening of credit conditions that could reduce spending and lead to an economic slowdown. In turn, this would lead to more credit losses materialising, which could further lower confidence, further inhibit credit growth and so on. And simultaneously, a fall could occur in the prices of previously overvalued assets (like housing), reducing the value of collateral to back loans and, in extremis, increasing the probability and expected costs of bankruptcies in both the real and financial sectors.

History also teaches us that the economic losses associated with downturns of this nature can be very great and the recovery time can be very long.45 This immediately raises two policy questions; how best to respond to such developments, and how to make reforms to ensure that such difficult situations could be made less likely in the future.46 Answers to these questions will, of course, have to be reserved for later sessions of this conference.

42 One market that deserves special attention is the market for credit default swaps, in which one can buy protection against corporate bankruptcies. As of mid-February 2007, the market was pricing in a cumulative five-year default probability for junk bonds of only 14%, whereas the corresponding percentage failures rose to around 22% and 32% following the recessions of 1981 and 1991 respectively.

43 By way of example, residential investment rose to 5.8% of GDP in 2006 in the United States (versus a 30-year average of 4.6%), while comparable numbers for Spain were 9.3% and 5.5% respectively. In the Spanish case, of course, this was partly a response to very significant population growth.

44 Minsky (1992) postulates that, over time, the quality of lending declines until credit is essentially being extended to pay interest on previous credits. As a moment, impossible to predict ex ante, there is a sudden recognition of the counterparty risk inherent in such behaviour, and liquidity in markets dries up. The important point to note is that, for Minsky, the illiquidity in markets is only a symptom of a much deeper problem.

45 Consider in recent decades the long period of German stagnation after reunification, the Japanese bubble period and the Southeast Asia crisis. In each case, difficulties in the real economy were aggravated by banking systems that had become dysfunctional. For a fuller analysis, see Reinhart and Rogoff (2008).

46 A number of BIS papers address this issue. See Borio (2003) and White (2006).
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## Annex

### Pass-through coefficients for individual countries (G10 + Australia)

<table>
<thead>
<tr>
<th>Country</th>
<th>Changes in long-run pass-through</th>
<th>Responses against a 1 percentage point change in the exchange rate</th>
<th>in consumer prices</th>
<th>in import prices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Australia</td>
<td>0.09 → 0.01 [1993]</td>
<td>0.35** → 0.17** [1990]^c</td>
<td>0.69* &lt;-0.09&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>0.30* → 0.04 [1985]</td>
<td>0.19 → insignificant [1984]^a</td>
<td>0.68* &lt;-0.23&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>0.17* → 0.01 [1987]</td>
<td>0.27** → -0.14 [1990]</td>
<td>1.21* -1.00&gt;</td>
<td>0.76** → -0.06</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.13 → 0.12** [1981]</td>
<td>0.17** → -0.03 [1990]</td>
<td>0.79* &lt;-0.12&gt;</td>
<td>0.37** → 0.28**</td>
</tr>
<tr>
<td>Italy</td>
<td>0.33** → 0.08 [1987]</td>
<td>0.32** → 0.46 [1990]</td>
<td>0.62* &lt;-0.65&gt;</td>
<td>0.56** → 0.41**</td>
</tr>
<tr>
<td>Japan</td>
<td>0.26* → 0.02 [1981]</td>
<td>0.23** → 0.05 [1990]</td>
<td>1.26* &lt;-0.76&gt;</td>
<td>0.74** → 0.36**</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.08 → 0.06* [1985]</td>
<td>PT of guilder-mark increased after 1993^h</td>
<td>0.77* -0.17&gt;</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>0.05 → 0.02 [1993]</td>
<td>0.68** → 0.02 [1995]^j</td>
<td>0.59* -0.45&gt;</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.18 → 0.07 [1985]</td>
<td></td>
<td>0.94* &lt;-0.09&gt;</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.18* → 0.08 [1981]</td>
<td>0.29* → 0.01 [1990]</td>
<td>0.47* &lt;-0.11&gt;</td>
<td>0.68** → 0.45**</td>
</tr>
<tr>
<td>United States</td>
<td>0.19 → 0.03 [1981]</td>
<td>0.25** → 0.10 [1990]</td>
<td>0.41* &lt;-0.10&gt;</td>
<td>0.48** → 0.18**</td>
</tr>
</tbody>
</table>

1) ** and * indicate statistical significance at the 1% and 5% levels, respectively. Years in square brackets refer to the timing of a change in pass-through. They correspond to the starting years of the second samples, when estimations are conducted by split sample periods. Shaded cells indicate a decline in pass-through (PT).
2) Elasticities against import prices.
3) Only significance tests at the 5% level are provided. Figures in < > are changes in pass-through coefficients from the 1977–89 period to the 1977–99 period.
11) Marazzi et al (2005). Results of a 10-year rolling regression. Only 5% confidence intervals are provided.
Globalisation has grown as a natural evolution of our era, not only incorporating more countries into the process, but also increasing their mutual interdependence. There are reasons to believe that this phenomenon is not harmless for domestic prices; therefore, the critical question to discuss is: to what extent does globalisation affect domestic prices and what are the channels through which they are affected? This session –enriched, undoubtedly, by Bill's paper– aims, at least, to make headway in some aspects of this question.

My comments are divided in three parts. First, let me introduce some general remarks on the paper. Second, I bring up some specific and constructive comments with the view of complementing the approach of the study. And, before concluding, I focus on the prospects for inflation in the light of current financial turbulences. I put special emphasis on the impact of key factors for emerging market economies such as food inflation and commodity prices.

Bill's appealing work presents a detailed overview of the main potential and not necessarily excluding explanations for the dramatic and persistent diminishing of inflation over the last 20 years. It also poses challenging policy dilemmas that arise from these trends and from the recent developments in the world economy. As he correctly stresses, domestic and global factors seem to have complemented to explain the decline of inflation worldwide.

The author reviews the literature and underlines the limitations faced by each hypothesis to confront the so-called "puzzles". The concept is that, even though each of the explanations is individually unsatisfactory, the aggregate effect of all of them fits the facts and removes all the puzzles.

It may be so, but it is difficult not to feel that this "combined" explanation lacks some sort of quantitative support. As the author correctly points out, “the character of the shocks hitting the global economy has changed over time and some forces affecting inflation have been more important at some times than others”, which clearly makes it a complex task to advance into modeling the study.

Perhaps, as the author says in the introduction, macroeconomics is not really a science, although even that is debatable as science are mostly considered so for their analytical models rather than solely for their ability to forecast.

Nevertheless, based upon Bill's thoughtful piece of analysis, any attempt of further research to quantify the magnitude of the impact of each factor in diminishing inflation will be very much welcomed. It will definitely provide additional light on this issue, empowering the author's work.

Let me turn now to the more specific points I find worth bringing up about this work.

• The author seems to agree that, to assess the relative power of the different explanations, it is sensible not to put much faith in output-gap measures or Phillips curve estimates (domestic gaps are difficult to estimate and global ones even more so, disregarding the fact that it is not obvious that they can be meaningfully defined). Indeed, the robustness of the findings in the literature is too low not to attempt a different approach.

In my view, the definition of output gap may vary when we refer to economies that are normally relatively close to their production frontier. Countries where incipient restructuring processes are under way may allow them to grow above the average for a few years. Those processes would be underestimating...
productive capacity and, therefore, the growth of supply will happen without any overheating. If we add economies of scale into the equation, it is likely that prices will not increase when output is above its empirical potential (or its potential as estimated against a historical trend).

Furthermore, in emerging countries with somewhat informal sectors, it is already hard to determine the effective output level, before even beginning to consider potential output. I always recall the provocative work of Robert Hall (2005), where it is argued that we, monetary policy makers, should not pay any attention whatsoever to neutral values for real variables (such as the output gap). In my view we should look at output gap but do not consider them as the “bible”.

- While pointing to evidence of a decline in the devaluation pass-through in emerging market economies, White writes that it is remarkable that inflation stayed so muted after the Brazilian and Argentine devaluations.

Regarding the latter episode, it must be emphasized that this was mainly due to massive unemployment before and during the crisis, after three and a half years of a continuous decline in output. The significant excess supply of labour was by far the main factor explaining the low pass through. Yet, during the following 12 months, inflation exceeded 40 percent, mainly as a result of realignment in the relative prices of tradable goods. When unemployment began to be reabsorbed, inflation pressures resumed their upward trend.

- A widespread hypothesis holds that lower headline inflation is due to lower imported prices or larger imports of cheaper goods, as a result of lower production costs arising from higher competition in the face of production factor globalisation. However, this essentially microeconomic explanation of such an essentially macroeconomic phenomenon is suspicious. Let me borrow a term coined by Cecchetti, who calls this the “accounting” theory of inflation. The problem arises because prices affected by trade are “relative” prices. The import of a foreign product that is cheaper than the domestic one produces a change between this price and the other prices in the economy, while inflation is actually the aggregate change in general nominal prices. What is fallacious is to take these two notions the same way. This is better appreciated when taking into account that, by definition, when the relative price of a certain good falls, there should be a rise in the price of the other goods against which it is compared.

- The author points out as a “puzzle” that inflation should have dropped so dramatically in many countries with very different institutional arrangements, different monetary policy and, above all, different exchange rate regimes. In particular, he stresses that, during much of the period under review, many of these countries had fixed exchange rate regimes.\(^1\)

However, calling it a puzzle seems exaggerated. Lower inflation in my opinion is the consequence of a more “responsible” management of fiscal, monetary and wages policies, which might be a result of a growing awareness of the costs of inflation. These policies can be put into effect by diverse means and through different institutional setups. There isn’t a one-size-fits-all sort of recipe for implementing a more responsible economic policy.

In the paper, the role played by monetary, fiscal and wage policies seems to be rather underestimated. In my view, the contribution of better and sounder policies to explain the trend of domestic inflation in both industrial countries (ICs) and emerging markets economies (EMEs) over the last 20 years has been crucial. The empirical literature has provided vast evidence, particularly for the United States, that changes in policy objectives and management have been important to explain the decline of inflation since mid 80’s.

In developing countries, where fiscal imbalances were a main source of monetary instability and inflation, improvements in tax and expenditure policies contributed significantly to explain the decline of inflation since the early 90’s.

- Bill also mentions that it is strange for inflation to remain so low given that monetary conditions seem to have been particularly lax for a rather long period of time. This is a true puzzle. However, considering the recent trend in certain variables related to the opportunity cost of keeping money, as well as the high global growth in the past years, we cannot rule out that,

\(^1\) Actually, another way of looking at the phenomenon is that it does nothing but providing an additional reason to understand why lower inflation was so widespread. In fact, since countries that peg their currencies to another, in this case the US dollar, actually lack an independent monetary policy and borrow it from the Federal Reserve System. As the Fed has pursued relatively prudent policies, in a forty-year term it can be expected that all countries with currencies pegged to the US dollar will have a lower inflation.
in real terms, the demand for money has genuinely increased. Conclusive evidence to make this point is hard to find yet. Further research on the subject should add some light on this issue.

- White remarks the low cost of buying protection against corporate bankruptcies until the outbreak of the August crisis. He compares the cost as of mid July 2007 with the cost in the recessions of 1981 and 1991. However, the comparison is not totally valid because the depth and liquidity of the credit default swap (CDS) market in 2007 was enormously higher than in 1981 and 1991.

- Let me emphasise though, that financial integration should be given a larger role in the discussion between globalisation and inflation. In particular, when assessing the effectiveness, credibility and commitment of monetary policy in emerging market to deal with inflation and inflation expectations. In my opinion, the depth of the financial system and its integration with capital markets has a powerful disciplinary effect on monetary policy as it reduces incentives to pursue expansionary policies as foreign capital would flow out to other markets with more predictable returns.

Also, financial development allows agents to substitute assets in local currency to protect themselves against inflation, restraining again the discretionary use of monetary policy. Moreover, financial integration allows financing current accounts deficits, weakening the link between domestic output and demand. Then, an increase in domestic demand would translate into larger imports and not necessarily into higher prices.

My opinion is that “financial integration” measures (like the sum of foreign assets and liabilities over gross domestic product –GDP) seem to be better indicators of globalisation as a “price container” than “real economy” measures (such as the trade to GDP ratio).

- White mentions the possible re-emergence of inflation as one of the two main problems going forward (the other being an unwinding of the various “imbalances”). But he does not discuss one very interesting aspect of this development: the recent pick up in inflation at the international level is to a great extent a consequence of the process of catching up of billions of people in the developing countries to levels of consumption closer to those in developed countries, including changes in dietary patterns. Let me hypothesise that we are approaching a true law of one price, with developed countries converging top-down and emerging countries bottom-up.

- There is a risk that the insolvency that lies at the base of the current crisis (although manifested until now largely in a lack of liquidity) may impart an inflationary bias to the system and that the unwinding of the imbalances leads to more inflation. The hypothesis that states that globalisation may reduce policymakers’ ability (and, consequently, incentives) to temporarily stimulate output was perhaps never heeded by policymakers. Certainly, they do not seem to be acting in accordance to it now.

- Also, we should not forget that there is an additional “insolvency” looming in the horizon: the unfunded liabilities of social security systems in developed countries. There may be a temptation to inflate that burden away. Thus, there are both short-term and long-term reasons to expect a higher inflation rate in the future than during the “great moderation” period.

Let me turn now to my last comments.

Regarding commodity prices and their impact on inflation, the increasing trend is largely due to its own fundamentals, including above all the major growth in emerging countries over the past few years, biofuel development and structural changes in livestock feeding.

Nevertheless, seasonal factors are also influential; among them, it is worth mentioning supply shocks from climate hazard and geopolitical conflicts, and the increase in speculative demand to protect against us dollar depreciation and financial asset loss, and inflation.

Agricultural commodities in my view are more resilient to a recessionary outlook by their lower income elasticity and the relative strong fundamentals of emerging economies, where demand increased substantially.

Soft commodities accumulate increases ranging from 100% to 150% since the beginning of the century with an acceleration in 2007-2008 that is leading to historically low stock to consumption ratios.

In the cases of soy and corn, where Argentina is a world-class producer, demand is consistently outpacing supply due to a hike in demand for food in the emerging world and a growing demand for
biofuels in the industrial countries. While supply stays in historically high levels it cannot keep up with the demand forces. Just to give you an example, corn inventories are 30% below the average of the last ten years. The outlook of financial volatility will continue to be a source of speculative demand for commodities as hedge for inflation. In addition, the continuity of monetary policies aimed at reducing reference rates would likewise aid speculative demand for commodities.

As the paper points out, food and energy impacted on the acceleration of consumer prices, especially in emerging countries, where foodstuffs have a significant weight in the consumption basket. However, the prices of other goods and services remained relatively contained. Insofar as structural factors prevail over temporary ones, food and energy prices would more likely have second-round effects on other goods and services through cost pressures. While by the end of 2007 headline inflation accelerated in close connection with the behaviour of core price indices, these second round effects have not materialised yet.

Food prices can potentially lead to wage demands which, given the stickiness of this component of the cost structure of the private sector, would result in subsequent increases in general level. However the risk is more evident in emerging countries than in developed ones. For example, the average wage in China increased by 26.9 percent year-over-year in the third quarter of 2007, significantly above the average of the past five years (16.8 percent) and well above the consumer price index increase. So, there might be some evidence that the downward pressures in consumer goods that come from China are reaching an end.

To sum up, we central bankers around the globe face significant dilemmas and challenges. In spite of the opposing forces on inflation prospects, I expect that the slowdown in global economy will ease excess demand pressures and at the same time it will contribute to moderate marginally the increases in commodity prices.

However, due to the structural factors in the agri-bussiness sector worldwide, I do not expect this scenario to change significantly.

Emerging markets economies seem to be better prepared to face this new scenario and the slight acceleration in prices. This is mainly due to sound macroeconomic policies and a favorable international context with commodity prices facing a long favorable cycle. And, in my view, policy makers in emerging markets are well prepared to face some social tensions that could come as a result of the higher commodities prices.

In a nutshell, the challenges that globalisation poses due to its impact on domestic prices are significant. But, now policy makers around the globe seem to understand that recipes vary from one case to the other in this complex scenario. This progress is, obviously, welcomed. Especially for us, emerging markets’ policy makers, as we have to catch up with growth and macroeconomic stability, deal with the tensions derived from buoyant economies and, most importantly, build credible institutions.

In fact, it is more a synchronic than a sequential two-fold challenge: advancing towards the development of our economies and constructing solid institutions simultaneously. To implement these policies effectively, the only possible way is to be firm in the implementation of consistent (I mean consistent with the history and idiosyncrasies of each economy), flexible and gradualist approach that has guided us in recent years.
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Janet L. YELLEN
President and Chief Executive Officer
Federal Reserve Bank of San Francisco

I would like to thank Governor Noyer and the Banque de France for organising this stimulating conference on globalisation, inflation and monetary policy. With strong global growth boosting oil, food and materials prices, the linkages between globalisation and domestic inflation – one focus of Bill White’s interesting paper – are very much on the minds of monetary policymakers these days. I will return to this development as I conclude my remarks.

Bill White’s paper is an ambitious attempt to identify the main factors responsible for the decline in global inflation since the 1970s and the persistence of low global inflation in recent years. The stylised facts about inflation that Bill documents are striking. Over the past 25 years, the level and volatility of domestic inflation rates have declined significantly worldwide. The decline began in industrial countries in the early 1980s and then occurred in many developing countries in the 1990s. In addition, the inflation process has changed noticeably over this period. Inflation expectations have declined and become better-anchored, shocks to inflation have become less persistent, and there is less pass-through of shocks to energy and food prices and exchange rates into the overall inflation rate.

These developments raise two basic questions about the determinants of domestic inflation which Bill addresses. First, why did inflation fall in the 1980s and 1990s in so many countries? Second, is there a common factor or set of factors that explains why inflation has remained low in these countries in recent years despite, in Bill’s view, increasing monetary stimulus?

Bill considers four possible explanations, finding each to have serious shortcomings.

The first explanation is “more effective central bank policy”. But, in Bill’s view, this does not explain why inflation fell sharply in countries with different degrees of economic and financial development, central bank independence, and exchange rate regimes. Nor does it account for why inflation has remained low recently despite accommodative monetary policy.

The second is domestic deregulation. Here he argues that it is unlikely to have been of sufficient magnitude to explain the phenomenon of sharply lower inflation worldwide, particularly since the extent of deregulation has varied across countries and has been notably lower in emerging market countries.

The third explanation is excess global saving, or equivalently, a global investment “drought.” He argues that any resultant decline in aggregate demand might have been expected to lower not only inflation but also output growth, contrary to the robust growth evidenced worldwide, until this past year.

Fourth is globalisation. He argues that it explains neither the sharpness with which inflation declined in the first place in the early 1980s in industrial countries, nor the long delay before inflation began to come down in emerging markets.

Because no single hypothesis adequately explains the full set of “stylised facts”, Bill advocates a global aggregate demand-aggregate supply approach in which all four explanations matter to inflation to varying degrees and at varying times. Demand-side factors, driven mainly by tighter domestic monetary policy, were central to the decline of inflation in the 1980s and 1990s. Supply-side factors, associated with both domestic deregulation and globalisation, as well as lower aggregate demand associated with excess global saving, all have played a role in restraining inflation more recently.

I find Bill’s complementary approach – giving weight to factors that are global in scope and have impacted both demand and supply – to be sensible and appealing. For the United States, I agree that all four factors are relevant to inflationary trends. That said, I would probably ascribe somewhat less importance than Bill to the role of globalisation and somewhat more to effective monetary policy in explaining why inflation was tamed in the 1980s and 1990s and why it has remained low since then.

With respect to globalisation, I agree with Bill that, through its effect on relative prices, globalisation has created both tailwinds and headwinds for central banks...
in their quest for price stability. Such shocks do not, in my view, alter in the least the ability of a central bank to attain its desired inflation objective over the medium term in a flexible exchange rate regime. But they do affect inflation in the short run, and they can make the attainment of a particular inflation goal easier or more painful by impacting NAIRU (non-accelerating inflation rate of unemployment), at least for a time. Increases in the prices of oil and other commodities due to strong global growth, have certainly created headwinds in recent years. In contrast, declines in the relative price of manufactured imports, due partly to the rapid expansion of capacity in China and other emerging markets, have created tailwinds that, for a time, made the Fed's job somewhat easier. The impact on inflation was similar to that associated with the pickup in productivity growth during the second half of the 1990s.

In my view, however, the impact of the tailwinds associated with global competition are frequently overstated. Most research to assess the magnitude of direct and indirect linkages between import prices and inflation for the US and other industrial countries finds that the impact, thus far, has been surprisingly limited. For example, a 2006 IMF analysis calculates that non-oil import price reductions lowered US inflation by an average of 1/2 percentage point a year over the period from 1997 to 2005. This finding is in line with an analysis at the Federal Reserve Board that estimates that lower (core) import prices reduced core US inflation an average of 1/2 to 1 percentage point over the past 10 years. A Fed study focusing specifically on China’s impact on US consumer prices also finds only modest effects – since 1993, about 0.1 percentage point per year. Remember that, even now, non-traded goods and services represent the large majority of US domestic consumption.

Bill emphasises, and I agree, that the effect of globalisation on inflation may operate not just through import prices but also through other channels, including those relating to the labour market. Globalisation has certainly enhanced the opportunities for firms to substitute imports for domestic output. And firms operating plants in several countries are increasingly able to shift production from domestic plants to those in lower-cost countries. These growing opportunities for substitution could certainly affect wage and price dynamics, explaining, in particular, why the Phillips curve appears to have flattened in many industrial countries.

A review of the literature suggests that there is substantial empirical evidence that inflation in the US has become less sensitive to measures of the domestic output gap. One possible reason is that firms have become less willing to grant wage increases that would impair their cost-competitiveness, even in the face of tight domestic labour markets. This might diminish the sensitivity of wage inflation to domestic slack. However, San Francisco Fed staff find no change in the coefficient on the unemployment rate in wage-price Phillips curve in recent years. This suggests that, insofar as globalisation has flattened the price-price Phillips curve, it is more likely to have done so through changes in firms’ ability to mark up costs in setting prices than through changes in the effects of domestic slack on wage growth. This finding seems consistent with recent research at the Federal Reserve Board that finds evidence that US tradable goods prices and markups are increasingly sensitive to movements in foreign prices.

A flattening of the Phillips curve could explain why inflation has become less volatile in industrial countries. However, the finding of a flatter Phillips curve is open to differing interpretations. For example, a Board study estimates Phillips curve equations over the period 1977–2005 for 11 OECD countries and found the sensitivity of inflation to the domestic output gap has declined over time in many of the countries in the sample, but it found no evidence that this decline was attributable to globalisation. Other studies by the OECD and by Larry Ball draw similar conclusions.

It is also worth considering the possibility that globalisation could be holding inflation down by making workers in the US and elsewhere more fearful of job loss, thus lowering wage demands. I agree with Bill that this may account for the declining wage share in output in the G10 countries and could explain why, in the US at least, there

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1. This discussion draws on an earlier speech. See Yellen (J. L.) (2006).
4. See Kahn (S.), Marazzi (M.) and Schnider (J.) (2006).
7. See Ihrig (J.), Kann (S.B.), Lindner (D.) and Marquez (J.) (2007).
8. See Pain (N.), Koske (I.) and Sollie (M.) (2006); Ball (L.) (2006).
has been so little evidence of “real wage resistance” in the face of energy, food, and import price shocks. The empirical challenge is to estimate the effects of globalisation through these channels when the actual substitution of inputs and outsourcing is limited, but the threat is large.

Provocative research at the BIS suggests that globalisation is affecting inflation in yet another way, namely, by making domestic inflation increasingly sensitive to foreign, rather than domestic output gaps. This phenomenon could reflect an intensification of the degree of effective competition between domestic and foreign workers in the labour market due to globalisation and might explain why inflation movements are so highly correlated across countries. Empirically, Borio and Filardo find that a measure of the global output gap has a significant effect on inflation in estimates of Phillips curve equations for a sample of 16 countries. As Bill is careful to acknowledge, however, other empirical studies have drawn different conclusions. For example, the Board study I just referred to does not find any significant effect of foreign output gaps on domestic consumer price inflation. Moreover, San Francisco Fed staff found that measures of world capacity are not significant when added to the Phillips curves that they use to forecast inflation, and that the usual measures of domestic labour and product market slack retain their significance.

As I mentioned at the outset, I probably attach more weight than would Bill to effective monetary policy in explaining why inflation was tamed in the 1980s and 1990s and why it has remained low since then. So let me turn to the two problems that Bill cites concerning the role of monetary policy in explaining the stylised facts about inflation. First, Bill said he was puzzled that such a diverse set of countries have appeared to be so successful in bringing down inflation through greater monetary policy credibility. I don't find it so puzzling.

The policy shift was in part a response to earlier adverse experiences with high and variable inflation in industrial countries in the 1970s and in many emerging markets through the 1980s. Governments in the industrial countries, including the US, reacted first by strengthening institutional frameworks to foster monetary stability. For example, some industrialised countries, such as New Zealand, Canada, and the UK adopted explicit inflation-targeting regimes. Others, like the US, Germany, and Japan, have used less formal, but still forceful, means to convey the significant weight they place on low inflation. Still others, such as the Southern European countries of Portugal, Italy, Spain, and Greece, succeeded in lowering inflation to meet the conditions of joining the European Monetary Union.

The later shift to lower-inflation policies in emerging market economies occurred in part because they could take advantage of low foreign inflation, in part because they could learn from successful policies elsewhere, and in part because of public dissatisfaction with inflation. Globalisation of capital markets probably also strengthened the commitment of emerging market policymakers to macroeconomic stability. These countries' interest in attracting capital inflows coupled with their recognition of the potential macroeconomic damages resulting from capital flight must surely have disciplined the conduct of monetary policy. As Bill pointed out, their approaches differed. Some emerging markets first stabilised inflation by creating currency boards and credibly pegging to foreign countries; here Hong Kong in 1983 and Argentina in 1991 come to mind. Others stabilised inflation by pegging temporarily before allowing more exchange rate flexibility, as in the case of Israel in the mid-1980s and Brazil in the mid-1990s. More recently, some emerging markets have adopted inflation-targeting frameworks to provide nominal anchors: Korea in 1998, Brazil and Mexico in 1999, and Thailand in 2000 are examples.

Second, Bill said he was puzzled about why inflation has not been higher in recent years, given what he regards as accommodative monetary policies in many countries, that is, low real interest rates, rapid growth of money and credit, booming asset prices, and policy rates significantly below levels implied by Taylor rules.

I frankly don't consider this much of a puzzle at all. The stance of monetary policy must be judged not on the basis of money and credit growth but rather on the level of the real policy interest rate compared with its neutral or equilibrium value. That value can vary over time and, in my estimation, it was quite low in the United States and many other industrial countries following the bursting of the tech bubble, the collapse in investment spending,

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9 See Barro (C.) and Filardo (A.) (2007).
and the 2001 recession. Indeed, the Federal Reserve worried in 2003 about the possibility of deflation and the prospect of hitting the “zero bound”, a situation that research shows is best avoided by cutting rates early and substantially. A decline in the estimated equilibrium real rate coupled with a desire to use policy aggressively to avoid the zero bound, explain why, in the United States, the policy rate may have fallen below levels implied by Taylor rules.

As Bill details, many emerging market economies experienced a savings glut, or more accurately, an investment drought, in the aftermath of the financial crises of the late 1990s and the subsequent tech bust. Such drags on aggregate demand necessitated low real interest rates to offset them, and the boom in housing, which occurred not only in the United States but around the globe, provided an offset to restraint in other components of aggregate demand.

During the past few years, strong global growth has diminished slack in labour markets around the world and pushed up energy and commodity prices. From the US standpoint, whatever tailwinds may have resulted from falling non-commodity import prices waned as the dollar declined. Even so, core inflation in the United States and most other industrial countries has remained reasonably well contained. Bill credits supply-side factors associated with both domestic deregulation and globalisation in holding down inflation. I consider it a mistake, however, to downplay the role of monetary policy, in particular its credibility. In the US case, it is the credibility of monetary policy that, in my view, has helped to ensure that the inflation shocks resulting from energy, food, materials, and exchange rates do not spill over into inflation expectations and wage setting, and thus have only transitory effects. Credibility accounts for why inflation appears generally to have become less persistent. Households and firms believe that such shocks will not be allowed to feed into further increases in inflation, so inflation expectations have become better anchored. Indeed, much research documents that movements in energy prices have had far smaller effects on core inflation since the mid-1980s, and the most compelling reason for this shift is the credibility of monetary policy.

Let me conclude by looking forward, offering my personal assessment of where domestic inflation is heading in the US. Recent inflation performance has certainly been disappointing and the disappointments stem largely from strong global headwinds. Rising food and energy prices have boosted the total PCE price index by 3.7 percent over the past 12 months and 5.4 percent during the past three. Excluding food and energy, the core PCE price index is still up 2.2 percent over the past 12 months, an outcome that partly reflects pass-through from the drop in the dollar. Even so, I expect both total and core inflation to moderate over the next few years, edging down to under 2 percent, an outcome that is broadly consistent with my interpretation of the Fed’s price stability mandate. And I see the risks to this outcome as roughly balanced.

My forecast of moderating inflation assumes that labour compensation will continue to grow, as it has in recent years, at a reasonably modest pace. This in turn assumes that inflation expectations will remain well-anchored, as they have been, and also that workers will not through their bargaining offset the real losses resulting from higher food and energy prices. It importantly assumes that energy and food prices will stabilise near their current levels so that the inflationary impetus from these sources will dissipate over time. Bill rightly points out that these assumptions cannot be taken for granted. Rising food and energy prices have lowered the purchasing power of the median worker and, as Bill comments, some “pushback” could occur. The expectation that energy prices will stabilise near their current levels is consistent with futures prices, but such expectations have been dashed many times over the past few years. With respect to inflation expectations, Bill rightly cautions that “the experience of past errors should not be forgotten today when it is once again being suggested that inflation expectations are sticky (now at low levels)”. I agree that the Fed certainly cannot afford to take for granted that inflation expectations will remain well-anchored.

At the same time, there are downside inflationary pressures relating to the slowdown in the US economy. Bill notes, and I agree, that the US economy is particularly exposed to downside risks from the unwinding of the housing bubble and disruptions in financial markets. There is some slack now in the US labour market and, if these downside economic risks materialize, quite a bit more slack could emerge. Even with a flatter Phillips curve, such a development would place some downward pressure on inflation. It is this unpleasant combination of risks to both inflation and employment that the FOMC must balance as it assesses the appropriate path for monetary policy going forward.
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I would like to express my thanks to the Banque de France for inviting me to this important symposium. I enjoyed immensely reading Bill White’s paper on globalisation and determinants for domestic inflation. I would like to make the following remarks.

First, globalisation has made great contributions to the low worldwide inflation for the past ten or fifteen years. This year is the 30-year anniversary of economical reform and open-door policy for China. It took some ten years for China to integrate into the world economy. In the past fifteen years, China has provided a lot of low-cost goods with reasonable and improving quality to the world market. I think, as many speakers and the commentator have said, that this has contributed a lot to the low level of inflationary pressures during the past decade.

Now, if you look at China and India, they joined the game, both in terms of manufacturing consumer goods and consumer electronics, as well as software services provided by India, and together they contributed a lot to the low inflationary environment. I am not sure whether there is a three billion labour force joining the game. From the central planning economy to market economy, there is probably about one billion of labour force joining the market economy. My estimate is that over a hundred million labour force in China joined our opening sector of the economy, which is closely related to export. So certainly with that kind of low labour cost, the costs of production of goods lowered tremendously.

In Bill’s paper, he discussed several scenarios, several reasons for a low inflation period. He asked whether it is good monetary policy, whether it is global competition, whether it is saving a lot, whether central bankers have done a good job controlling inflation. And I think that this has to do with globalisation. The globalisation in the global market of consumer goods, globalisation especially on free trade and globalisation in the financial market have contributed a great deal to the low inflation period.

My second comment is about recent developments and changes of the whole picture. In recent developments you can see that there is a quick catch up of the cost side, in terms of rising asset prices in China and rising commodity prices in the world and important changes in the labour supply picture. We all know that during the centrally planned period, probably more than forty percent of the world population lived in a centrally planned economy. That implies that it tied up over forty percent of the labour force of the world in very low efficient and centrally planned economy. When you liberalise that part of labour force into a market economy, it would provide tremendous energy to the market. In China, many economists1 find that we are entering the so-called period of “Lewis turning point”, which means that we are entering a period in our economy during which we will see that the infinite labour supply of the blue-collar labour period is about over. This means that from 2006 to 2010, this is probably the five-year period we are entering of the so-called “Lewis turning point”. We have observed that on the Pearl River Delta and also the Yangtze River Delta there is already a labour shortage phenomenon occurring. When that happens, you will see wage increases. And also we are emphasising on the labour standards in terms of medical insurance and social security, urbanisation and education for the rural migrant labourers working in the urban area and for

their kids, and also environmental protection, energy efficiency. All the above will increase the costs, so that we will ask the question: with these costs gradually increasing, is there somewhere in the world where there is still a large amount of potential low cost labour force? The answer is yes for there probably still are some countries in Africa, not very large, where there is a lot of potential low cost labour force. I hope that this century, and the sooner the better, there will be a great development in Africa. But it will take a lot of work to do and a long time in infrastructure building up, education and the labour training for that to happen. I would say that if you look at the current picture, especially if you look at China and India, you will see that there will be a gradual increase of cost. Plus, China will concentrate more in the future on domestic demand, so that we will rely less and less on exports. So the environmental policy and the labour standards will continue to improve, and that will increase the costs.

My third remark is about the future. In the future, we will see a moderate price increase period, in terms of commodity prices, in terms of environmental protection costs, in terms of wage and salaries, labour standards and medical insurance, social security, and so on and so forth. So the costs are increasing, together with plenty of liquidity in the market, with relatively low interest rates. If you look at money supply and real interest rates in the major economies, the United States, Euro area and China, you will see that the monetary conditions are rather loose. We have tremendous liquidities. I believe that inflation is a monetary phenomenon, so that I will see in the future that we are going to enter a moderate price increase period. Why isn't there a severe inflation? I think the monetary policy has been improving tremendously and all major monetary authorities are very committed to fight inflation, so I believe that we are going to have a moderate price increase.

The second characteristic of this period is that there is increasing interdependency of global monetary policy. Globalisation, especially the integration of the financial markets, makes the central bankers very cautious in responding to inflationary pressures. We all understand the necessity of why the Federal Reserve cut interest rates dramatically recently, but we also observe other major central banks. Because they are concerned about the inflationary pressures, they are responding very cautiously. If you look at the theory, if you look at the impossible trinity scenario, you will see that as long as we do not have a fixed exchange rate, monetary policy should be independent. We all know that this is independent monetary policy, but interdependency and concern about the global situation, the whole picture, will increase.

My conclusion is that the super good time, high growth with low inflation period, is probably going to phase out gradually and that this is a test to the major central banks, whether they have the monetary policy framework of the inflation targeting, or the twin pillar approach, or the monetary policy considering employment and so on and so forth. We all have to face a new challenge. So with a much better monetary policy framework, I believe that we are going to have a reasonable and moderate price increase era.
Financial globalisation, growth and asset prices

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Financial globalisation and financial innovation

I have been asked to introduce the round table with a group of very distinguished panellists who will discuss the topic of “Financial globalisation, growth and asset prices”. I was pleased to see that the panellists, through their different fields of expertise, will be able to illuminate us with a broad range of ideas on this topic.

Before giving them the floor, let me raise a few issues. Financial globalisation, like most good things in life, has its doses of risks and challenges. The recent wave of financial globalisation, which began in the mid 1980s, has been seen as a catalyst for financial innovation. We have witnessed borders opening for banks and other market players. As a result, global financial markets have become deeper and more diversified and financial products have become more complex. In response to these changes, supervisors and the industry have had to keep pace by adapting the regulatory structures. The Basel II framework in that sense is inherently flexible with its risk-based approach. Even so, as lessons from the turmoil become clearer, it may be necessary to fine-tune certain elements of Basel II.

To make our work as central bankers even more interesting, financial globalisation has changed the environment for monetary policy with the growth of cross-border financial flows and the transfer of risk across different jurisdictions. In response, central bankers have also taken a number of steps to adapt their strategies to support financial markets and price stability. Just to mention a recent example, the collective actions among central banks to facilitate liquidity provision in short-term money markets were an important initiative in this sense.

But to what extent does increasing financial globalisation affect the efficiency and stability of asset prices and economic performance in general?

Financial globalisation, growth and asset prices

In the past years, as financial globalisation and deeper financial markets became more prominent there was an improvement in the stability of the macroeconomic environment. Global inflation was contained, accompanied by a decline in the volatility of economic growth, exchange rates and interest rates leading to the so-called Great Moderation. These factors contributed to improving market sentiment. Liquidity seemed plentiful and this perception had a strong influence on the behaviour of investors and their risk tolerance, which grew with the search for yield. Alternative asset classes began getting large injections of liquidity. Real estate, high risk credit products, private equity and art, for instance, saw their prices rise considerably, which increased the potential for financial bubbles. Capital flows to and from emerging markets have also been surging. In the past five years, emerging markets have seen capital inflows almost six fold, raising challenges for many economies.

This environment contributed to a new trend in financial innovation, mainly through securitisation and a change in banking strategy to the so called “originate-to-distribute model”. This model allowed banks to originate loans, pool credit risks and sell them on to investors. The securitisation of mortgage loans became an important platform for the originate-to-distribute model. Initially, a problem that started in the US housing market, spread rapidly across borders and across other financial markets, particularly to where credit risk had been transferred but not exclusively. There continues to be a generalised uncertainty related to valuation losses of securitised products (USD 250-600 billion), the use of credit ratings, possible spillover effects to other financial institutions (including monoliners) and the overall impact of the turmoil on global economic growth. The recent developments in the US and in foreign financial markets are stimulating considerable review and analysis.

1 B. Bernanke in a speech given in 2004 indicated that among the explanations for the Great Moderation (the decline in economic volatility in the past years) were structural changes led by deeper financial markets, a more stable monetary policy and good luck.
Regulators, supervisors, central banks, accounting boards, rating agencies and academics are trying to distil lessons from the crisis. To help address and coordinate this endeavour, the Financial Stability Forum for instance, has set up a working group on Market and Institutional Resilience. This group has analysed the causes of the market turbulence and proposes policy directions to strengthen financial resilience. The results of the report will be available in April 2008.

The quality of financial globalisation matters

If markets remain fragmented, not all the fruits of financial globalisation can be reaped. Consequently, we probably need to work more in a concerted fashion to enhance the quality of globalisation. Let me address some lessons from the recent turmoil.

• First, I would stress that complacency in risk management is often fertile soil for financial distress. Complacency spread through global markets has contributed to over-optimistic assumptions for market liquidity conditions and led to a great reliance in rating agencies.

• Second, in the past, liquidity risk management had not been at the centre stage. Most improvements in liquidity risk management were tailored for each country. Today, there is consensus among supervisors and the banking industry that liquidity risk management needs to be upgraded to capture the implications of a more globalised financial system and the rapid growth in financial innovation.

• Third, the originate-to-distribute model encountered several shortcomings. The sub-optimal incentives in the chain of origination, acquisition and distribution led to a poor assessment of risks, based on the expectation that credit risk could be quickly transferred through securitisation. Another important weakness was the inadequate information on products and the quality of underlying assets. Moreover, the model's dependency on market liquidity made it extremely vulnerable.

• Fourth, recent events that have led to changes in the implementation of monetary policy through open market operations. G10 central banks took coordinated measures to bring money market rates back down to target levels.

• Finally, from our specific experience at the Dutch Central Bank, I must add that the combination of central bank and supervisor led to a successful internal communication structure and to timely interaction with the financial industry during recent events.

Follow-up issues

To conclude, the pace of financial developments has accelerated with financial globalisation. Consequently, we must remain exceptionally alert and flexible to encounter adverse dynamics that may threaten financial or economic stability. In my opinion, developments that should be followed closely are the strengthening of risk management and the implementation of Basel II. There are other interesting issues to follow-up such as the role of sovereign wealth funds in a context of globalised financial markets. I trust that the panellists will focus on this and other interesting issues in the coming hours.
Two asset prices that are of particular interest for policymakers in most small open economies are house prices and the exchange rate. Over the past decade, the “global savings glut”, declining interest rates and a search for yield drove up exchange rates for many small open economies such as Australia and New Zealand and also helped fuel a sharp increase in house prices in many countries. Recent developments in global markets stand to have further impacts on housing markets and exchanges rates and create some new challenges on both the monetary policy and financial stability fronts.

The experience of the past decade is now doubtlessly familiar. The decline in interest rates was reinforced by the “Great Moderation” in the apparent variability of most economies. Investors became more willing to accept risk, partly in order to maintain returns as risk free interest rates dropped, and partly because the risks seemed smaller.

From a monetary policy perspective, the past decade highlighted some of the challenges that we face in trying to run an independent monetary policy in a connected world. In targeting inflation, as many small open economies do, we set a domestic policy interest rate, which has some bearing on domestic monetary conditions. But domestic monetary conditions also hinge on what is happening to interest rates across the rest of the world. Sometimes global interest rate developments are “in sync” with domestic monetary policy and support it. At other times, they are “out of sync” and can work against it, making monetary policy spongier, and perhaps less effective at the margin than would otherwise be the case.

At times over the past decade, monetary policy in New Zealand and some other smaller open economies had to contend with global interest rates that were considerably lower than domestic economic conditions would warrant. Financial institutions in these countries were able to access cheaper funding than they could obtain domestically, exchange rates rose to uncomfortable levels on the back of the carry trade and some asset markets—such as housing—were able to surge on the back of lower effective interest rates than domestic policy settings might suggest.

A strong element of the capital flow into New Zealand—and this is a financial innovation, though now a relatively old one—has been the issuing of fixed income NZ Dollar securities to international retail investors by very high quality international names such as the World Bank. The willingness of these investors to take NZ Dollar risk at elevated currency levels has helped keep the currency relatively high and short term interest rates a bit lower than would otherwise have been the case. This has been far from an ideal mix of monetary conditions at a time when most of the inflation pressures have been concentrated in interest rate sensitive sectors like the housing market. The possibility of collateral damage on the country’s tradable sector has to be taken seriously.

In New Zealand, we have done significant work, documented in a number of studies on our website, on whether there might be additional regulatory measures or other policies that may have helped adjust the balance of monetary policy pressure to better match the underlying inflation pressure. It will not surprise anyone in this room to know we have not found a “silver bullet”, although analysis continues.

Besides retail investors, we have also seen the presence of institutions such as hedge funds engaged in the “carry” of funds borrowed in low yielding markets to invest in markets like New Zealand. An unresolved debate is whether these hedge funds actually provide additional market liquidity for smaller economies or whether they effectively soak it up—particularly in troubled times. The role that these hedge funds can play at the stage where an over-valued exchange rate begins to adjust back to a more normal level is also unclear. Whether hedge funds assist the adjustment process or whether they make it more abrupt and costly, is debatable.

Many countries have seen pronounced strength in property markets over the past decade. Strong residential property markets have often gone hand in hand with strong consumer spending. New Zealand has been a leading example. House prices have risen substantially as a ratio to income over the past five years. As longer term interest rates have risen recently in New Zealand, and housing turnover has slowed, the elevated level of house prices has looked increasingly unsustainable.
One interpretation of recent housing cycles is that a “glut of capital” lowered interest rates and put upward pressure on house prices, creating a persistent tailwind for some economies. As houses change hands and are more heavily borrowed against, equity is withdrawn by the seller, who may often choose to spend the money. This has helped to keep demand very robust in New Zealand for a number of years and seems to have supported consumer spending as well.

With recent developments in global finance markets, we now seem to be moving into a new era and policymakers are facing some new challenges on both the monetary policy and financial stability fronts. We are only just beginning to understand what is prompting such a marked shift away from risk taking and the pursuit of yield to heightened risk aversion. A ready pool of investors and an appetite for risk appear to have encouraged substantial financial innovations and the creation of a new set of financial instruments, some of which ultimately proved to be a lot riskier than they initially seemed. Much of this activity was concentrated in the US.

The creation of these instruments involved the following elements which I only mention here, but are likely to be worthy of further study and analysis in years to come:

- Origination of credit on riskier terms. A clear example is the covenant-lite debt that private equity firms were able to obtain until 2007, and the increased flow of mortgage lending in the US that would previously not have occurred.

- Contracting out of origination, and securitisation of the completed loan, both of which have at least the potential to create moral hazard.

- Pooling of risk and assumptions about correlation which were based on historical data but did not always prove accurate _ex post_.

- Credit guarantees, often from the so-called “Monoline” insurers.

- The use of conduits by financial institutions to expand credit creation and asset holdings above and beyond the usual balance sheet constraints.

- A relatively relaxed approach to liquidity risk, with an implicit assumption that wholesale funding was not at risk –as seen in the Northern Rock case, for example.

These events are having important implications for smaller open economies, including New Zealand, Australia and the economies of Scandinavia and Eastern Europe which have a substantial reliance on the international capital markets. Most of these countries have not been very directly affected by the problems arising from the complex innovations described above. In New Zealand, for example, we have not really seen the development of any of the complex financial instruments at the heart of the US’s current financial problems. However, as a net borrower and a participant in international markets, New Zealand is certainly affected by the sharp changes in interest rates, credit spreads and exchange rates that have occurred as a result of recent developments. We are currently seeing increased funding costs in global markets for reasons that are largely not of our own making.

We currently face something of a mixed bag at present in terms of global interest rates. At one level, a loosening in monetary policy in the US and some other countries is putting downward pressure on medium to longer-term interest rates. For those smaller economies like New Zealand and Australia which are facing relatively strong inflation pressures at present, that would ordinarily make the monetary policy challenge harder. On the other hand, higher credit spreads are actually increasing the effective cost of funds for many of our financial institutions and businesses accessing funds through the global capital markets. So we actually face some quite difficult judgements in assessing how policy settings and global conditions will affect domestic economic activity and inflation in the months ahead.

Despite increased global risk aversion, it is not yet evident that the carry trade is dead. We have still seen a relatively strong issuance in the New Zealand dollar in recent months _via_ Uridashi bonds for example. The New Zealand dollar remains at relatively high levels and has recently been at a post-float high against the US dollar, albeit largely reflecting the weakness in the US dollar itself. However, as one might well
expect, exchange rate volatility has been high of late and there is perhaps more than the usual uncertainty around the likely path of the exchange rate over the months ahead.

With banks’ funding costs on the rise, mortgage rates have been increasing in New Zealand and Australia and in some other small open economies recently. This occurs at a time when New Zealand’s housing market is already slowing due to the effects of past policy tightening. Whilst we are projecting the housing slowdown to be of the soft landing variety, there is obviously some risk of a more pronounced slowdown. History shows us that either scenario can happen. Clearly, the path of global interest rates from here on will have some bearing, given their influence on bank funding costs.

Of course, monetary policy is not our only focus. Global market developments also have important ramifications for financial system stability in smaller open economies. The banks in many of these countries are net borrowers in global markets, New Zealand and Australia being two examples. Recent events have highlighted some risks and vulnerability that institutions and regulators need to ensure are properly managed. We always used to talk about these risks but they have come into sharper focus. Our institutions need to be able to cope with sharp changes in the cost of funds in the global market place. But as we saw in July last year, we also need to confront the possibility that global funds may not always be as readily available as we perhaps used to think. Financial market liquidity policies and the management of funding by financial institutions are two areas that are likely to receive considerable policy attention in many countries over the coming months.

Specifically, I note a very timely and comprehensive analysis of liquidity issues was prepared in a special Financial Stability Review by the Bank of France in February. In New Zealand, we have also been keenly aware of the liquidity risks that recent events have demonstrated. Banks have had an important role intermediating capital account flows into New Zealand (and Australia), and have accepted a significant amount of short term capital flows in order to minimise funding costs. We want to look at whether the vulnerabilities that this can create have been adequately priced and managed—noting that some of the costs of a liquidity event are probably externalities that would ultimately be borne by other New Zealand parties.

Breakdown of short term lending markets is one specific challenge we would expect to confront if the financial stability situation deteriorates markedly further in one or more of the major advanced economies. There will doubtless be other flow-on effects as well. Like the transmission of subprime issues to monolines and seemingly unrelated markets, many of these flow-on effects could surprise us. However, the potential for a deterioration in financial stability to further intensify risk aversion seems significant. For countries like New Zealand with substantial borrowing from abroad this could clearly have an impact on our cost of funds and/or our access to funds in some global financial markets.
Thank you for the opportunity to be a part of this panel and share my views on globalisation and financial stability. The bulk of my comments are going to be devoted to the link between financial innovation and stability.

The main thesis that I am going to put forward today is that a financial innovation, while welfare enhancing in the long-run, often encounters bumps in the road. I will refer to some historical examples, beginning with the current financial crisis, to argue that financial crises are often associated with the rapid proliferation of a financial innovation. I will highlight that uncertainty, in a manner that I will explain, is the key link between innovation and crises. I will then suggest that there is a strong impetus for financial innovation today. In particular, there are important trends in today's globalised landscape that incentivise financial innovation. To close, I will present some thoughts on how these observations should inform policymaking.1

Knightian uncertainty and crises

A good place to begin illustrating my points is in the current financial market turmoil. Perhaps the single largest change in the financial landscape over the last 5 years has been in complex credit products: collateralised debt obligations (CDOs), collateralised loan obligations (CLOs), and the like. These instruments have proliferated rapidly. Because of their rapid proliferation, market participants have only had a limited historical record of dealing with them. When the defaults on subprime mortgages occurred last year, many market participants were taken by surprise. They realised that they didn't understand their investments and were confused. A prominent example of this is the case where AAA subprime tranches suffered losses.

Let me pause at this point. I am using the word uncertainty in a very specific way. There is a long tradition in Economics, going back to Frank Knight, which distinguishes uncertainty –risks that are unknown and immeasurable– and risk –which is quantifiable and measurable. Human behaviour when faced with uncertainty is to act to minimise the effect of uncertainty: in short, to disengage from that which creates uncertainty. Faced with risk on the other hand, agents smoothly adjust decisions and pricing policies to reflect the risk. The financial sector specialises in managing measurable risk. Indeed, I think that uncertainty is inherently difficult for a financial organisation to deal with.

If uncertainty was only in subprime investments, given the relatively small size of the subprime sector, the financial system could have easily absorbed these losses. However, investors started to question the valuation of the myriad other credit products –not just mortgage– that had been structured in much the same way as subprime investments. The result was uncertainty across the entire credit market.

To understand how uncertainty can lead to a liquidity crunch, an analogy may be useful. Take the children's game of musical chairs. The rules are that there is always one more child than chairs. The children circle around the chairs until the music stops. When the music stops, one child will be left without a seat. Now suppose that the children are confused about these rules –it is a new game. Suppose that each is convinced that he will be the one left without a seat. Chaos may erupt. Kids may start grabbing on to chairs, running backwards, refusing to play, etc.2 This is what uncertainty does.

In the credit crisis, uncertainty led every player to make decisions based on imagined worst-case scenarios. Liquid players stayed out of markets or pulled back dramatically. Some players questioned whether their counterparts had hidden losses on their books and stopped trading. Others hoarded their own liquidity because they were sure they would

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1 An academic reference for these ideas is “Collective risk management in a flight to quality episode”, coauthored with Ricardo Caballero and forthcoming in the Journal of Finance. My ideas are also drawn from discussions with Ricardo, who should not be held accountable for any flaws in my presentation.

2 For further development of this point see “Musical chairs: a comment on the credit crisis” in the Banque de France's Financial Stability Review, Special Report on Liquidity (February 2008).
receive some worst-case shock. But for financial markets to function, they need participants and their liquidity. When you have many players disengaging due to uncertainty, the effective supply of liquidity in the financial system contracts. Players who need liquidity are unable to get it. Markets turn illiquid. The last half a year has shown that illiquidity can have far reaching macroeconomic consequences.

In reviewing this episode, note the importance of lack of history. If market participants had a historical record within which to understand events, we would have been in a situation of risk but not Knightian uncertainty. The crisis dynamic in that case may have been far less severe.

Financial innovation

Consider then the role of financial innovation. As I will argue, the recent crisis is an example of a more general phenomena associated with financial innovation. A successful financial innovation is a product that meets a market demand and is therefore taken up widely. The subprime case is an example of a successful financial innovation. But, by its very nature, a successful financial innovation provides market participants with only a short history. Things will happen that people don’t expect. In this case it is easy to see how an uncertainty-driven crisis may occur.

Let me elaborate on this point and give you three historical examples.

Let us start with the 1970 Penn Central Railroad default. Penn Central defaulted on USD 82 million of prime-rated commercial paper. The commercial paper market at the time was not as mature as it is today. It had developed rapidly through the 1960s to meet growing corporate borrowing needs. However, ratings were not fine tuned. Back-up liquidity facilities, which are standard practice today, did not exist. When the default occurred, it spooked money-market investors. These investors went back to the drawing board to re-evaluate their credit models and ratings guidelines. The result was disengagement. Investors stopped buying commercial paper completely. The Fed had to step in and encourage banks to buy commercial paper, before the market normalised.

Contrast this event with those of 1997. In 1997, Mercury Finance —another commercial paper borrower— defaulted on USD 500 million of paper. The default was much larger in real terms than Penn Central and was similarly a surprise to the market. In contrast to the Penn Central case, there were no effects on the commercial paper market. The reason is that it quickly became clear that the default was a case of fraudulent accounting in Mercury Finance. There wasn’t the uncertainty element that had been important in 1970.

Another example to illustrate these points is the stock market crash of October 19, 1987. The new innovation in this episode was portfolio insurance strategies—that is, the computerised replication of put options. This was a strategy that had become increasingly common among investors in this period. However, nobody knew how widespread these strategies were. Moreover, nobody knew how financial markets would equilibrate in the presence of portfolio insurance strategies. The speed of the market decline on October 19 took everyone by surprise. Market makers widened their bid-ask spreads and other key market players pulled out of the market completely. The result was a lack of liquidity. The computerised sales into an illiquid market pushed prices down further and worsened matters, snowballing into a market crash.

My last example is the hedge fund crisis of the fall of 1998. In this scenario, hedge funds were still a relatively new and opaque financial vehicle. Assets under hedge fund management had grown from around USD 10 billion in 1991 to USD 80 billion in 1997. Notice that this is still far less than the trillions under management today. In the fall of 1998, even sophisticated market participants such as Long-Term Capital Management were taken by surprise by the comovement of many bond spreads. Russian government bond spreads, Brazilian spreads, and US Treasury bond spreads were all moving together in an unprecedented fashion. The standard risk management models that people used were no longer applicable. The result was that financial market participants searched for new models and made decisions based on worst-case scenarios. We now know that hedge funds had similar strategies and had filled up a similar asset space, and that this was the source of the correlations. But at the time,
hedge funds did not know this and certainly creditor banks did not understand this point. The result of this uncertainty was illiquidity and crisis.

In each of these cases, the financial innovation was eventually absorbed into the marketplace. Once people understood what could happen, they accounted for it in their decision making. When Mercury Finance defaulted in 1997, people knew about Penn Central, and there was little disruption to the market. Similarly, in the mini-crash of October 1989, people knew about portfolio insurance and there was no stock market crisis. It is worth noting that portfolio insurance and other sophisticated computerised trading strategies are quite common today. Today, as opposed to in 1998, people understand that asset prices should comove during periods of illiquidity. Creditors understand the risk involved in lending to hedge funds. While in 1998 hedge funds were still a novel financial vehicle, the large reported losses of the Amaranth hedge fund in 2006 barely caused a ripple in financial markets.

Of course, hindsight is 20/20. That is not the point of these examples. What these examples show is that a crisis dynamic is likely when something happens that is not expected. This is natural. What we can learn from these examples is that the unexpected happens more often with new financial innovation. Over enough time, the market's decisions encompass more of the event space. Only as this happens is the innovation absorbed into the marketplace.

Globalisation and asset demand

So far I have discussed the link between innovation and crises. Let me next turn to a point which is more speculative but possibly very important. There is an important trend in the world today having to do with the demand for developed economy financial assets. This is a trend that many people here have commented on and has been noted by many prominent academics and policymakers. We understand that this demand plays a role in global capital flows as well as in low world-wide real interest rates.

The trend is also important for financial innovation. An increase in asset demand will be met by an increase in asset supply. There are only two ways in which asset supply adjusts. First, the real sector undertakes investment and produces more real assets. Second, the financial sector operates on the current base of real assets and engineers more financial assets. It is this second force that is important for financial innovation. In part, I see the engineering of credit products over the last 5 years as due to the increase in asset demand.

Policy

It is apparent that the asset demand trend is here to stay. The impetus for financial innovation is also likely to remain. While the recent innovation was in credit products, there will be a next innovation in a different product space. Let me conclude by offering some thoughts for how this should guide policy.

First, at some level, we must recognise the limitations of policy. The newness of financial innovation, which is the source of market uncertainty, also poses a problem for policymakers. Policymakers are in the same boat as market participants. They can't and won't know how things may go wrong. Nevertheless there are still lessons to be learned. It is possible to proactively identify trouble spots. I have suggested focusing on financial innovation. I could add complexity as a precondition of a trouble spot. The uncertainty dynamic is caused by a lack of information. It is important therefore to understand as much as possible about the trouble spots. It is also important to create situations where information is shared among market participants.

Second, during an uncertainty crisis, central banks may be the only source of certainty. A credible lender of last resort policy can act as a backstop during a crisis. That is to say policy can play an important part in helping to reduce anxiety over worst-case outcomes. In fact, any ambiguity over central bank policies dulls the effect of policy. Certainty provision is the important dimension of central bank policy. I think it is important that central banks fine tune their arsenal of lender-of-last-resort instruments, and deploy them in a clear manner during a crisis.

As I said at the start of this talk, innovation brings long-run benefits. But in the short-run, there are bumps. Prudent oversight of financial innovation is about enjoying the benefits of innovation while limiting the inevitable costs brought about by short-run instability.
Yaga Venugopal REDDY

Governor
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I am thankful to the Banque de France for giving me this opportunity to participate in the International Symposium on ‘Globalisation, inflation and monetary policy’. I will present some of the aspects of the Indian experience on the subject and conclude by briefly flagging select issues in the light of recent global developments.

Financial sector reforms

In India, reforms to improve efficiency and soundness of the financial sector started early in the reform cycle that commenced in 1991—in some ways anticipating the gains that would accrue from the resultant flexibility in product and factor markets. However, the process of strengthening of the functioning of the financial institutions in terms of prudential framework, operational efficiency and regulatory/supervisory regimes has been gradual. It was also calibrated with the development of money, forex, government securities and equity markets. At the same time, the pace and content of reforms in banking, financial and external sectors are closely aligned with the progress in reforms in the real and fiscal sectors and in the public sector as a whole, considering in particular that the banking sector in India is dominated by the public sector. Our attempts to align the financial sector with the global best practices do take into account progress achieved in public policy in regard to similar alignments in related areas, especially the real sector flexibilities, fiscal health and overall governance standards.

In the Indian context, considerable weight is currently accorded by the Reserve Bank of India (RBI) to price and financial stability while recognising its twin objectives of growth and stability. The large segments of the poor tend to reap the benefits of high growth with a time lag while the rise in prices affects them instantly. Further, we recognise the limited capacity of the poor to bear risks that may occur in the real sector by virtue of developments in the financial sector, in the absence of social security mechanisms and public safety net.

Let me illustrate with two examples of emphasis on stability in relation to financial institutions and financial markets. First, the centrality of the banking sector, especially the retail deposit base and credit disbursement, is maintained while gradually expanding the practice of diversified universal banking. Second, in regard to financial markets, in view of a persisting, though moderating, high combined (i.e. federal and provincial debt together) public debt to GDP ratio of over 70 per cent, coupled with current levels of fiscal deficits, almost the whole of sovereign debt, mostly at fixed interest rates, is denominated in domestic currency and is held almost entirely by residents. A small component is open to Foreign Institutional Investors and multilateral/bilateral agencies. At the same time, the government securities market is well developed and is paving the way for the healthy development of an expanding corporate bond market.

Capital account liberalisation

Liberalisation of the capital account has been a gradual process with a distinction being made between households, corporates and financial intermediaries, along with the recognition of a hierarchy of preferences for capital flows. The equity markets are more liberalised, relative to debt markets. Experience has shown that investment in equities, especially in terms of foreign direct investment, may bring in collateral benefits such as technological and organisational know-how. There is, therefore, considerable openness in regard to equity along with active management of external debt.

While the policy readily recognises the benefits of liberalisation of trade, it constantly weighs the risks and rewards based on both domestic developments and global conditions in regard to management of capital account. Thus, the process of liberalisation of the capital account reckons the pace of concomitant developments in domestic financial sector, fiscal health and flexibilities in the real sector.
Capital account management

It is possible to argue that just as “stabilisation funds” take care of current account shocks, capital account management and market interventions are justifiable to take care of cognisable capital account shocks.

A continued focus on financial market development and its sophistication would, no doubt, mitigate the challenge of capital flows in the medium term. However, it is important to recognise that maturation of financial markets takes time. Hence, sometimes capital flows may have to be managed through other instruments in the short term, while continuing to work on development of the financial markets.

Increase in absorptive capacity of the economy could be a mitigating factor in the context of large inflows. It is not easy, however, to develop absorptive capacity of an economy in the short run and in any case it is very difficult to calibrate the absorptive capacity of an economy to match capital flows if they happen to be volatile. Furthermore, the level of current account deficit in respect of emerging market economies that is generally considered as sustainable by the global financial markets may be lower than the sheer volume of capital inflows in these economies.

It is sometimes suggested that encouraging outflows would be a good solution to manage surging inflows. While there is some merit in this approach, liberalising outflows may not be of great help in the short run because a more liberalised regime generally attracts higher inflows. Hence, such a policy has to be combined with other measures which could help to effectively manage the flows.

In implementing a calibrated process of liberalisation of capital account, co-terminus with developments in other sectors, there are several issues that are addressed in regard to managing capital flows in the short run. These are:

- the desirable extent of sterilisation, considering costs and the available instruments;
- above all, the likely impact of the relevant policy stance and procedural measures on the exchange rate expectations.

Needless to say, monetary and exchange rate and reserve management are rendered complex in the context of the well known “trilemma”, especially in the current global environment.

Monetary policy

Monetary policy recognises the growing importance of global factors but the domestic developments play a dominant role. No doubt, the structural transformation underway and the continued significance of public sector in financial sector as well as notable prevalence of administered interest rates make the tasks particularly complex. While there has always been a dual mandate of the RBI, it has, in recent years, successfully articulated a self-imposed tolerance limit of five per cent on headline inflation. The tightening of monetary policy commenced in October 2004 and there have been seven increases of 0.25 per cent in the repo rates till March 2007, to address early signs of possible overheating during the period. To meet the challenges of excess liquidity on account of surge in capital flows, the cash reserve ratio in regard to banking system has been increased in ten instalments since September 2004 till date, aggregating three hundred basis points. Currently, there are acute policy dilemmas arising from global food and energy prices as also from financial market turbulence that need to be factored-in in evolving appropriate policy responses.

Supervision of banks

In recent years, partly reflecting the buoyant economy, credit growth has been very high, particularly in select segments, and the asset prices have been accelerating. The RBI made it clear that while it does not have a view on the market valuations, it would like to sensitise the banking system to the potential risks of rapid escalation in prices. The actions taken since December 2004 to address these issues include increase in risk weights in respect of housing loans and sensitive sectors viz., commercial real
estate and capital market exposure. Further, since November 2005, provisioning requirement for standard advances, except for agriculture and SMEs, were increased while the increases in respect of sensitive sectors were steeper. Several procedural and suasive measures, and supervisory review processes over select banks were also undertaken to sensitise them in this regard. In particular, the RBI's concerns about credit quality in the expansion phase of credit, the recourse to non-deposit resources to fund their assets, the uncomfortable loan-to-value ratios and excessive reliance on wholesale deposits were repeatedly expressed, and this has been followed up with interactions with select banks, as needed. As a result, overall credit growth as also advances to sensitive sectors have since moderated. The RBI has been urging the banks to also monitor carefully larger unhedged foreign exchange exposures of their corporate clients.

In view of the tendency of some of the banks to utilise non banking financial companies as conduits to channelise funds leading to regulatory arbitrage and discomfort, limits on both direct and indirect exposures were imposed and transparency in their relationship with banks was insisted. Further, supervisory review process has been undertaken in regard to the few banks that rapidly expanded their off-balance sheet exposures so as to secure supervisory comfort.

As regards complex financial products, the structured credit market is in its infancy. Both mortgage-backed and asset-backed securities are in vogue, but in the light of differing market practices and concerns relating to accounting, valuation and capital adequacy treatment of such products, the RBI issued guidelines on securitisation of standard assets in February 2006. Permitting introduction of credit derivatives, currency futures as well as interest rate futures with modified product design in India are under active consideration and the process of extensive consultations with market participants is underway.

Regulatory focus on liquidity

The overall liquidity in the system is actively managed by the RBI mainly through the operation of Liquidity Adjustment Facility on a daily basis in addition to sterilisation through several instruments.

While the RBI has prescribed prudential guidelines for asset liability management by the banks and they have flexibility in devising their own risk management strategies as per Board-approved policies, subject to regulatory limits on mismatches prescribed for short-term time buckets, the RBI has taken steps to mitigate risks at the system level as well.

RBI had, early on, recognised the risks of allowing access to the unsecured overnight market funds to all categories of entities and, therefore, restricted the overnight unsecured market for funds only to banks and primary dealers.

Like other supervisors, the asset liability management guidelines for dealing with overall asset-liability mismatches have been issued by the RBI. Since excessive reliance on call money borrowings by banks could cause systemic problems, prudential limits in relation to net worth have been stipulated on both lending and borrowing in call money market in addition to those on inter-bank liabilities.

The guidelines on securitisation of standard assets have laid down detailed regulations on provision of liquidity support to special purpose vehicles (SPVs). It inter alia enables grant of liquidity facility, by the originator or a third party, to help smoothen the timing differences faced by the SPV between the receipt of cash flows from the underlying assets and the payments to be made to investors. The liquidity facility is subject to certain conditions to ensure that the liquidity support was only temporary and gets invoked only to meet cash flow mismatches and for absorbing losses. Any commitment to provide such liquidity facility is to be treated as an off-balance sheet item and attracts 100 per cent credit conversion factor as well as 100 per cent risk weight.

Select issues

Keeping in view the Indian experience and recent global developments, I will venture to pose some select issues for consideration. First, arguably globalisation had helped to bring down inflationary pressures. An interesting issue would be as to whether globalisation of trade has contributed more to such a process than globalisation of finance or whether it is a combined effect. China's manufacturing industry and to some extent, India's services sector, have admittedly contributed to the downward inflationary pressures while more recent upward pressures on prices of food and fuel
do not suggest significant role for finance relative to trade. The impact of extensive use of derivative instruments in respect of commodity trade on oil and food prices is still indeterminate.

Further, as illustrated by China and perhaps India, major contributors to the price moderation so far, consequent upon global integration, have remained relatively less open on capital account and have a moderately integrated financial sector.

Second, the link between open capital account and growth performance is not fully confirmed by the experience of the two largest emerging markets, though such a link is not entirely refuted either. In view of limited experience so far it is also useful to explore the link between movement in asset prices and financial integration vis-à-vis trade integration. In any case, the assumption that a managed capital account generates adverse sentiments in financial market is not fully borne out so far by the two aforesaid examples which experience large capital inflows. This points to the need for assigning greater weight to macro-economic fundamentals than to the state of capital account openness.

Third, recent turbulence in financial markets/institutions and the importance of harmonised and coordinated response of public policies indicate the significance of countercyclical fiscal and monetary policies. Is it possible to argue that similar harmonisation between monetary policy and prudential policies would be of some value as part of counter cyclical measures?

Fourth, in regard to regulation and supervision over banks, it is useful to explore whether the special status of banks in the financial system and the need for active coordination among regulators/supervisors needs to be reaffirmed. Further common persons in most of the societies would like to have a set of institutions where almost total safety of funds is assured and these traditionally are the banks. Hence, if the concept of reasonable expectation in public policies is accepted in regard to banks (as evidenced by the experience with Northern Rock), the pre-eminence of depositors’ interests come out prominently. In this light, a reassessment of "originate-to-distribute" models, off balance sheet items and liquidity requirements of banks may warrant a closer examination in regard to banks. Moreover, the debate on financial innovation and regulation has to be considered in terms of potential and systematic relevance of such innovations besides the capabilities for bringing them effectively under the regulatory umbrella. The extent of relevance of reputational risks in the conduct of the banking business relative to the past may also be worth considering.

Fifth, relative to trade in goods, externalities are more prevalent in regard to financial sector, especially the banking sector. Hence, some regulation is essential and it tends to be national. However, the financial flows are rapid due to modern technology and could be quite substantial, but in view of global scale, it becomes extremely difficult to identify or enforce the rules of origin in regard to financial flows. In this regard, the scope of and limit to global harmonisation of banking regulations in a convincing and enforceable manner may have to be continuously assessed so that the national regulators appropriately build into their regulatory regimes the requisite global requirements and domestic compulsions of reasonable expectation from the common person that ought to govern the public policy.

Sixth, currently there appear to be simultaneous challenges from several angles to the conduct of monetary policy emanating from recent financial turbulence. These relate to abrupt and large shifts in monetary policy measures of the major economies, major realignments in exchange rates within a short period and unprecedented inflationary pressures due to food and energy prices. These warrant significant and innovative ways of cooperation among the central bankers.

Finally, from a purely academic perspective, it may not be out of place to explore the issues concerning international policy coordination including the political economy considerations, in terms of interaction between governments and the financial sector, which may have been influenced not only by the growing importance of finance but also by the cross-border linkages in the financial flows. Recent debates on the Northern Rock, Sovereign Wealth Funds and financial innovations being ahead of regulation, are symptomatic of this broader issue. If I recall, Prof. McKinnon and Prof. Jagdish Bhagwati, among others, had alluded to some of these aspects some years ago.
One of the key words of this conference and of this panel is “globalisation”. And one of the most intriguing features of the current events in the financial markets is how the US subprime crisis managed to globalise itself in an international financial turmoil whose dynamics is still highly uncertain. I would like to propose a few ideas, some of them speculative, regarding the spreading of the crisis and the current nature of its dynamics.

Rather than being very general, I am going to discuss three market dysfunctionalities. I take these three examples because I think they are very important in the current dynamics. These three dysfunctionalities have to do with the originate-to-distribute model; the credit default swap (CDS) market; and the accounting rule of marking to market.

The originate-to-distribute model, which consists of securitising loans that one issues, of packaging them, slicing them, and selling them to other market participants, has some virtues. Risk diversification is one, and indeed we have seen that some American risk has landed in some German balance sheets, so this has worked. But there are also flaws. A few recent academic papers have shown that because of this model, the incentive to screen and monitor loans as they are securitised has gone down a lot, and quantitatively this matters. As tranches of risk are packaged and sold, globalisation of risk has increased, and so has globalisation of doubts on asset values. This globalisation of doubts has increasingly touched balance sheets of different financial institutions in different countries.

Here comes the second market dysfunctionality, which I will link to the credit default swap market. This is a market in which market participants can exchange contracts to cover the default risk that they have on a bond they hold. With the globalisation of doubts, loss of confidence has also appeared in the CDS market. Spreads have been widening. If CDS spreads widen, investors ask for a higher yield on the paper issued by a bank, say. So if a bank sees its spread widening on the CDS market, this will lead to an increase in its cost of capital. Now, as the cost of capital for the bank increases, the bank cannot raise as much funds as it wants or may delay the raising of funds because of the current cost. It has to find alternative sources of funding; for example, it can compete on the market for deposits, but so do other banks at the same time, so it is not easy. Or it can raise equity, and we have seen some of that happening; it also comes at a cost.

All this means that the balance sheet of the bank is likely to worsen further, and therefore, enter into a vicious circle. The CDS spreads may widen even further. As the cherry on the cake, a rating agency may consider downgrading the bank at this point, in a classic backward looking fashion, and make the dynamics even more perverse.

Now, is it all theoretical? Well, let me give you a simple example coming from the North, the case of the main Icelandic banks, which as late as July 2007 saw their CDS traded at 30 basis points, and these days the CDS for these banks trade at around or close to 700 basis points. This means it is expensive to insure the debt from these banks, and this certainly increases their cost of capital. It is interesting to note that these banks had no exposure at all, or very little exposure, to the subprime crisis. So the CDS prices seem to have taken on a life of their own in these markets. They are becoming disconnected from the fundamentals.

As a result, some of these banks delay raising capital, delay issuing debt; for how long? Well, it depends on the solidity of their balance sheet. This story is a classic vicious circle. CDS spreads widen; investors demand higher yields; cost of capital goes up; balance sheet deteriorates; CDS spreads widen. To all the academics in the room, this type of mechanism is extremely familiar. We have lots of them, we love modelling them. I will make a provocative parallel with the debt crisis. We have a similar type of vicious circle in the classic cases of debt crisis that we have seen in the past: loss of confidence in government debt with an increase in the risk premium; the cost of debt increases; the fiscal burden goes up and the loss of confidence goes further. This is a kind of picture we know about. This is also a kind of picture that is pretty nasty because typically this means models with multiple equilibria, or at least models with strong self-fulfilling elements. So I will make the provocative statement that maybe the banking
sector in 2008 could be compared to Brazil in 2002. In this type of situation, the academic literature is focusing on how we select the right equilibrium if we have self-fulfilling elements in a crisis.

If we look back at what we do in the case of a debt crisis, the IMF is key. IMF intervention may or may not work; this depends on several things, like the sizes of a package and the ability to convince the market that actually the fundamentals are good, so that people actually coordinate on the good equilibrium. If we draw the parallel some more for the current situation, clearly such bank intervention is there, and liquidity injections are welcome. Maybe cutting the policy rate can help, even though it is unclear if the policy rate affects much the market rate at five years, which is where most of the CDS market operates. Another possibility is that the banks which are affected by this type of balance sheet effect raise some more capital. And there, there are fascinating issues relating to the amount of money available from sovereign wealth funds. Are geopolitical concerns that may come up, but I won’t talk about that here.

But clearly, these strategies have to be also helped by a discussion on the solidity of the balance sheets, so one has to convince the market that assets are good, just like the fundamentals for Brazil were good after all. And there I think we are hit on the head by a third market dysfunctionality, which is the marking to market accounting role. It is fair to say that valuing assets at market value in distress times is probably not such a great idea, in the sense that it certainly amplifies the balance sheet problem. There is a nice paper by Plantin from London Business School, Shin from Princeton and Sapra from Chicago which shows that there is a clear trade off between using historical cost accounting and marking to market. There are interesting cases where banks accounting losses have to be met with real capital, even if they are not economic losses. The amplification mechanism that can come simply from this account rule of marking to market is pretty powerful! One could argue that if there had been marking to market, maybe these players would not have gotten into these positions. I have my doubts about that.

To conclude, as Claude Bébear put it very recently, it is not because your neighbour sells his house at a depressed price that your house is worth a depressed price if you do not need to sell it. The problem is that for banks accounting losses have to be met with real capital, even if they are not economic losses. Taken together with the self-fulfilling elements they show is that marking to market injects artificial risk that degrades information values of prices. So in distress times liquidity dries up and, in fact, there is a lot of noise in the prices of assets. They find in the theoretical model that this noisy effect on prices is actually worse for claims which are longed lived, illiquid and senior. These are typically the claims that are in the balance sheets of insurance companies and some banks. So it seems pretty clear that the marking to market accounting rule here creates a problem and an amplification mechanism for the current turmoil.

I will make a second provocative comparison: what would have happened if the 1982 debt crisis had been marked to market? We did not have these accounting rules at the time. A lot of people in the room know more about this crisis than I do, but my understanding is that the nine New York money center banks had at the time an aggregate exposure to Latin America sovereign debt of around 250 percent of their equity capital. So imagine, when some countries started not to repay, that there had been a market at that time. And let’s say the market valuation of these assets would not have been greater than 60 cents on the dollar. It is very likely that it would have been lower than 50 cents on the dollar if these markets had existed in fact. All these banks would have gone under. The amplification mechanism that can come simply from this account rule of marking to market is pretty powerful! One could argue that if there had been marking to market, maybe these players would not have gotten into these positions. I have my doubts about that.
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Houston, we have a problem! For three decades now we have been promoting the joys of a liberalised financial system and what has it brought us? “One massive financial crisis after the other” is the answer. This is not to say that liberalised finance brings no benefits. It has certainly made a substantial number of people extraordinarily rich. It may well have brought economic benefits, as well. On that, the evidence appears mixed. But of one point, there can be little doubt: the crises have been frequent and costly, not least for innocent bystanders. Fiscal costs have been particularly disturbing. Gerard Caprio and Daniela Klingebiel provide information on no fewer than 117 systemic banking crises (defined as ones in which much or all of bank capital was exhausted) in 93 countries (that is, half the world) since the late 1970s. In 27 of the crises for which they have been able to obtain the data, the fiscal cost of the bail out was 10 per cent of GDP, or more, sometimes vastly more.1

This was not a happy story. But an optimist – me, for example – might still believe, or at least hope, that regulation was becoming better, management of financial institutions more adept and risk-management more sophisticated. Above all, such an optimist could – indeed, did – believe that the most advanced financial systems in the world, particularly that of the United States, represented a promised land of sophisticated new transactions-oriented finance. I even wrote a piece on “the new financial capitalism” just before the crisis broke.2 In this I argued that we have today “the triumph of the global over the local, of the speculator over the manager and of the financier over the producer. We are witnessing the transformation of mid-20th century managerial capitalism into global financial capitalism. Above all, the financial sector, which was placed in chains after the Depression of the 1930s, is once again unbound”. I concluded the piece, however, by noting that: “Our brave new capitalist world has many similarities to that of the early 1900s. But, in many ways, it has gone far beyond it. It brings exciting opportunities. But it is also largely untested”.

The test came remarkably promptly. This is why the latest crisis – the “subprime cum credit-freeze” of 2007 and 2008 – is, I believe, far and away the most significant of the crises of the last three decades. It may also end up as the costliest, in absolute terms, simply because its epicentre is the United States (though it will certainly not be the costliest in relation to gross domestic product).

What makes this crisis so significant? It tests the most evolved financial system we have. It emanates from the core of the world’s most advanced financial system and from transactions entered into by the most sophisticated financial institutions, which use the cleverest tools of securitisation and rely on the most sophisticated risk management. Even so, the financial system blew up: the commercial paper and inter-bank markets froze for months; the securitised paper turned out to be radioactive and the ratings proffered by ratings agencies to be fantasy; central banks had to pump in vast quantities of liquidity; and the panic-stricken Federal Reserve was forced to make unprecedented cuts in interest rates.

Moreover, losses just keep bleeding out. Nobody believes we have reached the end of them. Sovereign Wealth Funds have helped recapitalise damaged institutions. But it is far too early to be confident that a direct bail-out by the US government will be unnecessary. Nouriel Roubini of New York University’s Stern School of Business, not the most cautious of analysts, it is true, but largely accurate in his prognostications of the looming recession, has recently argued that total losses of the financial system might end up USD 3,000 billion.3 In that case the US financial system would presumably be bankrupt and the rescue might even cost US taxpayers 20 per cent of GDP. In any case, an indirect bail out by the Federal Reserve is already under way. Meanwhile, as a footnote, though it is hardly that, one of the UK’s most dynamic banks, Northern Rock, imploded, generating the first bank run for over a century and forcing the government, in effect, to guarantee the liabilities – yes, I do, alas, mean the entire liabilities – of the

1 See Caprio and Klingebiel (2003).
2 See Wolf (2007).
3 See www.rgemonitor.org.
British banking system. The United Kingdom prided itself on having as advanced a financial system and as sophisticated a system of regulation as anywhere. It can no longer do so, alas.

So what has gone wrong? That seems to me to be the first question. Why has an era of globalisation, economic convergence and low inflation led to a plethora of bubbles, crises and financial mishaps? In the newest edition of the late Charles Kindleberger's classic work on financial crises, Robert Aliber of the University of Chicago Graduate School of Business argues that “the years since the early 1970s are unprecedented in terms of the volatility in the prices of commodities, currencies, real estate and stocks, and the frequency and severity of financial crises”.

I do not know whether that is true. But this is certainly the only significant industry whose safety standards seem to be no higher than a century ago. So what, if anything, can or should we do about it? That will be my second question.

What has gone wrong?

How do we explain this pattern of repeated failure? The alternative perspectives on crises are particularly well displayed in discussions of the most recent one, that in the United States.

One view is that this crisis, like most others, is largely the product of an irretrievably defective financial system. An email I received a few weeks ago laid out the charge: the crisis, it asserted, is the product of “greedy, immoral, solely self-interested and self-delusional decisions made throughout the 2000s, and earlier, by very real human beings at the very top of the financial food chain”.

The argument would be that a liberalised financial system, which offers opportunities for extraordinary profits, has a parallel capacity for generating self-feeding mistakes. The story is familiar: financial innovation and an enthusiasm for risk-taking generate rapid increases in credit, which drive up asset prices, thereby justifying still more credit expansion and yet higher asset prices. Then comes a top to asset prices, panic selling, a credit freeze, mass insolvency and recession. An unregulated credit system, then, is inherently unstable and destabilising.

This is the line of argument associated with the late Hyman Minsky, who taught at Washington University, St Louis. George Magnus of UBS distinguished himself by arguing early that the present crisis is a Minsky moment: “A collapse of debt structures and entities in the wake of asset price decay, the breakdown of ‘normal’ banking functions and the active intervention of central banks”. This followed an extraordinary dependence on credit growth in the recent cycle.

Economists would offer two contrasting explanations for this fragility. One is in terms of rational responses to incentives. Another is in terms of the short-sightedness of human beings. The contrast then is between misdirected intelligence and simple folly.

Those who emphasise rationality can readily point to the incentives for the financial sector to take undue risk. This is the result of the interaction of “asymmetric information” – the fact that insiders know more than anybody else what is going on – with “moral hazard” – the perception that the government will rescue financial institutions if enough of them fall into difficulty at the same time. There is evident truth in both propositions: if, for example, the UK government feels obliged to rescue a modest-sized mortgage bank, such as Northern Rock, moral hazard is rife.

An obvious reaction to this line of argument is that the failure was one of regulation. If regulators had done their job, by ensuring prudent mortgage lending, curbing the growth of off-balance-sheet vehicles, overseeing regulatory agencies, and so forth, the crisis would never have happened. Yet it is also evident that everybody involved – borrowers, lenders and regulators, too – are all too often swept away in tides of euphoria and panic. To err is human. That is one of the reasons regulation is rarely countercyclical: regulators are swept away, as well. The financial deregulation and securitisation of the most recent cycle merely encouraged an unusually wide circle of people to believe they would be winners, while somebody else would bear the risks and, ultimately, the costs.

An alternative view is that this is a crisis not of markets, but of government intervention. Governments provide the explicit and implicit guarantees. Governments heavily distort the market.

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4 See Kindleberger and Aliber (2005).
for housing, particularly in the United States, via government-subsidies for long-term lending. Governments subsidise borrowing in the tax code. At the same time, governments do not – or perhaps cannot – create a regulatory regime capable of offsetting the incentives for perverse behaviour created by such subsidies.

Yet there is a very different perspective. The argument here is that US monetary policy was too loose for too long after the collapse of the Wall Street bubble in 2000 and the terrorist outrage of September 11 2001. This critique is widely shared among economists, including John Taylor of Stanford University. The view is also popular in financial markets: “It isn’t our fault; it’s the fault of Alan Greenspan, that ‘serial bubble blower’.

The argument that the crisis is the product of a gross monetary disorder has three variants: the orthodox view is simply that a mistake was made; a slightly less orthodox view is that the mistake was intellectual – the Fed’s determination to ignore asset prices in the formation of monetary policy; a still less orthodox view is that man-made (fiat) money is inherently unstable. All will then be solved when, as Mr. Greenspan himself believed, the world goes back on to gold. Human beings must, like Odysseus, be chained to the mast of gold if they are to avoid repeated monetary shipwrecks.

A final perspective is that the crisis is the consequence neither of financial fragility nor of mistakes by important central banks. It is the result of global macroeconomic disorder, particularly the massive flows of surplus capital from Asian emerging economies (notably China), oil exporters and a few high-income countries and, in addition, the financial surpluses of the corporate sectors of many countries. This was a global real interest rate shock, with particular force in the United States, where the capital was directed.

In this perspective, central banks and so financial markets were merely reacting to the global economic environment. Surplus savings meant not only low real interest rates, but a need to generate high levels of offsetting demand in capital-importing countries, of which the United States was much the most important. In this view (which I largely share) the Fed could have avoided pursuing what seem like excessively expansionary monetary policies only if it had been willing to accept a prolonged recession, possibly a slump. But it had neither the desire nor, indeed, the mandate to allow any such thing. The Fed’s dilemma then was that the only way to sustain domestic demand at levels high enough to offset the capital inflow (both private and official) was via a credit boom. This generated excessively high asset prices, particularly in housing. It has left, as a painful legacy, stretched balance sheets in both the non-financial and financial sectors: debt deflation, here, alas, we come. This is not to deny that the Fed over-egged the pudding. But it had reasons for doing so.

When I read these analyses, I am reminded of the story in which four people are told to go into a dark room, hold on to whatever they find and then say what it is. One says it is a snake. Another says it is a leathery sail. A third says it is a tree trunk. The last says it is a pull rope.

It is, of course, an elephant. The point that it is, indeed, an elephant comes out clearly when one looks at the similarity with earlier crises. In a recent column (February 26th 2008), I argued that most crises began with capital inflows from foreigners seduced by tales of an economic El Dorado. This generated low real interest rates and a widening current account deficit. Domestic borrowing and spending surged, particularly investment in property. Asset prices soared, borrowing increased and the capital inflow grew. Finally, the bubble burst, capital flooded out and the banking system, burdened with mountains of bad debt, imploded. With variations, this story has been repeated time and again. It has been particularly common in emerging economies. But it is also familiar to those who have followed the US economy in the 2000s.

What can be done?

I want to conclude with a discussion of the lessons of this painful experience. I have to stress that my thinking is at an early stage. I no longer know what I used to think I knew. But I also do not know what I think now. So the discussion will lay out alternatives, in two main areas: regulation and monetary policy.
Regulation

Optimistic opponents of further regulation argue that the banks have learnt their lesson and will behave more responsibly in future. Pessimistic opponents fear that legislators might create a Sarbanes-Oxley squared. The Act passed by the US Congress in 2002, after Enron and other scandals, was bad enough, they say. The banks might now suffer something worse.

My reply to the optimists is “dream on”. To the pessimists, I respond: yes, the danger of over-regulation is real, but so is that of doing nothing at all.

Two points shine out about the financial system over the past three decades: its ability to generate crises, and the mismatch between public risk and private reward.

It is true, on the first point, that none of the financial crises of this period has gravely damaged the world economy, although some have devastated individual economies. But it is probably just a matter of time. It is also true, on the second point, that the banking sector is the recipient of massive explicit and implicit public subsidies: it is largely guaranteed against liquidity risk; many of its liabilities seem to be contingent claims on the state; and central banks create an upward-sloping yield curve whenever banks are decapitalised, thereby offering a direct transfer to any institution able to borrow at the low rate and lend at the higher one. In addition, banking institutions suffer from huge agency problems – between clients and institutions, shareholders and management and management and other staff. All this is also exacerbated by the difficulty of monitoring the quality of transactions until long after the event.

The United States itself looks almost like a giant hedge fund. The profits of financial companies jumped from below 5 per cent of total corporate profits, after tax, in 1982 to 41 per cent in 2007, even though their share of corporate value added only rose from 8 to 16 per cent. Banking profit margins have been strong, until recently. Now, at last, earnings per share and valuations have collapsed.

Yet can anything effective be done to contain the risk-taking this implies? To answer this, we must distinguish “micro-prudential” controls over institutions from “macro-prudential controls” over the entire system.

On the former, the consensus of regulators seems to be that we need tweaks to the existing system. This could include: greater attention to liquidity management, alongside the focus on capital requirements in Basel II; more stress-testing of “value at risk” models; greater transparency throughout the businesses; and greater independence of ratings agencies from issuers.

I would argue, however, that none of this will make a sufficient difference. Regulators must also pay attention to the incentives – particularly the structure of pay – within the businesses. I would argue, in addition, that regulators would have to take a much tougher approach than most did in the past cycle. More broadly, there is a case for much higher capital requirements, particularly as a cushion against failure, combined with ruthless marking of assets and liabilities to market. I am also interested in the idea of forcing regulated banks to issue subordinated debt to one another, with the price being used as a relatively well-informed indicator of stress. Finally, originators must clearly be forced to hold the riskiest tranches of subsequently securitised loans on their books.

More radically still, we might ask whether the Glass-Steagall Act was really so unreasonable. A clear distinction exists between banking as a safe, low return utility, designed to provide services to the public at large, on the one hand, and investment banking, on the other. It is far from clear to me that combining a utility with a hedge fund is a good idea, not least because the result is close to being impossible to manage or regulate. Of course, one might wish to go even further and turn the utility part into narrow banks.

The bigger point still, however, concerns macro-prudential regulation. As William White of the Bank for International Settlement has noted, banks almost always get into trouble together. The most recent cycle of mad lending, followed by panic and revulsion, is a paradigmatic example.

One response would be to raise capital requirements counter-cyclically, in response to the growth of credit, as Charles Goodhart of the London School of Economics and Avinash Persaud of Intelligence Capital have suggested. They also suggest a variable maximum loan-to-value ratio for mortgages. Mr. White adds the need for tighter monetary policy.
These are all reasonable ideas. Yet, as Mr. White also notes, the strength of the pressures against taking “away the punchbowl just as the party gets going”, in former Fed Chairman William McChesney Martin’s famous phrase, is formidable. In addition to bureaucratic inertia, such action is subject both to unavoidable uncertainty about the dangers of current trends and to resistance from private interests. Furthermore, regulators are in constant danger of losing sight of the systemic wood for the institutional trees.

Monetary policy

The second area for consideration is monetary policy. Here the big question is what role should be played by asset prices in the formulation of monetary policy. The conventional wisdom – or at least the Federal Reserve’s conventional wisdom – has been that one cannot recognise bubbles before the event and can clean up the mess after it. I had an open mind on this proposition. No longer. It is now clear that neither proposition makes sense. One can judge when prices are moving a long way from fundamentals and it is hard to clean up the mess afterwards, particularly if much debt has been accumulated, using the overpriced assets as collateral. Worse, this is a one-sided policy that tolerates booms, but not busts. It now seems clear that the best policy is to lean against the wind, when asset prices are soaring, even if that means pushing inflation below target for a while. This, after all, is not a situation in which deflation is a danger, by definition. The danger of deflation comes after the bust and the bigger the boom, particularly the asset price boom, the bigger the bust is also likely to be. Central banks must surely pay more attention to asset prices in future. It may be impossible to identify bubbles with confidence in advance. But central bankers will be expected to exercise their judgment, both before and after the fact.

I would add to all this the simple fact that freedom of US monetary policy has been seriously constrained by the monetary and exchange-rate policies of others, notably of China. Monetary disorders are global. If important countries pursue radically destabilising exchange rate policies, global monetary and balance of payments disorder is the inevitable consequence.

Those who do not learn from history are condemned to repeat it. A fundamental lesson concerns the way the financial system works. Outsiders were aware it had become a gigantic black box. But they were prepared to assume that those inside the box at least knew what was going on. This can hardly be true now. Worse, the institutions that prospered on the upside expect rescue on the downside. They are, alas, only too right to expect this. But this can hardly be a tolerable bargain between financial insiders and wider society. Is such mayhem the best we can expect? If so, how does one sustain broad public support for what appears so one-sided a game?

This crisis is a wake-up call. We are going to have to think again.

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6 See White (2004).
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Implications for the conduct of monetary policy

Chairperson: Guillermo ORTIZ, Governor, Banco de México

Speaker: John B. TAYLOR, Professor, Stanford University
“‘The impacts of globalisation on monetary policy’”

Discussants: Eric CHANEY, Managing Director and Chief Economist for Europe, Morgan Stanley

Donald L. KOHN, Vice Chairman, Board of Governors of the Federal Reserve System

Jürgen STARK, Member of the Executive Board, European Central Bank
Let me first thank Christian Noyer for the invitation to participate in this colloquium. Let me also congratulate him and the organisers of this colloquium for the excellent quality, and particularly for the foresight of planning an event on globalisation and monetary policy and inflation precisely at this juncture, today in particular.

This is the last session of the day. Well, actually it's not the last session. We still have another session where Jacob Frenkel is going to make the summary. I saw him taking about 100 pages of notes. I sat next to him throughout the day, so I'm sure he will make a very thorough summary of the proceedings. But today we have, I think, an excellent panel to discuss what are the implications of everything that we have been saying and listening to today for the implementation of monetary policy. We have as the main speaker John Taylor, who is, as you know, a professor at Stanford University and he's one of the best known monetary economists of our time. He has particularly, of course, made very important contributions for monetary analysis of central banks. We also have Eric Chaney, who is a chief economist for Europe, Morgan Stanley, Don Kohn, Vice President of the Board of Governors of the Federal Reserve System, and Jürgen Stark, member of the Executive Board of the European Central Bank.

So in this last session we will be essentially focusing on the implications again of the different issues raised in previous discussions for the design and conduct of monetary policy. The main question we intend to address is what are the implications of globalisation for monetary policy. We will ask ourselves whether globalisation should lead or not to a reassessment of central banks' price stability objectives and of the degree of reaction to variables or shocks that become more important in global markets, such as exchange rates, international commodity prices or real and financial developments in other countries.

In this context, the main issues that will lead the discussion in this session will precisely be whether globalisation has altered the way we think about monetary policy. And in this context, in the discussion we have to include the reaction function of the central bank, the objectives of monetary policies, the channels of transmission of monetary policy, whether we should be taking into account explicitly variables such as the exchange rate, commodity prices, the shape of the Phillips curve, et cetera, et cetera.

I think there are two ways of approaching this question. One is a sort of analytic, academic exercise that we are going to be discussing today with the presentation of John Taylor. The other one is the political economy dimension of these issues, which was mentioned this morning by Ken Rogoff.

The analytical part involves asking ourselves whether the models that we are utilising are sufficiently, I would say, complete to take into account the different aspects in which globalisation affects monetary policy; there is, for example, exchange rates. Since exchange rates are already a structural part of the models that we use, perhaps these should not be explicitly in the objective function of the central banks. These kinds of things are the subject of the discussion today.

Now, the political economy question is a little bit different. From the point of view of emerging markets the situation is even more striking. I will be very brief because what I am saying is something that has already been said before. We're facing a very unusual situation in the sense that we're, on the one hand, facing increased inflation pressures coming from commodity prices. Inflation has been going up throughout the world, but particularly in the emerging markets, which are much more prone to shocks of commodity prices, particularly food, since food has a greater weight in the consumer price index. So I would say that all emerging markets today are facing strong inflationary pressures.

On the other hand, we are facing downside risk to economic growth, some emerging markets more
than others; we in Mexico, of course, who are closer to the United States are more vulnerable to the downturn in the US economy. So of course policy dilemmas begin to amplify in the circumstances. Interest rate differentials, implied capital freeze, appreciation pressures create in particular, I would say, not only a difficult situation, but real dilemmas for central banks.

The other aspect of this political economy question is that most central banks do in practice take into account changes in exchange rates and they react to exchange rate changes, they react to shocks in the commodity prices, by adopting monetary policy for that. So there has to be some sort of connection between the conceptual and the political economy dimensions. Perhaps this connection has to do with the subject of what was previously mentioned this morning, which is precisely the question of anomalies. When you are dealing with a more normal world and the shocks to the system are small enough, then the standard models are probably all right to be utilised when taking into account this. When you have shocks that are outside the normal bound, when you have anomalies, the story is very different. Perhaps this is the situation that we are dealing with today.

So without further ado, let me ask John to begin his presentation.
Monetary policy has been dealing with globalisation for centuries as the magnificent Galerie Dorée at the main headquarters of the Banque de France reminds us. The Banque de France moved into those beautiful quarters in 1808, exactly two centuries ago, and the statues in the four corners of the Gallery are said to represent the four corners of the globe: Europe, Africa, America, and Asia. I note with some trepidation that the statue in the European corner is wearing Roman legionary dress, with a sword in her hands and a globe at her feet, and is accompanied by a horse, while the American has only a bow and arrow and is accompanied by a lizard. But I take some consolation by reminding myself that fears of globalisation are usually unwarranted, and indeed that is a main theme of my remarks today.

I also understand that near the Governor’s offices is a pair of Jacques Joseph Duhen gouaches, two seascape paintings, one entitled Calm and the other Storm, an ever-present reminder of how the global financial seascape can change suddenly, though none of us need that reminder right now.

A review of the history of the impacts of globalisation on monetary thought and practice is essential for understanding the implications of globalisation for monetary policy today, and I start with a short review. I won’t go back two centuries, but I will go back a good fraction of a century, to the period immediately after the collapse of the Bretton Woods fixed exchange rate system in the 1970s.

Looking for a monetary framework in a globalised economy

This was a time when central banks around the world were groping to find an alternative to the fixed exchange rate international system that had guided many of them in the 1950s and 1960s. It was not a pretty sight. With monetary policy de-linked from the constraints of the Bretton Woods system, inflation in the United States accelerated from the already high levels that put pressure on the international system in the first place. The US inflation rate reached 12 percent in 1975, fell to 5 percent in 1977, and then increased to 15 percent before the 1970s were over. Recessions were frequent. The volatility of real GDP was high, twice as high as it has been recently: the standard deviation of real GDP growth in the United States was 2.3 percent in the 1970s, compared with 1.4 percent in the 1990s.

The lack of a workable framework for monetary policy created similar instabilities in inflation and output in many other countries around the globe. The volatility of real GDP growth in Europe in the 1970s was comparable to that in the United States. In France, for example, the standard deviation of real GDP growth was 2.7 percent in the 1970s compared with only 1.1 percent in the 1990s.

Out of this experience came better monetary theories, better monetary policies, and of course better macroeconomic results. The theories and policies were designed for, or at least influenced by, a certain conceptualization of globalisation. Empirical models to evaluate monetary policy moved rapidly in a global direction. The ones I know best were the multicountry models first built at the International Monetary Fund, at the Federal Reserve Board, and at Stanford University, but there are many others. Books published as part of a Brookings international model comparison project (See Bryant, Hooper and Mann, 1993) provide many more details. These multi-country models continue to evolve and improve over time, especially at policy making and policy research institutions, now also including the European Central Bank; see Coenen, Lombardo, Smets, and Straub (2007), for example. A new model comparison project is now underway, jointly sponsored by the Center for Financial Studies (CFS) in Frankfurt and the Stanford Institute for Economic Policy Research (SIEPR) at Stanford University.
Like other modern monetary theories these empirical models are built on the foundations of rational expectations and staggered price and wage setting. But more important for this conference, they are globalised: they assume perfect capital mobility between countries, interdependence of foreign exchange markets, price links between different countries, as well as export and import flows and the current account. Globalised monetary models have strong links between different economies. A slowdown or a recession in one country, for example, will affect growth and inflation in other countries through many financial and “real economy” channels. In this sense, the empirical models are designed to address questions about the implications of globalisation for monetary policy. So what do the theories and the empirical models tell us about the implications of globalisation for monetary policy?

The exchange rate and interest rate decisions

First consider the exchange rate. The exchange rate plays three significant roles in any reasonable international monetary model. First, the expected rate of change of the exchange rate affects the return from holding one currency compared to another. This implies, for example, that a cut in the interest rate in one country will tend to lead to a depreciation of that country’s currency. Second, the level of the exchange rate affects the relative price of goods in different countries and thus exports and imports. This implies, for example, that an increase in the trade deficit will tend to lead to a depreciation of the currency. Third, the percentage change in the exchange rate affects inflation through the pass-through mechanism.

Despite these significant roles for the exchange rate, the theories and the empirical models tell us that monetary policy should not react directly to changes in the exchange rate. More specifically, if you characterise policy as a monetary policy rule for setting the interest rate in a way that aims to keep the fluctuations of inflation and real output low, then that rule should respond primarily to inflation and real GDP, or perhaps forecasts or nowcasts of inflation and real GDP, but not directly to the exchange rate. In my view this is a pretty robust result, and it has held up over time. Some research on small open economy models (See Ball, 1999) shows that reacting by a small amount to the exchange rate -decreasing the interest rate when the exchange rate appreciates- can improve macroeconomic performance, but the gains are small and are not robust across all models. Recent work by Batini, Levine, and Pearlman (2007) finds that not responding directly to the exchange rate in the monetary policy rule is nearly optimal.

What is the intuition behind this finding? First, exchange rates are more volatile than macro variables like real GDP and inflation; reacting to them can cause herky-jerky movements in the interest rate, which have harmful effects on the economy. Second, having interest rates respond to inflation or expected inflation automatically provides a response to the exchange rate (See Taylor, 2001). A depreciation of the exchange rate increases inflation in the empirical models. Hence, increasing the interest rate when inflation rises due to a depreciation is an indirect response to the exchange rate.

Cooperation and interest rate decisions

Another broader set of questions concerns whether globalisation implies that central banks should be reacting in different ways to inflation or real GDP in other countries. Should the central bank in country A react more directly to economic events in country B under globalisation, and if so how does that affect the policy decisions in country B? Clearly there is a “we’re looking at you and you’re looking at us” aspect of central bank decisions in a globalised world.

A formal way to address this question is to consider the gains from central banks cooperating in the design of monetary policy rules (See Taylor, 1985). Estimating the size of such potential gains empirically is essential because it is likely that they are positive in principle and we need to know if they are material in practice.

To be specific we can use some concepts from game theory. Though it may sound abstract, let me define a global cooperative policy as one where central banks jointly choose their policy responses to bring about good performance globally. To be sure, I am thinking about a joint international choice, by central banks, of the parameters of their policy rule for the interest rate –a global cooperative policy rule. This means they agree on a global objective, such as price stability and output stability for the global economy, which would, of course, depend on price stability and output stability in each country.
In contrast, a global policy rule without cooperation can be defined as in the non-cooperative case of game theory; that is, a Cournot-Nash policy. Such a global non-cooperative policy rule occurs when policy makers in each country take as given policy reaction coefficients in the other countries. One can easily imagine the central bank staff taking the policy rules of other central banks as given when they do alternative policy simulations. They then determine the best response of the interest rate in their own country to bring about price and output stability. The central bank thereby creates a policy rule conditional on the foreign central banks’ policy rules. The global Cournot-Nash policy assumes that other central banks do the same thing. The equilibrium is where the rule that every central bank takes as given for other central banks is optimal for those other central banks. That equilibrium is the global non-cooperative policy rule.

Believe it or not, it is computationally feasible to calculate these policies with empirical multi-country models. The computations show that the policy rules are, perhaps not surprisingly, different for the cooperative as compared with the non-cooperative policies. For example, the global cooperative policy entails a smaller response of the interest rate to the inflation rate than the global Cournot-Nash policy. Why? When a central bank raises its interest rate in response to an increase in the inflation rate, the exchange rate tends to appreciate in that country and to depreciate in the other countries. The depreciation abroad is inflationary abroad and this requires that the central banks in the other countries raise interest rates. In the cooperative case the smaller initial response reduces these interactions.

However, according to the empirical models the gains from using the cooperative policy rule are very small quantitatively compared with using the non-cooperative policy rule, and as a practical matter the policy could easily ignore these international complications (See Carlozzi and Taylor, 1985). The global non-cooperative rule generates a workable international system and the extra complexity of cooperating as defined here is not worth it. By focusing optimally on the goals of price and output stability in each country separately, the non-cooperative policy is already a great improvement over sub optimal policies of the 1970s. More recent research by Coenen, Lombardo, Smets, and Straub (2007) also investigates the gains from monetary policy cooperation among countries using a slightly different concept of cooperation and non-cooperation (“open-loop” rather than “closed-loop”). They also find that these gains are small.

**Cooperation in the broader sense**

It is important to note, however, that even this non-cooperative global Cournot-Nash policy, as defined here, involves a significant amount of cooperation in the ordinary sense of the word. At the least, it is necessary for central banks to cooperate in providing clear and transparent information about their own policy reactions. Meeting together and exchanging views as is done in such forums as the BIS, the OECD, and the IMF is important so that policy makers can make their decisions taking other policymakers into account.

Cooperation is also essential for the part of monetary policy that does not entail changing the overnight interest rate, including efforts to provide liquidity, agreements on swaps, and employing new facilities such as the Fed’s new term auction facility. Exchange of information in a prompt and transparent manner is essential in times of financial market crisis.

**What has been the experience?**

In my view, the actual monetary policy framework that has been put in place during this period by the central banks has been reasonably close to this theory and the recommendations implied by the empirical models. At least until recently there has been a pretty explicit policy of not reacting to exchange rates other than indirectly through inflation and real GDP effects. Many central banks have been following such a strategy as part of their general approach to inflation targeting. However, as Edwards (2005) has noted, estimated reaction functions show that some emerging market countries have been taking exchange rates into account even when such actions are not part of their stated strategy. I will return to this issue later in my remarks.

Another aspect of today’s international monetary policy framework that is consistent with the theory is that central bank behaviour is reasonably well described by a global Cournot-Nash policy. Central banks make their best assessments of the likely response of other central banks and then find their own appropriate responses. With many central banks following such an approach,
the resulting policy fits the Cournot-Nash concept closely. They have wisely resisted the temptation to obtain the extra gains from cooperation in the formal game theory sense, but they have cooperated by exchanging information about their policies.

Overall the experience has been very good. Price stability and output stability have improved dramatically since the 1970s. At the same time, however, the policy framework and the increased stability have led to other changes and these have implications for policy going forward, as I consider next.

Globalisation and the decline in pass-through

One of the most significant changes in the global economy in recent years is the sharp reduction in degree of exchange rate pass-through. This has been empirically documented in many countries. Some have credited this decline to increased globalisation and in particular to increased foreign competition. They argue that the resulting “price pressure” prevents firms from passing along the full cost increase when the price of imported goods rise.

I have argued (See Taylor, 2000) that the declining pass-through has been more likely due to a more credible focus of monetary policy on price stability and a less accommodative stance regarding inflation. If inflation is expected to remain low, then firms will recognize the temporary nature of nominal price increases and have less reason to pass through a cost increase. Many empirical papers have tried to test which theory has more explanatory power.

The two explanations have widely different implications for monetary policy. If the first explanation is correct, then policy makers could take the low level of pass-through as a given, a structural feature of the economy which is invariant to monetary policy. If so, then optimal policy would entail a larger interest rate reduction in response to a decline in output because the exchange rate depreciation caused by the lower interest rate would not feedback into inflation very much. However, if the lower level of pass-through is due to a non-accommodative policy itself, then such accommodative actions could reverse the decline in pass-through and have a larger impact on inflation than expected.

Observe that in this case globalisation is making monetary policy more difficult by confusing the source of the decline in pass-through. The same type of signal distortion is evident in the cases I consider next.

Globalisation and short run inflation dynamics

Other significant changes in the world economy pertain to the short run relation between inflation and output. Explanations for these changes frequently invoke globalisation in some way. For example Rogoff (2004, 2006) showed that increased competition associated with globalisation would be expected to make the short run Phillips curve steeper by making prices more sensitive to shifts in demand. This increased price sensitivity has been cited as a reason for the excellent inflation record of the last two decades, because a steeper Phillips curve reduces the short run output benefits that surprise inflation might bring; it therefore reduces the incentives of policy makers to deviate from their inflation objectives.

Empirical evidence has shown, however, that the slope of the Phillips curve has flattened rather than steepened (See Roberts, 2006), and there have been a host of explanations for this phenomenon. The most widely discussed explanation is again globalisation, and namely that the lower slope of the Phillips curve is due to global aggregate demand effects on inflation, through which inflation in one country is related to output gaps or unemployment in other countries. However, for this effect to work, the lower coefficient on a country's output in the Phillips curve would have to be offset by higher coefficients on other countries' output in those Phillips curves. Kohn (2006) has shown that there is little evidence for this. See also Ihrig and others (2007).

Another globalisation-related explanation is that there are direct linkages between wages in different countries due to the off-shoring of labor services, as modeled by Grossman and Rossi-Hansberg (2006). However, evidence of an increased international wage to wage connection has yet to be presented.

There is another explanation for slope reduction which has nothing to do with globalisation. It is due to Roberts (2006) and it fits the facts very well. As Roberts (2006) has shown, the estimated slope could have declined simply because monetary policy has become more aggressive in controlling inflation. An increase in output appears to have a smaller effect on inflation because monetary policy is expected to take action to prevent such increases.
As with the case of pass-through, the different explanations for the change in the Phillips curve slope have widely different policy implications. If the slope is flatter because of structural changes due to globalisation, then making policy more accommodative to inflation would emerge from an optimal monetary policy exercise and might make sense. But if the lower slope was due to the policy non-accommodative policy in place, then such change to a more accommodative policy rule would not be justified.

There is another frequently discussed though conceptually different explanation for the impact of globalisation on inflation. It is a simple direct effect through which low priced imports from low cost developing countries such as China holds down the inflation rate. However, as with the case of pass-through there is another more traditional explanation for which we have much evidence over many years, namely that monetary policy itself has been the key factor in keeping inflation low and stable around the world. The “competition from abroad” explanation of the disinflation over the years is very popular, but it does not have a solid basis in monetary theory. Competition is a level rather than a rate of change effect and inflation is ultimately caused by higher monetary growth.

Globalisation and the impact of the exchange rate on policy in practice

Finally let me return to the finding that recently some central banks appear to be responding to exchange rates when setting interest rates, as Edwards (2005) has argued citing regression evidence that exchange rates appear in policy rules. Additional evidence of this phenomenon is that central banks sometimes mention how the prevailing interest rate around the world affects their decisions. If there is concern about exchange rate fluctuations, then moving the interest rate away from prevailing international interest rates could cause the currency to appreciate or depreciate, something that the central bank might want to avoid, perhaps due to political pressures. Many central bankers, even those with flexible exchange rate policies, watch the US federal funds rate carefully when making policy decisions.

To illustrate this issue consider the relationship between Eurozone interest rates and US interest rates during the past few years. Consider in particular the deviation of the overnight interest rate target for the European Central Bank from a simple guideline for that interest rate—the Taylor rule—which depends on the inflation rate and the gap between real GDP and its potential level. For this purpose I measure the inflation rate as the four quarter average rate of change in the harmonised index of consumer prices and the real GDP gap as the percentage deviation of real GDP from a trend estimated by a popular statistical procedure called the Hodrick-Prescott filter.

Now if one examines the relationship between this deviation and the actual federal funds rate in the United States during the period from 2000 through 2006, one finds a close empirical correlation between the two. An estimated linear relationship with the deviation on the left hand side has a coefficient on the federal funds rate of 0.21, which means that each percentage point reduction in the federal funds rate was associated with a 1/5 percentage point reduction in the ECB interest rate below what would otherwise be desirable on European price stability and output stability grounds (See Taylor, 2007). The relationship is highly significant statistically (t-statistic equals 3 ½). For part of this period the ECB policy rate was below this guideline and according to these estimates a significant part of the deviation is “explained” by the US federal funds rate being lower than normal. I have found similar strong foreign interest rate effects for other central banks.

These correlations suggest another implication of globalisation: the danger that central banks could move off course due to concerns about the exchange rate. If this causes central banks to veer off the framework that has proved effective in the past, it could be destabilizing. More specifically if it causes central banks to reduce interest rates below levels needed for price stability it could be inflationary.

Conclusion

In these remarks I have considered the impacts of globalisation on monetary policy using monetary theory, empirical models, and monetary experience. I reviewed how a workable monetary framework to deal with globalisation was developed after the 1970s as international economic connectivity grew in importance following the end of the Bretton Woods system. The international framework involved focusing on a target for inflation, adjusting the interest
rate instrument of policy in each country to changes in inflation and output in that country, and cooperating with other central banks in exchanging information about interest rate policies as well as policies to provide liquidity in times of payments crises. In principle, the framework has not involved reacting directly to exchange rate movements or jointly setting a systematic strategy for interest rate decisions, whether a target for inflation or the systematic reactions of interest rates to macroeconomic developments.

This framework has worked well for nearly a quarter of a century. Now, however, globalisation is threatening the same successful monetary framework which was designed to deal with globalisation twenty five years ago.

First, the concept of globalisation has tended to muddy the waters of our monetary theories as the world has changed. Whether it is the reduced pass-through, the flattened Phillips curve, or the disinflation over the past 25 years, globalisation is often invoked as an explanation. But one does not need globalisation to explain these phenomena. The monetary policy framework is sufficient, and, in my view, the correlation between globalisation and these phenomena is spurious. The danger is that using globalisation as an explanation for these phenomena can lead to deterioration of monetary policies, as I have shown in these remarks. For this reason alone globalisation is a challenge to monetary policy makers. The best way to meet this challenge is with rigorous economic research on globalisation and monetary policy as Fisher (2006, 2007) has called for. This would help clarify the theories and sort out the spurious from the genuine.

Second, though the monetary framework calls for little direct interest rate action to deal with exchange rates, it appears the central banks have been taking exchange rates into account in their interest rate responses. We still do not know all the reasons for these responses or how large a problem they are in practice, though I offered some suggestive evidence in my remarks. In the current environment they could be inflationary, and they may even be a part of the explanation for the elevated levels of global inflation that we see today. Perhaps there is more to gain than previously thought from a globally cooperative policy that simply emphasises the goal of global price stability. Again more research is needed to address this problem, which is likely to persist for a long time.
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If I had to summarise Pr. Taylor’s thesis in one sentence, it would be this: “The best way for monetary policy to cope with globalisation is to ignore the globalisation talk”. Although I have a lot of sympathy for this bold conclusion, I will do my best to question it. But let me say first that I am impressed by the method used by Pr. Taylor in his essay. It is nothing else than René Descartes’ “methodical doubt”, which seems quite appropriate in this country, even though the great mathematician and philosopher spent most of his intellectual life in Governor Nout Wellink’s country. More precisely, Pr. Taylor looks at several features commonly associated with globalisation, lower exchange rate pass-through, flatter Phillips curve, international wage competition and rejects each one of them, so that, in the end, what is left is not Descartes’ cogito, but … the Taylor rule.

Before turning to the core of the discussion, I have one observation regarding the reaction to exchange rate moves. It seems to me that most modern theoretical and empirical research supports Pr. Taylor’s thesis, namely that changes in the external value of the currency should not enter in the monetary policy reaction function other than through their impact on future inflation and output. However, this does not imply that policy makers should be indifferent to the exchange rate per se. A long lasting deviation from fair value may have unwelcome re-distributive consequences, but this is a policy coordination issue rather than a pure monetary policy matter.

There are three areas where I’d like to challenge Pr. Taylor’s conclusions: the short run Phillips curve, the change in relative prices due to globalisation, and the deviation from a Taylor rule by the ECB in the 2000-2006 period. By globalisation, I do not refer only to the opening of borders to flows of goods and services as well as capital –although still going on, this is not new– but also to the scale effect of the entry of giant economies such as China and India in the global market economy and to what Richard Freeman dubbed the Great Doubling. I will call that “modern globalisation”.

Starting with the Phillips curve, I am not sure that the steeper curve that should result from increased competition associated with globalisation according to Rogoff and the empirical evidence of a flatter curve are antinomic. Assume for instance that the impact of modern globalisation is incremental and spanned over a much longer period of time than commonly assumed because, for instance, capital is far from being perfectly mobile. Then, the effect of increased competition should be an incremental inward shift of the Phillips curve combined with a steepening of its slope. In other words, a progressively steeper slope but also a steadily declining Nairu. If this is the case, then the flattening of the Phillips curve could be nothing else than an optical illusion due to the fact that the mathematical envelope of a family of steeper and shifting Phillips curves would look like a flatter curve. These issues have been discussed at length in the previous sessions but my point is that it might not be so easy to reject the hypothesis that modern globalisation is causing changes in structural parameters. Further empirical research, along the lines I have just sketched, might come to different conclusions.

Similarly, while Taylor is perfectly right to stress that “competition is a level rather than a rate of change effect”, this does not imply that competition may not have an impact on the rate of change of prices during a relatively long period of time, as the price of traded goods moves from level A to B. To take an very mundane example, the dramatic decline of shoes’ prices in the US and Europe may have come to an end, since I am told that China is now producing 90% of the world production of this particular item (even so, my Chinese colleagues tell me that cut-throat competition in China is keeping a downward pressure on prices). But the case of shoes (and items such as micro-ovens) is not yet the rule, so traded goods prices have probably not yet reached level B.

This brings me to my second observation, the change in relative prices that is resulting from modern globalisation. I assume that at least one feature of modern globalisation is Cartesian-doubt-proof: prices of internationally traded manufactured products are going down, while prices of commodities (including soft commodities) are going up. While the former trend seems to be loosing steam, maybe because the dynamic process from level A to level B follows a kind of logistic curve, it appears that the latter is not only lasting more than most analysts had predicted,
but, in addition, is accelerating. In essence, this is a change in the relative price of commodities, due to a shift in the demand curve not matched by a similar move of the supply curve, which is relatively rigid, for various reasons. In theory, monetary policy should disregard changes in relative prices, since its goal is to stabilise the aggregate level of prices. However, the dynamics of the process matters. Assume for the sake of reasoning that the dis-inflationary effect of globalisation (cheaper manufactured products) is over and that only remains its inflationary side, ever more expensive commodities. Delivering price stability, i.e. keeping inflation close to its target, necessarily implies that prices of other goods and services will have to decelerate, if not decline. Practically, this has to be a combination of imported prices, via the exchange rate, and of domestic prices, via the output gap or the Phillips curve. My worry is that while commodity prices are almost perfectly flexible with respect to changes in supply or demand, this is far from being true for domestic prices, which are much more rigid, a point Pr. Taylor famously embedded in his own analysis of monetary policy. This stickiness asymmetry raises a difficulty: during the transition period, i.e. until the price of commodities stabilises, monetary policy may turn sub-optimal if it keeps the same inflation target than in normal, i.e. steady state for the rest of the world, circumstances. In this regard, ignoring some of the consequences of globalisation is in my view disputable.

My last observation is about the ECB. Pr. Taylor observes that the euro area overnight rate, directly influenced by the ECB's refi rate, has deviated from a Taylor rule and that this deviation is nicely correlated with the fed funds rate over the period 2000-2006. I must confess that I do not find this result particularly surprising and that, even if there was a stochastic causality from the Fed to the ECB, I would be reluctant to conclude that there was a “real” causality in the decision process itself. The reason of my scepticism is that both central banks, although at various degrees, when facing the consequences of the crash of the IT bubble, only a couple of years after the Asian crisis, considered deflation was a risk. Because of well known non linearities, this might have convinced policy makers on both side of the Atlantic to deviate from their normal reaction function. I remember vividly a discussion with Pr. Otmar Issing in the aftermath of 9/11, where he told to some of us that he did not see deflation as a very serious threat, but that the cost of insurance was so cheap that buying some protection against deflation had some merits. By the way, the reason why the cost of insurance was cheap was precisely the alleged effect of globalisation, which, at that time was widely considered seen as disinflationary. Because the ECB was more sceptical than the Fed, I am not surprised either that the pass-through coefficient is 0.2.

In conclusion and despite the reservations I have just made, I find Pr. Taylor cartesian scepticism solidly founded. Calling another mathematician to the bar, Blaise Pascal, I would say that, given the high uncertainties surrounding the impact of globalisation on the parameters of our economies, central bankers are entitled to wage a Pascal's Gambit: if high inflation is really the hell that modern central bankers think it is, then it makes sense to stick to the rules that have worked reasonably well in the post 1979 period. I would only hope that Pr. Taylor's call for rigorous economic research on globalisation and monetary policy will be fulfilled in the years to come. The risk of sub-optimal policies should not be under-estimated.
Let me begin by saying that I agree with the thrust of John’s remarks. He is right that globalisation has not fundamentally changed the way central banks should do business. Although production chains and capital markets are more integrated across countries than before, and gross trade flows now account for a larger share of gross domestic product (GDP) in most nations, the dynamics of aggregate output and inflation remain at least qualitatively the same. Accordingly, central banks should continue to conduct monetary policy in the same forward-looking manner as they have for the past twenty years or so, adjusting policy rates in response to current and expected future movements in output and inflation, taking account of the lags in monetary policy. When exchange rates are free to adjust, this general approach to policymaking has proven effective in fostering macroeconomic stability over time in many countries.¹

In my remarks, I will expand on another of John’s points –namely, that monetary policy making has been complicated by globalisation, particularly by rising trade volumes and increased capital market integration. That is true in several ways. For one thing, globalisation has likely made the domestic economy more sensitive to foreign shocks, so central banks must now pay more attention to events around the globe. And, the integration of China and other countries into the world market economy has expanded the scale and complexity of the foreign developments that central banks must monitor. Finally, globalisation has probably made the link between policy actions and economic outcomes more uncertain by, among other things, strengthening the role of the exchange rate in the monetary policy transmission mechanism.

Recent increases in prices for oil and other commodities illustrate some of the complications that globalisation creates for policymakers. Those price increases have raised inflation worldwide while accentuating already weakening growth prospects in some countries in recent months. Commodity prices depend on a wide range of demand and supply factors, and sorting out their various contributions can be difficult. In recent years, potential constraints on the expansion of supply, especially of petroleum, have played a role. But in addition, the emergence of China, India, and other industrialising Asian economies as major consumers of oil and other raw materials has complicated the analysis, partly because these countries exert such a strong influence on global markets and partly because the structure of their economies is changing so rapidly.

Disentangling the various global forces influencing commodity prices can be useful in assessing the implications of those prices for domestic output and inflation, and hence monetary policy. For example, it matters whether a rise in oil prices results from demand factors, such as stronger global real activity, or supply factors, such as a hurricane that shuts down production. For an oil-importing country, a demand-driven price increase would have less negative implications for domestic real activity than a supply-driven increase because an expanding world economy would help boost demand for the country’s exports. For the United States, however, a rise in oil prices driven by stronger real Chinese activity would not necessarily lead US export volumes to rise substantially, given the low propensity of China to import from the United States.

Policymakers focus on the inflation outlook, and so we need to consider what global forces imply for the future when assessing the inflation consequences of rising commodity prices. Will prices for crude oil and other commodities continue to rise rapidly in the face of robust growth in China and other newly industrialising economies? Or do current prices on the spot and futures markets already fully incorporate the likelihood of continued growth in those economies, in which case prices would remain near their current level? In the first scenario, climbing energy prices, for example, would continue to boost headline inflation directly and would indirectly boost non-energy prices through higher costs of production; moreover, a continuing rise in oil prices might potentially threaten the stability of long-run inflation expectations and nominal wage demands. In contrast, a flattening out of oil prices

¹ David Reifschneider and Steven Kamin, of the Board’s staff, contributed to these remarks. The views expressed are those of the author and do not necessarily represent those of other members of the Board on the Federal Open Market Committee.
would restrain overall inflation, directly by stabilising a key component of energy prices and indirectly by ceasing to put upward pressure on inflation through pass-through and expectational effects.

Because monetary policy has a limited ability to counter short-term price surprises, the distinction between transitory and persistent influences on inflation from oil and other factors is critical. If we were to project a continued significant rise in energy prices over the medium run, we would need to factor that expectation into the outlook for overall inflation. Doing so could have important implications for the stance of monetary policy—all the more so if we expected rising energy costs to lead to higher inflation expectations and elevated wage gains.

Still, a leveling out in oil prices seems the more likely scenario. Surprised as we have been by the rapid, extended run-up in energy costs over the past few years, one would think that the price of a storable commodity such as oil should already embody expectations of continued rapid growth in the developing economies. However, the large run-up in spot and futures prices in recent weeks indicates that market participants are still revising their views of long-term demand-supply conditions. In these circumstances, policymakers must be mindful of the uncertainties surrounding the outlook for commodity prices and the risk that past or future increases in these goods could yet embed themselves in higher long-run inflation expectations and a persistently faster rate of overall price increases.

Besides these complications, globalisation has made the workings of the monetary policy transmission mechanism more unpredictable. For one, the determination of asset prices is now more dependent on conditions in financial markets worldwide, making the link between domestic policy actions and movements in the prices of bonds or equities more uncertain. For example, the correlation of quarterly changes in the federal funds rate with the variation in US Treasury yields has fallen from 0.6 before 1990 to 0.3 since then. To be sure, the falling correlation probably reflects a variety of factors, possibly including more systematic and predictable monetary policies. But global financial markets also seem to have played a role; as Chairman Bernanke has pointed out, savings from abroad, especially Asia, appear to have held down intermediate and longer-term US interest rates from 2004 to 2006 even as monetary policy was tightened. As we have seen in recent months, the increased integration of financial markets has also facilitated the transmission and amplification across borders of many shocks, such as changes in the perceived riskiness of certain assets and the compensation required to hold them.

The role of the exchange rate is another complication that has only grown with globalisation. Of course, flexible exchange rates make it possible for central banks to achieve their domestic economic objectives. But the exchange rate is a notoriously difficult asset price to predict, and its response to any particular policy action is highly uncertain, as we found, for example, in 2001, when aggressive rate cutting in the United States was accompanied by a strengthening in the dollar. Even with an apparent decline in the pass-through of exchange rates into import prices, the increase in trade volumes arising from globalisation has presumably boosted the relative importance of the exchange rate in the economy, thereby strengthening an unpredictable factor in the monetary policy transmission mechanism.

Despite the increased openness of the domestic economy to foreign shocks and greater uncertainty about the monetary policy transmission mechanism, economic volatility in the United States and other advanced economies has declined. That stability may be attributable, in part, to the increasing ability of global product and capital markets to buffer the domestic economy against internal shocks. Because of globalisation, net exports likely absorb a greater proportion of downshifts in domestic spending, foreign competition helps discipline domestic price increases, and—as a consequence of greater cross-border holdings of assets—gains and losses on domestic assets are realised in part by foreign investors. Together with the implementation of better monetary policies in many countries, these particular aspects of globalisation likely contributed to the “Great Moderation”.

John addresses the question of whether greater economic integration has increased the gains to be had from policy cooperation and coordination. We have seen an example recently in which policy cooperation of a particular type seemed to pay dividends. In December, simultaneous and in some cases coordinated actions by a number of central banks to supply liquidity to banks apparently helped relieve stresses in interbank funding
markets. Coordination and cooperation were called for because banks today operate in many markets simultaneously, and pressures in one market can readily spill over to others, especially when the normal channels for arbitrage have been disrupted by financial turmoil. The Federal Reserve and other central banks are examining the implications of this episode for their methods of supplying liquidity and for responding to future interruptions in the flow of liquidity across markets.

Successful coordination in the provision of liquidity raises the question of whether appreciable gains might be had from coordination of monetary policies more generally. John is sceptical, and so am I. Gains from formal policy coordination never seemed large, and it is not clear that globalisation has increased them appreciably. Policies agreed to under one set of circumstances may no longer be appropriate when circumstances change, as they inevitably will. Monetary policy should be able to adjust quickly to such changes; agreements that must be renegotiated can tie policymakers’ hands. That does not mean that no circumstances exist in which coordinated monetary policy actions would be beneficial, but such circumstances are probably quite rare. Ultimately, global stability depends on good performance in individual countries, and the record of recent decades suggests that, in general, good performance is most readily achieved when central banks focus on their own mandates for domestic price stability and growth.
Jürgen STARK  
Member of the Executive Board  
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In my remarks, I will focus on the implications of globalisation specifically for monetary policy-making in the euro area.¹

Globalisation may change the environment for monetary policy-making

We all agree that globalisation offers great opportunities. It increases the scope for efficiency gains through specialisation since it allows economies to make better use of their comparative advantage in international production. This reduces production costs and expands the production frontier, generating gains which are passed on to consumers through lower prices for many goods.

Globalisation thus fosters economic prosperity and raises living standards. At the same time, the gains from globalisation may not be distributed evenly, as globalisation can affect differently the returns to different factors of production.²

To monetary policy-makers, globalisation is important mainly for two reasons.

• First, the process of globalisation itself can occasionally lead to economic disruptions, especially if markets lack transparency. Increasingly-globalised and internationally-integrated financial markets, for example, if not sufficiently transparent, can at times be conducive to excessive risk-taking and contagion effects –a theme that rings particularly true in light of the current financial turmoil.

• Second, and more importantly, increasing global integration induces structural changes in goods markets and financial markets alike. As a result, foreign shocks may have a greater impact on domestic inflation, and the transmission of other impulses to the euro area economy can change. This also applies to the impact of monetary policy on inflation.

Let me briefly elaborate on how structural changes, which are driven by globalisation, can affect the process of inflation.

• There is good reason, for instance, to believe that globalisation increases competitive pressures, both worldwide and in domestic markets. An increase in competition may –relative to previous periods– put downward pressure on wages and prices and thus contain inflation for a period of time.³ A structural intensification of competition would also induce firms to work harder to increase productivity, and this would translate into an increase in the growth rate of the natural level of output.⁴

• Beyond this effect, the increasing use of international production opportunities based on comparative advantage may lead to a change in the production structure of our economy, which would in turn alter the relative scarcity of production factors, and thus the response of their prices and the prices of final goods to economic shocks.

Thus, globalisation

• is of importance to monetary policy

• and it is likely to have a lasting effect on our economy and on the environment for monetary policy-making.

An initial conclusion therefore is that central banks need to continue to commit resources to analyse and closely monitor the structural changes and the shocks caused by globalisation, and need to build an increasing awareness of economic and financial developments outside their home countries.

¹ For stylised facts about trade globalisation and its likely effects on euro area inflation, see also the ECB Monthly Bulletin article entitled “Globalisation, trade and the euro area macroeconomy,” January 2008.

² Trade theory (Stolper-Samuelson theorem) would e.g. suggest that trade integration should place downward pressures on the relative return to lower-skilled labour. However, real wage developments have been similar across all skill groups in the euro area. See ECB (2008), op. cit.

³ While globalisation and the disciplining impact that it exerted on pricing and cost control is likely to have facilitated disinflation around the globe in the past ten years or so, globalisation per se cannot permanently reduce inflation. The main reason for the observed spread of low inflation around the globe in recent years is a change in monetary policymaking in many countries, and, more in particular, the change towards a credible commitment to price stability.

⁴ That is, it would lead to an increase in the rate at which the economy can grow without jeopardising price stability.
Globalisation does not change rules of monetary policy-making

Although globalisation is challenging monetary policy, I fully agree with John Taylor’s assessment that globalisation does not fundamentally alter the rules for monetary policy-making. Nowadays as ever, over the medium to longer term, inflation is a monetary phenomenon. This means price stability is for us to achieve.

Let me stress the obvious here, namely that central banks cannot permanently determine the relative prices of specific goods. In referring to price stability, we mean stability of the purchasing power (of the domestic legal tender) as measured by the cost of a representative basket of goods.

While international liquidity conditions may influence market interest rates and thus the transmission of monetary policy to real activity and inflation, central banks retain the ability to control short-term interest rates by appropriately influencing the supply of the domestic legal tender. Short-term rates in turn work their way into the domestic cost of credit and into long-term interest rates.

Therefore, central banks can ensure price stability in the medium to long-term, even in a financially-integrated world in which production factors and goods move freely, and even if the size of the world economy increases relative to that of the domestic economy.5

But, as I said earlier, as a precondition for successful monetary policy central banks need to properly adapt their analyses to the changing environment. In such an environment, it is clearly important for stability-orientated monetary policy to analyse developments in external prices, in international trade flows and in international financial flows.

This said, I agree with John Taylor that developments in exchange rates per se should not be given any special status but should be taken into account by monetary policy only to the extent that they have a medium-term influence on price stability. This is because another fundamental law of monetary economics is alive and well in the globalised economy: flexible exchange rates are a sine qua non for price stability.

Does a globalised world call for more international monetary coordination?

With a growing set of prices and asset valuations being determined internationally, information on international developments is crucial for monetary policy-making. In this light, the financial turmoil in particular has shown the value that growing financial globalisation places on a timely and open international exchange of information among central banks and regulators.

Central banks should therefore cooperate by exchanging information and by designing a solid international financial architecture.

Beyond that, however, the scope for monetary policy-makers to coordinate is limited. This is the case as each central bank has just one policy instrument, and this instrument can only achieve a single domestic objective, price stability. As a consequence, each central bank is well advised to react to foreign developments only if these become relevant for domestic price stability. I therefore fully agree with John Taylor’s conclusion that central banks should not mechanically follow other central banks’ policy decisions.

Not least as a result of this consensus, I question the strong conclusions that John Taylor draws from some of his empirical analysis. In brief, he finds that a simple monetary policy rule, also widely referred to as the “Taylor rule”, when applied to the euro area, has residuals that correlate positively with the US federal funds rate. He interprets this finding as implying a leader-follower structure in the sense that US monetary policy induces the ECB to deviate from its objective of price stability out of concern for the exchange rate.

This is not the case. Indeed, a more reasonable explanation for John Taylor’s findings is the following:

Central banks which are concerned with domestic price stability seek to offset potentially destabilising shocks. In a globalised world, though, different central banks naturally respond in part to similar global

factors. And, as we know, a number of these factors are not well captured by a mechanical policy rule of the type which John Taylor takes as a benchmark for good monetary policy-making. Adequate policy reactions to global factors, and to the risks that they pose for domestic price stability, will thus show up – within the context of a simple rule – in the residual term.

Some observers interpret this residual as a measure of the monetary stance. It may indeed, in some cases, be possible to interpret the residual in this way. However, often the residual is a measure of the lack of explanatory power of the simple policy rule itself.

Now, to the extent that economies are structurally different and are hit by shocks with different timings, 

• global factors affect these economies with different lags.

• As a result, the measures of inflation and the output gap used in the Taylor rule are also affected with different lags.

• In such a context, monetary policy has to react in a pre-emptive manner to current and future likely developments to ensure domestic price stability over the medium to longer term.

• However, such a behaviour might generate a spurious correlation between the residuals of a simple Taylor type policy rule for the euro area and interest rates in other economies.

I suspect that this is what lies behind John Taylor’s result concerning the deviations from a euro area “policy rule” and the US federal funds rate.

Having inside knowledge, I can in fact rule out any sign of a leader-follower structure or any sign of a focus on the side of the ECB on the dollar-euro exchange rate, or in fact on any exchange rate, as a target of policy. Neither is the case. I agree with John Taylor, however, that any development in that direction would be deeply worrying.

Only a clear assignment of responsibilities ensures clarity about the central bank’s objective, which is at the heart of successful monetary policy. Yet international complementarities exist in monetary policymaking, to the extent that an international architecture which has each central bank keeping its own house in order is also conducive to an environment of global monetary stability.

Such architecture provides the best basis for a friendly and open exchange of views and information at an international level. Today there is frequent interaction as, for example, the BIS provides a much-appreciated forum for discussion among central bankers. In addition, there are further occasions for fruitful exchanges – this very symposium being one of them.

The role of the monetary policy strategy in an increasingly globalised world

I have argued that the best international monetary architecture is one in which each central bank focuses on achieving domestic price stability. In practice, even more is needed to guarantee a successful monetary policy. A clear mandate for price stability and a well-defined monetary policy strategy based on this mandate are essential for coping successfully with the analytical and practical challenges which lie ahead. Fortunately, both conditions are in place in the euro area.

A clear mandate for price stability:

• ensures that a central bank is fully accountable for achieving price stability. The commitment to price stability which such a mandate generates is, in turn, conducive to anchoring private sector expectations in a lasting way. This anchoring is particularly important if globalisation causes sequences of one-sided shocks to inflation.

• prevents central bank policy from going astray. While concerns are expressed that central banks may be increasingly tempted to stabilise exchange rates at the expense of price stability, a clear mandate for price stability guarantees that a central bank will not fall into this trap. Instead price stability-orientated central banks do not assign any special role to exchange rates, important as they are as information variables in the economic analysis.
Building on a clear mandate, a successful strategy:

- supports accountability,
- ensures a transparent and systematic response to risks to price stability,
- guides an effective communication policy,
- and enhances the predictability of monetary policy over the medium to longer term.

In this context, any measure of price stability used by central banks must adequately reflect the evolution of the purchasing power of money. Price stability is therefore best defined in terms of the cost of a representative, i.e., broad, basket of goods. An example which provides a clear and assessable yardstick of price stability is the basket underlying the euro area harmonised index of consumer prices.

This encompassing definition of the underlying basket contrasts with partial, or so-called “core” measures of inflation. While these measures can be useful for assessing risks to price stability, they –if put front and centre– risk providing a distorted view of underlying price developments which would jeopardise the anchoring of inflation expectations. This would be particularly detrimental in situations in which globalisation might induce sustained movements of prices of certain categories of goods.

A broad, transparent and widely accepted yardstick instead creates the necessary clarity to ensure a firm anchoring of inflation expectations. It is this clarity which allows a central bank to adopt a medium-term orientation within which policy-makers can appropriately discount short-term price volatility and transitory movements in inflation.

As mentioned, globalisation is likely to change the structure of the euro area economy both with regard to goods markets and financial markets. A strategy which monitors structural changes both from a goods market angle and from a financial or monetary point of view is therefore well-suited to cope with the challenges brought about by globalisation. The complementary perspectives of the economic analysis and the monetary analysis, which underlie the ECB’s “two-pillar strategy”, are conducive to appropriately adapting our policies to the changing environment. At the same time, the two-pillar strategy keeps minds focused on the fundamental laws of monetary economics.

In particular, having an explicit monetary pillar guarantees that the ECB always has considerable expertise in the analysis of monetary and credit developments and in the analysis of their impact on price stability. The close link between monetary developments and evolving imbalances in asset and credit markets implies that monetary analysis enables central banks to detect such imbalances at an early stage and to respond to the implied risks to price and financial stability in a timely and forward-looking manner. This has, in the past, proved an invaluable asset for the ECB, notably in times of global financial turbulence.

Just as the two-pillar strategy structures the discussion within the ECB, it also provides the basis for communicating our understanding of the economy to the outside world. By adhering to transparency, the ECB has achieved a high level of predictability for its monetary policy decisions. Our strategy therefore improves our policy effectiveness.

Let me conclude.

- Especially in an environment of ongoing globalisation, monetary policy must aim to robustly anchor inflation expectations. This requires a permanent alertness to risks to price stability on the side of the central bank, as shocks to inflation must not translate into second-round effects in price-setting and wage-setting.
- That being said, an efficient adjustment of the economy to macroeconomic shocks can be best facilitated by monetary policy-makers if they keep a firm focus on their domestic price stability objective. In particular, there will be no external stability without domestic price stability.
- Domestic price stability is a precondition for global monetary stability. Globalisation therefore does not expand the need for international monetary co-operation beyond an open exchange of views and information. The best international architecture is one in which each central bank has a clear mandate to focus on domestic price stability.
- Greater microeconomic flexibility would not only allow our economy to take better advantage of the opportunities provided by globalisation, but would
also facilitate macroeconomic adjustment in the wake of shocks and improve the resilience of the economy. Globalisation therefore intensifies the need for more flexibility in product and labour markets.

- I have argued that a monetary policy strategy which carefully monitors developments in domestic, as well as international, financial and goods markets is well-equipped to cope with challenges that globalisation brings for monetary policy. Such a strategy is in place in the euro area. At the same time, price stability is the best contribution monetary policy can make to enable the euro area economy to take the full advantage of the opportunities offered by globalisation.
This colloquium has been very rich in substance and highly stimulating. It has met the high standards that we have gotten used to expect from such events organised by the Bank of France. One could not have thought of a timelier or a more relevant subject matter than the one chosen by the organisers. In these brief summary remarks it is, of course, impossible to do full justice to the breadth and scope of the various presentations. I will make an effort, however, to highlight some of the key issues of the day.

The presentations started with an insightful introduction by our host, Governor Christian Noyer, who reminded us of the two major challenges that policymakers face today in the world economy: the challenge of rising inflation and the challenge of economic slowdown. Each one of these two challenges taken in isolation would have required a different policy response. The inflationary pressure requires a contracting policy whereas the economic slowdown pressure requires an expanding policy. The art of macroeconomic policy making is to design the appropriate set of policy measures that balances between these conflicting challenges. The unique characteristic of the current economic configuration is that the observed macroeconomic challenges have risen in the context in which the world economic system has undergone a dramatic process of globalisation. This globalisation has enhanced competition in the international markets for goods and services and has impacted on exchange rates and price trends. In addition, they were associated with large current account imbalances and have given rise to highly dangerous sentiments and political pressures for protectionism. Thus, under the current conditions, the conventional challenges to price stability and to stable economic growth are enhanced by challenges to globalisation that fuel protectionist sentiments.

The first session opened with an illuminating presentation of key stylised facts by Kenneth Rogoff. One of the issues covered in the paper is whether globalisation has made the task of central bankers easier or has it complicated their task. On the one hand, low cost imports (e.g. from China) to the rest of the world have helped to secure price stability. But on the other hand, the resulting low interest rates have stimulated more risky activities that have increased the fragility and vulnerability of financial markets. The external (imported) mechanism that mitigates inflationary pressures has raised the possibility that in the new globalised era central banks need to have a “new monetary framework”. John Taylor has rightly disputed this proposition. He claims that while we need to recognise that globalisation fundamentally help central bankers in pursuing their policy objectives, globalisation also helps to provide an economic environment that is conducive to economic growth and, as such, it helps the central banks to solidify support for the policy that they pursue: the policies which are aimed at achieving price stability. Accordingly, while there is no need for a formal “new framework”, there is a need to recognise that the traditional monetary framework now operates in a new globalised environment. As indicated by Janet Yellen, the openness of markets facilitates the beneficial effects of globalisation and the policies that have produced price stability have also reinforced the positive contributions stemming from the openness of the markets. This is an important perspective as it underscores the fact that there is no trade-off between open markets and price stability. The opposite holds – the openness of the markets contributes to an environment of competition and productivity growth and, thereby, helps price stability; at the same time price stability increases the support for and benefits from the openness of the markets.

Kenneth Rogoff reminds us, however, that “there is no free lunch”. The rapid export-led growth in China that has helped to mitigate inflationary pressures in the rest of the world has produced new challenges. First, it has resulted in a significant rise in inequality in the distribution of income and wealth in China, which in turn may fuel a dangerous degree of social turmoil. Second, the overheating economy in China has induced inflationary pressures within China which have also aggravated the inequality in the distribution of income and wealth. At the same time, the high rate of Chinese saving and the low growth of domestic demand in China have resulted in a very large surplus in the Chinese balance of payments which is reflected in a very rapid accumulation of foreign exchange reserves. These developments, in turn,
have stimulated political pressures for protectionism in the US and in Europe that pose significant danger to the future of globalisation.

The dangers posed to globalisation by the protectionist pressures are very real and needs to be resisted. It is enough to recall that in recent years the engine of growth in the world economy has been the Developing Countries. Specifically, in the year 2007, about seventy percent of the growth of world output stemmed from the Developing Countries and just about thirty percent of the growth of world output stemmed from the Industrial Countries. It is essential, therefore, that the international markets stay open so that trade between the Industrial and the Developing Countries continues. Furthermore, at the present time the largest economy in the world (the United States) is undergoing a significant slowdown that is induced by the collapse of the residential housing market. Maintaining unimpeded international trade between the US and the rest of the world can offer an important mechanism for mitigating the recessionary effects of the housing induced slowdown and, thereby, preventing it from becoming a more serious recession. Indeed recent data suggest that the dramatic expansion of net exports from the United States has contributed materially to US economic growth. The improved balance of trade of the United States has contributed positively to US output growth, and the magnitude of this improvement has exceeded the magnitude of the negative contribution to growth induced by the contraction of residential construction. Thus, globalisation has provided an important cushion for the US economy and (at least thus far) has helped to prevent the emergence of an aggregate recession. Indeed recent data suggest that the dramatic expansion of net exports from the United States has contributed materially to US economic growth. The improved balance of trade of the United States has contributed positively to US output growth, and the magnitude of this improvement has exceeded the magnitude of the negative contribution to growth induced by the contraction of residential construction.

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Richard Fisher made several important points. First, we operate in a world in which interconnectivity does not arise only from international trade in goods but primarily from the integration of capital markets. The latter form of interconnectivity is facilitated by thegreat progress made in the development of a highly sophisticated communication technology. The technological revolution and the associated information revolution have enabled a very rapid dissemination of knowledge and information. This rapidity is especially manifested in financial markets that are capable of responding to new information (and rumours) at great speed, and are capable of spreading this information around the globe. This expanded dimension of globalisation renders physical distances to be less relevant than in the past. In the new world, according to Fisher, (the rapidly moving) capital market transactions that are governed by current and expected rates of return, are gaining more prominence relative to (the slowly moving) goods market transactions. The world economic system is like a heavy tanker the speed of which has traditionally been influenced by the relative intensity of “head winds” and “tail winds”. According to Fisher, in the new globalised world, more attention needs to be given to strength and intensity of the “side winds” which influence materially the stability of the world economic tanker. Fisher also made the additional pertinent point that the forces arising from the integrated world financial markets have intrinsic disciplinary effects both on market participants as well on policy makers. Capital Markets punish very rapidly policy errors and, by the same token, these markets also reward correct policy actions.
In this regard, capital markets conduct a continuous referendum on economic policies. The results of these referenda are swift, objective, and efficient. This is another benefit of globalisation.

At that stage, the discussion turned into an analysis of numbers and statistics. Philippe Martin reminded us that we need to look at the composition of trade between high and low mark-up goods as well as between extensive and intensive margins. He also introduced the controversial concept of the “sacrifice ratio”. In the ensuing discussion, Christian Noyer pointed out that in determining the impact of price developments on inflationary expectations, we should go beyond the mechanistic reliance on the statistical shares that the various commodities have in the computed price index; rather we should note that some commodity prices are more visible than others and, therefore, the impact of changes in their prices on the overall inflationary expectations may be more pronounced than their statistical weight in the price index. The discussion on the properties of price indices and on the evolution of commodity prices has stimulated the contribution by Guillermo Ortiz who reminded us that “trees do not grow to the sky”, and that one should be very careful in mechanically extrapolating past trends into the future. Specifically, Ortiz has warned of the error that might arise from the assumption that in the future, oil prices and other commodity prices will continue to rise just because they have risen in the past. Ortiz argued that consideration should be given to the possibility that the trends of oil and commodity prices may be reversed as a result of a reduced demand induced by a slowdown in the US economy.

Rogoff added that globalisation is not only the characteristic of goods and capital markets but can also be a characteristic of economic policies. Specifically, the decision of several monetary authorities to peg the exchange rate of their national currencies to the US dollar implies that the domain over which the policy decisions of the US monetary authority (the Federal Reserve) exert their influence extends beyond the national borders of the United States itself. The expanded impact of the decisions of the Federal Reserve does not arise only from the traditional international transmission mechanism arising from the globalisation of markets but also due to the pegged exchange rate regime. The very fact that a foreign monetary authority decides to peg its currency to the US dollar, implies that that monetary authority has decided implicitly to adopt the monetary policy decisions of the US Federal Reserve. Thus, with pegged exchange rates the effects of policy actions undertaken by the US Federal Reserve are amplified by similar actions undertaken by the other monetary authorities through their exchange rate pegging operations. Thus, if the US adopted an inflationary course of action, the same course would be adopted by the other countries who peg their currency to the US dollar, and the global inflationary consequences of the US measures would be stronger than they would have been if the other currencies were not pegged to the dollar. This is the added dimension of globalisation—the globalisation of economic policies.

This perspective is relevant for the analysis of the current situation in the global economy. The decision of several authorities in Asia to peg their currencies to the US dollar implies that the recent relatively easy stance of monetary policy in the United States is being “imported” by the monetary authorities of these Asian countries and, as a result, the inflationary consequences of the easy money policy of the Federal Reserve gets amplified and globalised. If China and other Asian countries were to allow their currencies to appreciate relative to the US dollar, the global inflationary consequences of the US easy monetary policy would have been lessened. At the same time the overall international burden of the depreciated dollar (which was necessary to correct the very large and growing deficit in the current account of the United States), would have been shared more equitably among the key currency blocks. With a more equitable burden sharing, the pressures for appreciation of the Euro relative to the US dollar would have diminished as some of the burden would have been born by the Asian currencies that would also appreciate relative to the US dollar. Such an appreciation of the Asian currencies would help to reduce the large surpluses in the current accounts of these economies and would also help to reduce the re-emerging inflationary pressures.

The foregoing remarks indicated that the globalisation of economic policies adds a special dimension to the globalisation of markets and leads to the amplification and rapid dissemination of the consequences of such policies. This point was illustrated in the context of the pegged exchange rate regime. When one monetary authority pegs its currency to another, it finds itself (by default) mimicking the monetary policies of the other monetary authority and, thereby, importing...
the inflationary consequences. This phenomenon in which one region mimics policies of other region is not confined only to the globalisation of economic policies; it can also be found in financial markets and can be referred to as the globalisation of financial decisions. We all recall the collapse of the giant hedge fund Long-Term Capital Management (LTCM) in 1998. In retrospect it has become evident that one of the factors that accounted for the extreme outcomes was the fact that other investors and hedge funds followed the investment decisions of (the very successful) LTCM and mimicked them in their own investment decisions. As a result the financial positions undertaken by one player in the market, got amplified significantly and became much more pronounced by the globalisation of financial decisions of other market participants.

Some time ago, in commenting on the challenges of globalisation, Liu Ming Kang, the current chief bank regulator in China, recalled a Chinese proverb stating that “the honey is sweet, but the bee stings”. There is no question that globalisation is “sweet” in that its potential benefits are large. However, occasionally, along the way to getting the honey there are challenges, dislocations and hardships, there are bees that sting. It is important that we do not forgo the benefits from globalisation due to the challenges and obstacles along the way; we should obtain the sweet honey while, at the same time, design the mechanisms that would efficiently avoid the stinging bees. In this regard we should recall and apply the famous wise dictum of Sir Winston Churchill according to which “markets and parachutes share a very important property: both work best when they are open”.

Bill White offered a comprehensive analysis of the factors which underlie the current economic performance in the world economy. He highlights four factors: effective monetary policy; domestic deregulation; the saving glut; and globalisation. In this respects I would note that while all of these factors have played an important role, their relative importance is not the same. Effective monetary policy is the central policy pillar for the attainment of price stability. Different degrees of deregulation, of saving glut and of globalisation can provide headwind or tailwind to the wings of monetary policy but these factors can never substitute for it. Monetary policy is the only tool that is designed to secure price stability and, thereby, provide the preconditions for the attainment of sustainable growth.

The implicit presumption underlying White’s analysis was that the inflation performance has been satisfactory, and thus he posed the question: “Why has inflation stayed so low?” The question that I would pose is: has true inflation been indeed “so low”? In fact, “headline inflation” in the United States has clearly been relatively high, recently exceeding five percent. Of course, the trend rise in food and energy prices exceeded the headline rate and, therefore, the implied “core inflation” (which nets out food and energy components) was significantly lower. With the benefit of hindsight, and in view of the statistical properties of the (ex post) time series of food and energy inflation, it is relevant to ask how valid has it been to subtract the rapidly increasing food and energy components from the headline rate. If in retrospect the computed “core inflation” provided a downward bias of the “true” inflation rate, then the Central Bank policy rate of interest was set at a level which was too low relative to the level that would have been set had the true inflation rate been deemed to be higher. The full answer to this question is still unclear at the present stage but the possibility that interest rates in the US were set to be too low for too long can not be ruled out. If that was indeed the case, then the exceedingly low rates of interest may have fuelled future inflation in addition to having induced investors to seek higher yields and assume excessive risk. Finally, due to the globalisation of economic policies, the relatively easy monetary policy in the US was automatically adopted in other countries that have pegged their currency to the US dollar and, thereby, was spread globally.

In her intervention Janet Yallen argued convincingly that the key factor responsible for the good inflation performance of the United States has been the conduct of monetary policy. She acknowledged the fact that “head wind”, “tail wind”, and other external factors may impact on price developments but, the role of such factors should not be exaggerated. At the end of the day, it is the role of monetary policy to take all of these factors into account and act decisively to achieve the price stability objectives. Accordingly the good inflation performance of the United States resulted from the willingness of the monetary authority to use effectively the instruments at its disposal. The positive record of the Fed enhanced its credibility and reinforced the effectiveness of monetary policy. This view of the role of credibility is important in that it highlights the fact that the credibility of the monetary authority is an asset, it is a public good that needs
to be protected and cultivated. In this regards one recalls the saying that “credibility is never owned, it is just rented”. A similar point is illustrated by the old American Indian saying: “credibility comes by foot and runs away on a horse”; or in its more modern version: “credibility comes in an escalator and leaves in an elevator”. The key point is that when dealing with credibility one needs to recognise that there is a fundamental asymmetry and non linearity. Credibility is earned very slowly through hard work and consistent performance; it can be lost, however, very quickly.

Martin Redrado reminded us that, in contrast with the past in which financial disruptions stemmed typically from the Emerging Markets, the current disruptions to the global financial markets originated exclusively from the Industrial Countries (the United States). Redrado noted that in recent years the overall economic performance of several Emerging Economies has been more impressive than that of several Industrial Economies. He argues that the better economic performance exhibited by the Emerging Economies should not just be explained by reference to globalisation but, rather, by reference to the improved quality of economic policy in these countries. The fact that the economic performance of the Emerging Economies has improved so dramatically over the past decade demonstrates how quickly policy makers have learned from painful past policy mistakes. In this regard it is instructive to recall the alleged conversation between a young investor who asked a very successful investor for the secret of his success. The answer he got was: “the secret for my success is not making mistakes.” The curious young investor went on asking: “and what is the secret for not making mistakes?” The answer that he got was “I have a lot of experience.” The next question was: “and how did you gain so much experience?” And the answer was “I made a lot of mistakes.” There is no doubt that over the years, policy makers in the Emerging Economies have made ample errors that resulted in poor economic performance, high inflation, great suffering by the population, and significant political cost. This costly experience provided policy makers with the incentives to adopt a more responsible course of policies and, at the same time, it generated the political climate that was conducive for providing the necessary popular support for the appropriate set of policy measures. This resulted in an improved economic performance.

An instructive analysis of the Chinese experiences was provided by Yi Gang who observed that not all countries have adopted the inflation targeting strategy as a guide for monetary policy. He noted that several Central Banks of some large economies, such as the Federal Reserve and the ECB, chose not to be guided by inflation targets. Based on this observation, he expressed some doubts on whether China should adopt inflation targets. My own view on this matter is that one needs to draw a sharp distinction between countries that have enjoyed a long period of reasonable price stability and other countries that have not had such a legacy. Those countries with a history of price stability can use their own history and credibility to anchor inflation expectations. For them, the benefits from the formal adoption of inflation targets may not be great. On the other hand, countries whose past inflation record is less satisfactory may not wish to anchor inflation expectations to their unsatisfactory past. These countries need to divorce the expectations of future inflation from the unsatisfactory record of past inflation. For such countries the adoption of formal inflation targets makes more sense as it provides a clear mechanism by which the monetary authority makes a commitment and signals to the markets its planned policy. With a poor past performance, vague general statement by the monetary authority (or by the government) indicating its general “to achieve price stability in the long run” will not be credible. In order to succeed in anchoring inflationary expectations, the policy strategy must be credible. If the past record does not produce the necessary degree of credibility, one needs to adopt an institutional mechanism that helps to improve credibility. In such cases the inflation targets strategy with explicit quantitative targets, offers such a mechanism. In this regard the record speaks for itself: quite a few Emerging Economies of varying size that suffered from high inflation in the past (e.g. Brazil, Israel, and Mexico), have had a great success in employing inflation targets during their disinflation efforts.

Yi Gang also reported on the Chinese government plan to increase domestic demand. Against this background it is relevant to note that the implementation of such a plan, especially if it is based on structural measures that lower domestic savings (by households and by corporations) rather than expanding the public sector budget deficit, would be highly beneficial for China and for the global economy. It would help to reduce the large surplus in the Chinese current account of

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the balance of payments and, thereby, it will also mitigate the undesirable protectionist sentiments originating from the Industrial Countries in response to the large Chinese surplus. In this regard it would also be highly desirable for China to adopt measures that improve the functioning of its domestic capital markets including the secondary market for debt. This would encourage the development of pension plans and would provide households with more efficient ways to secure future income streams, and thereby reduce their need to have an excessively high saving rate. At the same time, the development of deeper capital and debt markets would encourage the Chinese corporations to reduce the excessively high proportion of their earnings that they keep as retained earnings. This would encourage corporations to distribute some of their profits as dividends to their shareholders, and thereby, reduce the abnormally high corporate saving rate.

The subject of financial globalisation and financial innovations was introduced by Alan Bollard who drew lessons from his own experience and from the experience of other countries. He reminded us again that maintaining an excessively low rate of interest for an excessively long period of time puts excessive pressures on private sector investors and asset holders to search for higher yielding alternatives. Typically, the search for higher yields results in investments that entail higher risks. Bollard observed that the higher risk was not always optimally priced as information was not complete and as transparency was lacking. He noted that our institutions are now facing an extreme challenge in the global market place: they will need to adjust so as to be able to cope with unprecedented sharp changes in the cost of borrowing as well as in the availability of funds.

Professor Arvind Krishnamurthy reminded us of the Philosopher/Economist Frank Knight’s useful distinction between risk and uncertainty. He used this distinction in order to explain how financial markets have recently become very illiquid. This is a relevant observation since when financial markets are dysfunctional the distinction between a “liquidity problem” and a “solvency problem” becomes somewhat blurred. Under such circumstances an otherwise solvent but illiquid institution may fail to secure funds on short notice and, thereby it may become de facto insolvent. In this context Governor Reddy described the strategy that helped India to defend itself from the turmoil. The defensive strategy was based on preparatory actions undertaken ahead of time. These actions enabled India to cope successfully with the external disruptions. In this regard a special focus was given to mechanisms that monitored credit quality.

Martin Wolf presented us with a characteristically lucid and fascinating presentation of the key issues. He describes the current crisis as a gigantic wake-up call, of which we better wake up, take notice, and rise to the challenge before a bigger crisis occurs. We must recall that the international system has allowed for the emergence of huge external imbalances without doing much about them. This multi-year neglect has made the global financial and trading system highly vulnerable. In view of this experience it is necessary that when the dust on the current financial crisis settles, the lessons will be learned. It is hoped of course that the relevant lessons will be learned in time. There is an old story about a man who was condemned to die; when being led to the electric chair he allegedly was heard whispering to himself: “this will teach me a lesson”. For him the lesson was learned too late.

In his lucid analysis of the implications of globalisation for the conduct of monetary policy, John Taylor recognises that globalisation affects the channels of transmission of policies. However, he does not believe that these changes require fundamental modification of the monetary policy framework. His analysis provides a useful historical perspective. One of the insights of his contribution relates to the objectives of inflation targeting. Since monetary policy in each country is conducted by its national monetary authorities it has been typical to define the price targeting objective in terms of the national price index. Taylor suggests that in a globalised economic system one may wish to pay attention also to the global price level. In order to pay due attention to the global price level, one needs to design a mechanism by which national central banks communicate and share information with each other. The existing fora in which central banks communicate with each other (such as within the BIS, ECB, IMF, etc.) may provide a good foundation for the institutional systemic setting necessary for the information sharing.

One of the elements that are relevant to the globalised open economy considerations is the relationship between exchange rates, prices, and monetary policy. In this regard, it is relevant to note that although changes in exchange rates impact on national price
levels and inflation rates (depending on the extent of the pass through), the inflation targeting approach should not be confused with an exchange rate pegging approach. Accordingly, under inflation targeting, monetary policy should not adjust interest rates in order to prevent exchange rate changes; rather it should change the rate of interest so as to ensure that the inflationary consequences of exchange rate changes are consistent with the inflation target. The discussion of this topic illuminated several important points. Eric Chaney reminded us that once inflation targets have been set, it would be wise for the authorities to make an effort to meet the target rather than be tempted to adjust the target depending on circumstances. Credibility is an asset that should be cultivated. Donald Kohn indicated that in order to deal properly with the challenges that globalisation pose to the conduct of monetary policy, it is important to recognise whether the origin of the various shocks is domestic or foreign. It is especially relevant in determining the proper policy response to oil price shocks. Finally, Jürgen Stark brought to the discussion the best tradition of the Bundesbank and reminded us that international policy coordination should not go beyond the sharing of information among the various national authorities. Economic policy is done “at home” and should be guided by domestic policy objectives. It is not wise to expect that democratically elected governments would set their policies by international coordination; rather, the responsibility of each government is to use its policy instruments for the attainment of its own objectives.

The final set of my comments relates to the current situation in financial markets. At the early phases of the current financial crisis, it was referred to as the “subprime crisis”. Over time, it extended itself throughout the capital markets, primarily in the United States but also abroad, and by now it is fair to refer to it as a “global financial crisis”. Today, capital markets are clearly dysfunctional. The system lacks transparency, nobody knows who holds the risk or, for that matter, what is the magnitude of the risk. Inter-bank markets got dry and counterparty confidence evaporated. The “originate-to-distribute model” was challenged and, as demonstrated convincingly by Hélène Rey, that business model has significant flaws. It is subject to the typical challenges which pose difficulties to the “principal-agent model” and it distorts the decisions concerning risk taking. It reduces the incentives for appropriate due diligence and, through a complex distribution of cocktails that underlie securitisation, it cast a shadow on the details that are critical for an appropriate assessment of risk and pricing of assets. Along the way a special role is given to rating agencies that operate in a non-competitive environment and that are compensated by the issuers of securities rather than by the investors. The compensation of bankers and investment advisors is not determined by their performance or by the profitability of the investment decisions; typically, the compensation system was completely unrelated to the fundamentals and to other conventional norms. Needless to say, the incentive system has been seriously flawed. With the lack of transparency and with the fear that tomorrow may be worse than today, potential investors stay on the sidelines and the dryness of the market is aggravated. To make matters worse, the accounting practices that are used for marking assets on balance sheets is introducing highly undesirable pro cyclical features. In this regard it is important to emphasize that there is a lot of logic in the “mark-to-market” principle. It clearly provides a more sensible valuation of assets than irrelevant “historical values”. However, as indicated by Mark Carney, all this presumes that there is a functioning market in which prices are determined in an objective manner and, thus, that such prices can be applied to implement the “mark-to-market” principle. Unfortunately, the current conditions are such that very frequently the process of “price discovery” cannot be based on the market since, for all practical purposes, the latter just does not exist. The solution for the lack of market prices cannot be satisfactorily solved by replacing the “mark-to-market” principle by the “mark-to-model” principle since the latter lacks the objectivity of a market price and is, therefore, subject to the arbitrariness of the specific model that is being used. In the absence of market determined prices, the pro cyclical nature of the “mark-to-market” rules poses a significant challenge to the financial sector. Each markdown of assets erodes the capital base of the banking system which, in turn, must seek ways to reduce significantly its lending activities and/or raise capital by costly borrowing or by attracting new shareholders such as sovereign wealth funds. The curtailment of the lending operations aggravates the credit crunch which, in turn, reduces profitability and worsens the overall economic situation. Thus, what started as the consequence of an initial markdown is planting the seeds for the next markdown and is creating a very dangerous spiral.
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At the heart of the process lies the situation in the housing market. The value of the mortgage based securities (and their derivatives), depends on the path of housing prices, and the situation will not stabilise until housing prices find their new equilibrium. There is no doubt that there has been a significant excess in the housing market in which prices kept on rising beyond the fundamentals. The list of the deplorable practices in mortgage origination is by now well known. It includes items such as no-documentation loans, unreasonable tempting "teaser" rates that are unrelated to the payment capacity of the borrower, mis-pricing of risk, "parking" risky assets in special vehicles off balance sheets, the production of complex derivatives that nobody understood, and the like. These have contributed to the housing bubble. Since "trees do not grow to the sky", the housing bubble had to burst and, thereby, initiating the inevitable domino effect.

The current crisis will inevitably stimulate a lot of reports that will attempt to understand its causes and recommend corrective measures so as to prevent the next round. It is of utmost importance that the lessons are not forgotten so that at the end of the day the financial system will be stronger, healthier and more robust. We must note, however, that the necessary corrective measures go beyond a mere improvement of the "plumbing" of the financial system and of its "nuts and bolts" (though there are a lot of those). The regulatory/supervisory systems need also to be re-examined including the long-standing question of whether the responsibilities for bank supervision should rest within the jurisdiction of the central bank or should it be assigned to another body (e.g. the FSA model). Since the effectiveness of monetary policy hinges critically on having a well functioning banking system, it is vital, therefore, that the Central Bank possesses timely information and intimate knowledge of all relevant developments within the banking system. In order to have such information and knowledge and be able to act upon it in a timely manner, my bias is that it would be best if the bank supervision function rested within the Central Bank. Of course, in view of the great interdependence among the various segments of the capital market (such as insurance, securities, banking, etc.) it would be important to ensure frequent communication among the various regulators.

Along side with the re-examination of the regulatory/supervisory framework, there will also need to be a fundamental re-thinking of the business models that are appropriate for the various segments of the financial industry. In this context it would be relevant to examine whether in the newly evolving financial system there is a room for, and economic viability of, investment banks that are independent, or will they need to merge with, or be transformed into, commercial banks. Looking ahead, it seems likely that the process of consolidation that has characterised the global financial industry in recent years will continue and will alter materially the size and operations of that sector. Emerging from this consolidation process will be a financial industry that is smaller, better regulated by a modern integrated regulatory system, and better aligned with the norms and performance of the rest of the economic system.

Even if all the necessary reforms are adopted and implemented so as to ensure adequate performance in the future, the "excess baggage" of the past must first be addressed. At the present time many financial institutions have balance sheets that are saddled by a huge quantity of "toxic assets" whose presence introduces a high degree of uncertainty which imposes a heavy burden. As long as this legacy from the past exists, the financial system might be prevented from having "a new beginning". A holistic solution to the problem of the financial system may need to include a mechanism for "cleaning up" the balance sheets from such "toxic assets". In order to implement such a "cleaning up" operation, policy makers will need to be creative and be willing to think "outside of the box". We are clearly in an unchartered territory, and, therefore, conventional solutions will not do. We may need to learn to live with the implications of "moral hazard", make all efforts to minimise them and, at the same time, remember that we are in the midst of an unprecedented challenging situation in which, from the public policy perspective, we may not have the luxury of waiting until the "best solution" is found. We should remember that too frequently the worse enemy of the "good" is the "very good".

While formulating the way forwards and agonising on the tough initial conditions that characterise the present, we may recall the famous story of the Gentleman who was on his way to Dublin and while driving through London he lost his way; he asked somebody for the best driving directions and was told: "I do not know the best way to Dublin but I would definitely not start from here". In order to conclude with an optimistic note it is enough to observe that this story was made famous by the residents of Dublin who greeted the Gentleman upon his arrival to town.
Les qualités des participants sont celles à la date du colloque

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