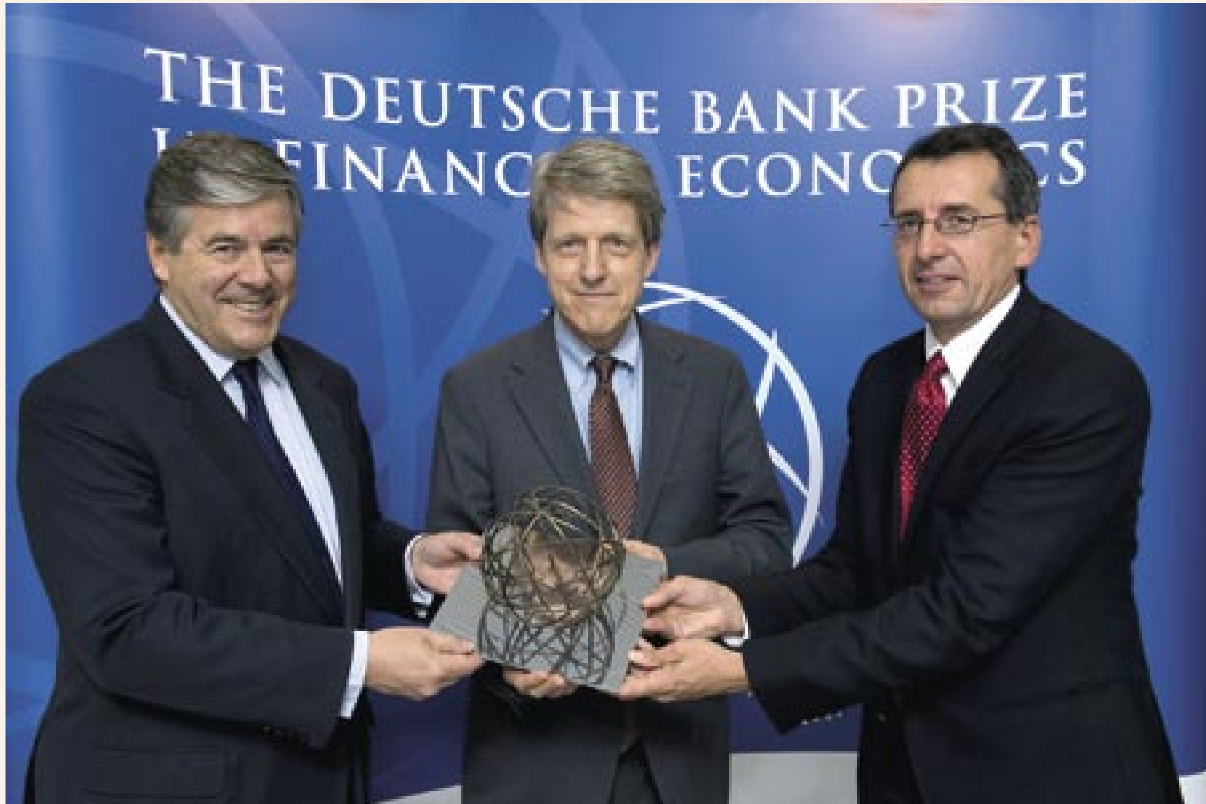


THE DEUTSCHE BANK PRIZE IN FINANCIAL ECONOMICS

2009

The Deutsche Bank Prize 2009 was given to Robert J. Shiller for his contributions to financial economics. Shiller is the Arthur M. Okun Professor of Economics at the Cowles Foundation for Research in Economics, Yale University, and Professor of Finance at the International Center for Finance, Yale School of Management. He was chosen by an international Jury of experts for his path breaking research related to the dynamics of asset prices, such as fixed income, equities, and real estate and their metrics. His work has been significant not only in the development of theory, but also in the implications for practice and policymaking. His contributions to risk sharing, financial market volatility, bubbles and crises, have received wide-spread recognition among academics, practitioners and policy makers around the globe.

CFS Symposium: "Financial Innovation and Economic Crisis" In honor of Robert J. Shiller

30 September 2009

Frankfurt am Main

The scientific symposium "Financial Innovation and Economic Crisis" in honor of Robert Shiller aimed to encourage discussion on the sources of economic crises, the development of instruments to manage a variety of risks and the prevention of future crises. It was organized by Michael Haliassos (CFS and Goethe University). Along with a list of prominent speakers, such as Nobel Prize laureate Robert C. Merton of Harvard Business School, some 600 participants from politics, academia, press, business and the financial sector took part in the event.

Jan Pieter Krahnen, Chairman of the prize Jury, opened the symposium by congratulating the winner, whose work "has been highly influential both with respect to academic research and to its macroeconomic implications." He also thanked the Deutsche Bank for supporting the prize and in doing so, setting a valuable example of corporate citizenship. Reviewing the nomination process, he noted that nominators from 55 countries proposed a group of more than 370 nominees, from whom the prize winner was selected by an independent Jury. The Jury itself consisted of leading international experts thereby ensuring exceptional academic standards are maintained and enhancing the credibility and reputation of the prize.

Josef Ackermann

In his welcome address, **Josef Ackermann**, Chairman of the Management Board and the Group Executive Committee of Deutsche Bank AG, praised Robert Shiller as a noteworthy prize winner. If the financial world would have spent more time on understanding the dynamics of asset markets, the psychological underpinnings of asset bubbles and the risks involved in buying a home in Florida versus Arizona in the middle of the decade, then the crisis would have at least been attenuated.

"An easy way of achieving that task would have been to read the contributions of Robert Shiller, looking at some of the indices he and his colleagues invented," said Ackermann. There would have been greater awareness of the potential

The Deutsche Bank Prize in Financial Economics is a highly endowed international award given for outstanding academic achievements in the fields of money and finance with a practice and policy relevant orientation. It was established in 2005 by the Center for Financial Studies, in cooperation with Goethe University Frankfurt. The prize is sponsored by the Stiftungsfonds Deutsche Bank im Stifterverband für die Deutsche Wissenschaft* and carries a € 50,000 cash award. It is awarded every two years and presented by Josef Ackermann (Chairman of the Management Board and the Group Executive Committee of Deutsche Bank AG). Previous winners were Eugene F. Fama (University of Chicago) in 2005 and Michael Woodford (Columbia University) in 2007.

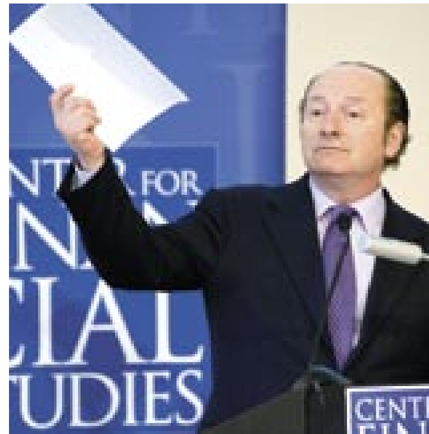
* Deutsche Bank Donation Fund in the Donor's Association for German Science

for unforeseen interactions in asset and money markets, something most existing risk models failed to capture. The costs of this failure have been immense. A number of large financial institutions failed and government interventions were needed to rescue others. "Both principled improvements based on sound academic research as well as practical improvements based on better-grounded risk management techniques are required," according to Ackermann.

Keynote Lecture: On the Science of Finance in the Practice of Finance: Challenges from the Financial Crisis and Opportunities from Financial Innovation

The keynote lecture was delivered by **Robert C. Merton**, Professor at Harvard Business School and Nobel Laureate in Economics. Merton noted that for nearly four decades financial innovation had been a central force driving the global financial system towards greater efficiency with considerable economic benefit accruing from these changes. The scientific breakthroughs in finance during this period both shaped and were shaped by the extraordinary innovations in finance practice that expanded opportunities for risk sharing, lowering transactions costs and reducing information and agency costs. Yet today, we are in a global financial crisis which many commentators attribute to the changes in the financial system brought about by financial innovation, derivatives and mathematical models. Merton's remarks mirrored these seemingly contradictory characterizations of finance.

First, he considered the structure of credit risk propagation and explained



Robert C. Merton

how large risks can build up without being recognized and then appear to explode. In the crisis, guarantees of debt in various forms played an important role. For example, so-called credit default swaps (CDS) are guarantees of debt. If a guarantee is used to render a risky debt risk-free, then the risky debt itself must be equal to the risk-free debt minus the guarantee. In default, this implies that the holder of the guarantee receives the difference between what was promised and what has been liquidated. The value of this guarantee can be very sensitive to small movements in the underlying asset's value. If the asset loses value, the value of the guarantee goes up and so does the risk involved. Thus, in a short time the risk associated with a particular portfolio may increase a lot. Macro risks can then build up in a nonlinear fashion, in particular if the asset and guarantees change hands without full consideration of the changes in value and risk. Additional destructive feedback loops arise with guarantors writing a guarantee even though their assets will not be adequate to meet obligations precisely in those states of the world in which it will be called on to pay. Examples would be a corporation writing a CDS contract on its own debt, or the Pension Benefit Corporation investing in the equities of the companies whose pensions it guarantees. Indeed, governments act as guarantors of banks liabilities, for example via deposit insurance. So "the governments are effectively writing a guarantee on a guarantee," stressed Merton. A government can be going with very little exposure on its guarantees, but should assets fall in value as they have, then the risks from those assets to the governments can rise very dramatically.

Plenary Lectures

The next speaker, **Nicholas Barberis**, Professor of Finance at the Yale School of Management, discussed the relationship between "Psychology and the Financial Crisis". He quickly summarized two alternative widely expressed views on the causes of the crisis. One of them is the "bad incentives" view, which states that banks knew that subprime loans had a significant risk of default, but their incentives led them to keep originating and packaging. According to Barberis, this explanation only works if decision makers have very short-term incentives. The other one is the "bad models" view. In this case, banks simply failed to forecast the likelihood and severity of a collapse. Barberis questioned how such smart and well-trained people could be comfortable with such deficient models.

Then he proposed a different perspective on the crisis based on the concepts used in behavioral finance. This explanation involves less than fully rational thinking by the actors in financial markets and institutions. Though to some level banks may have been aware of problems associated with their business models, a variety of psychological forces may have driven decision makers to delude themselves into thinking that everything was fine. Reasons for such delusion are found in cognitive dissonance, conformity, groupthink and excessive

Nicholas Barberis

obedience. Cognitive dissonance refers to discomfort with beliefs that question one's self-image. Thus, bankers may have manipulated their own beliefs and convinced themselves that everything was fine. Even if some bankers or traders acknowledged the possibility of problems to themselves, they may have kept quiet for the sake of conformity.

Furthermore, Barberis accentuated the role of psychological factors in amplifying the crisis. Absence of trading in some debt markets may have to do with lack of trust and ambiguity aversion. Moreover, the firm belief that house prices would keep on rising may have reflected people's tendency to see patterns where there are none, a behavior called representativeness, or their overconfidence. The same psychological factors may have led people to believe that they could forecast future house price movements more accurately than they could, in addition to underestimating the risks of taking on a large mortgage.

Luis M. Viceira, Professor at Harvard Business School, spoke on "Understanding Inflation-Indexed Bond Markets". He shared with the audience that he first learned about inflation-indexed bonds from Robert Shiller, who was studying them in 1996 to 1997 when the U.S. Treasury was thinking about launching these bonds. Essentially, inflation-indexed bonds are bonds whose principal and coupons adjust with inflation. In other words, they preserve the purchasing power of the coupon and principal, which is not the case for a standard nominal bond. In the United Kingdom inflation-indexed government bonds were already issued in the 1980s, whereas the United States followed in 1997. In both countries, these bonds are growing in share of total public debt and also as a share of GDP. If one thinks about the interest rate or yield paid on these bonds, they actually reflect market prices or market values unobserved until these bonds were invented and issued. This price is the real interest rate as assessed by the markets.

Luis Viceira

Viceira reviewed the decline of real interest rates from 4% in the 1980s and '90s to 2% in the 2000s, leveling off at around 1% in early 2008. The market turmoil in the fall of 2008 sent the yield of these bonds up to 3% while the yield on their nominal counterparts declined massively. However, inflation-indexed bonds gained in popularity among investors over the years, in spite of the short-run volatility they exhibit. The reason is that inflation-indexed bonds provide investors with a stream of coupons and principal payment at maturity that is constant in real terms.

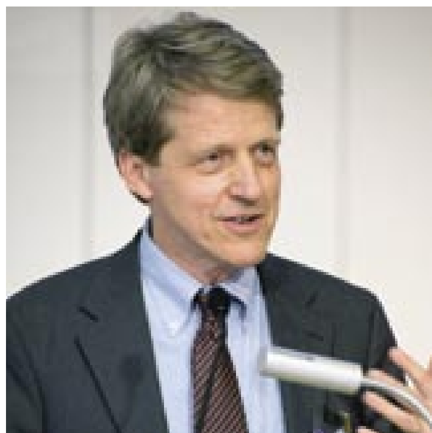
These are not "exotic" or "alternative" instruments. "They are a riskless asset for long-term investors and should be at the very core of conservative portfolios," according to Viceira. Inflation-indexed bonds can do what conventional nominal government bonds and cash instruments cannot. Cash is safe only in the short-term, if short run inflation uncertainty is small, and exposed to reinvestment risk in the longer run, because real interest rates fluctuate. The coupon and principal of long-term nominal government bonds may be eroded by unexpected inflation.

Keynote Lecture: Inventors in Finance: An Impressionistic History of the People Who Have Made Risk Management Work

Deutsche Bank Prize winner **Robert J. Shiller** began his speech in German to declare how honored he felt to receive this prize and thanked Deutsche Bank and CFS. He quoted Isaac Newton, "If I have seen further, it is by standing on the shoulders of giants." Shiller then focused on the history of innovations and the giants who have founded the financial system.

According to Shiller, the basic mission of finance is risk management and incentivization to further economic growth. In order to achieve that, it is necessary to be inventive. "What we need is innovation and economic progress, not bailouts," he stressed. Although bailouts might be necessary in the short run, they need to be done in the context of progress. Economic or financial inventions drive the economy forward. Yet inventions in finance are driven by certain intellectual processes. Shiller pointed to behavioral economics and the revolution which occurred in the last 30 years in bringing psychology into the fields of economics

and finance. To Shiller, it is essential that the knowledge of human psychology is incorporated in finance if there is to be progress and financial innovation.



Robert Shiller

In response to the financial crisis, Shiller called for a commitment towards the democratization of finance making it work better for the people. Not long ago, financial innovations were used narrowly. Only wealthy or well-connected people would take advantage of them. Democratization of finance implies setting up a risk management and incentivization system that works well for the society at large. In many ways the current financial crisis is due to a failure to manage certain kinds of risks. "We have not democratized finance well enough because we did not put risk management institutions in place that could have been there in the crisis," said Shiller.

The process of invention and advancement of the financial system has to involve experimentation and many minds. Shiller surveyed historical examples of key inventions touching on the founding of the Dutch East India Company in 1602, the Bank of England in 1894, the first indexed bond in Massachusetts in 1780, and the introduction of limited liability in New York State corporate law in 1811. What emerged out of these wild ideas, were great innovations. He concluded that changes to the financial structure are needed but will require some time to be accomplished.

Expert Panel: Providing perspectives on the financial crisis and the role of financial innovation from different angles

The symposium ended with a panel discussion, moderated by Michalis Haliassos. Panelists included Otmar Issing, President of the Center for Financial Studies, Klaus Schmidt-Hebbel, Professor at Catholic University of Chile, Frank Smets, Director General for Research at the ECB, Susan Smith, Director of the Institute of Advanced Study at Durham University and Mistress of Girton College, Cambridge, and Maria Vassalou, President of the European Finance Association and Global Macro Portfolio Manager at SAC Capital Advisors, LP.

Michael Haliassos pointed to an important challenge brought out by the symposium: how to create a new financial market environment that fosters socially useful financial innovation while at the same time avoiding the excesses of the past. He cautioned that the answer is unlikely to involve a severely constrained financial industry unable to experiment with new products; or one allowed to offer only very simple products. He introduced the panel as adding to the discussion differences in vantage points: those of the government and regulators; of the monetary policy maker; of the international organization; of the academic in social sciences; and of the professional investor.

M. Vassalou, S. Smith, F. Smets, K. Schmidt-Hebbel, O. Issing

Michael Haliassos

Otmar Issing reminded the audience of the surge of criticism of economics in the aftermath of the financial crisis. He emphasized that financial science is in flux, perhaps best illustrated by the same prize being given for opposing views on the efficiency of financial markets. Turning to the financial crisis, Issing focused on an aspect that is fundamental to the reform of the system. He saw a great risk in that government interventions have created the impression that in the future no major financial institution will be allowed to fail and that savers as well as bond holders will be largely bailed out. This would be a fatal deviation from the principles of a free markets system in which risk and uncertainty are unavoidable. Issing advised stricter capital and liquidity restrictions on systemically relevant financial institutions. Also, it should

be made easier to resolve financial institutions. The required solution combines an unconditional government guarantee for the bank's new business after the resolution date with an orderly run-down of its business contracted before the resolution.

Klaus Schmidt-Hebbel drew on his experience as former Director of the OECD Economics Department, to discuss the crisis from the viewpoint of international organizations. He acknowledged that just like most other observers they underestimated the build-up of risks in the world economy and missed the problems in financial regulation and supervision. They should have given more weight to the work of Professors Shiller and Case on the housing market and reacted to their warnings. Nevertheless, they did identify some problems early on, for example, the international imbalances implied by excess savings in China and dissaving in the United States. Also, the OECD had questioned the role of the semi-governmental agencies Fannie Mae and Freddie Mac in the U.S. housing market. International institutions responded quickly to the crisis. The OECD and IMF advised governments and helped induce cross-country collaborations, analysis and policy recommendations.

Frank Smets addressed the pro-cyclicality of the financial system and the various policy responses that are being pursued to alleviate it. Many of the booms and busts in credit and asset prices in the past start from a good fundamentals story underlying them. Yet, time and again there are episodes when these good fundamentals mutate into excessive credit expansion and risk taking. There are many feedback mechanisms that lead to procyclical behavior, but fiscal and monetary policies also often contribute to it. Initiatives on

Frank Smets

the reform agenda also include measures dealing with regulation strengthening the market infrastructure and increasing transparency. Furthermore, there is a growing consensus that a new macro prudential policy framework is needed. The European Council has agreed to establish a new framework for both micro and macro prudential supervision. On the macro side this includes the establishment of a systemic risk board, which will assess the stability of the financial system in the EU, issue risk warnings and make policy recommendations.

The effect of innovations in the housing economy and interactions with the financial crisis formed the focus of **Susan Smith**'s presentation. She reviewed housing, mortgage and financial markets. Their uneven integration is certainly related to the causes of the crisis but may also carry seeds of its resolution. She looked at equity borrowing in the United Kingdom and Australia, finding that (i) equity borrowing is widespread, frequent and not trivial, (ii) housing wealth operates via equity borrowing as a store for precautionary savings, and (iii) equity borrowing is risky. Finally, she indicated barriers to innovation on the side of industry and housing demand.

In conclusion, **Maria Vassalou** compared market efficiency theory as developed by Eugene Fama, the Deutsche Bank Prize winner in 2005, and the new behavioral finance. She noted that market efficiency, that is whether prices incorporate all available information, can only be tested along with an asset pricing model. Thus, it is joint hypothesis of market efficiency and the particular model to test it. Some of the "bad press" that market efficiency had gotten is related to the particular capital asset pricing model used in testing it. Some of the "anomalies" that were studied by behavioral economists were defined relative to mis-specified asset pricing models. Instead of signaling irrationality of investors, these anomalies are better explained by asset pricing models that link important macroeconomic variables to asset prices. She was skeptical of behavioral finance stating she "has seen no convincing evidence...that markets are persistently inefficient and investors act irrationally in a way that has a material impact on prices for a prolonged period of time."

Maria Vassalou

Nevertheless, she praised Shiller for his influential research on asset pricing and on financial innovations such as the "MacroMarkets" he proposed to hedge economic risk factors.

Celia Wieland (CFS & wieland EconConsult)

The Award Ceremony

The symposium was followed by an exclusive award presentation ceremony where Josef Ackermann presented the award to Robert Shiller. The laudatio was given by Karl Case, the Coman and Barton Hepburn Professor of Economics at Wellesley College and co-founder of the widely known Case-Shiller Home Price Index for the United States

Karl Case

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