

Jean-Claude Trichet: Making decisions in an uncertain world

Speech by Mr Jean-Claude Trichet, President of the European Central Bank, at the Rheinisch-Westfälische Technische Hochschule (RWTH), Aachen, 1 June 2011.

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I. Introduction

It is a pleasure for me to be here in Aachen, a city that has played such a central role in the project of European integration.

As students at RWTH Aachen, you must be proud to be part of one of Europe's leading institutions for science and research. This university has an international reputation, demonstrated both by its participation in global networks of higher education and by the presence of a large contingent of students from around the world. A degree from such a renowned university is indeed a great asset and a remarkable insurance against the uncertainties of your working lives.

In pursuing your studies, you have already had to make important decisions under uncertainty. Your choices of university and degree course were made with limited information – about the chances of obtaining the degree, about the impact of your degree on future job opportunities and about its relative merits compared with alternatives. Such uncertainty is a constant feature of our lives, as we experience the structural transformation of our economies driven by new technologies and globalisation.

Fifty years ago, future career paths were clear for most graduates. Engineering students would become engineers and medical students would become doctors. Nowadays all professions change at much greater speed. Engineers and doctors work side-by-side in such areas as nanotechnology and biomedical engineering. Many of you will be not so much filling existing jobs as inventing whole new jobs.

At the same time, increasing interactions between people and organisations across geographical borders makes it more difficult to appreciate the potential impact of economic developments elsewhere in the world on the prospects for your home country. The process of globalisation has many positive consequences, such as the benefits of trade, financial market integration and the acceleration of global growth. But there are risks too, such as the accumulation of so-called “global imbalances”, which were a key underlying cause of the global crisis.

All of you will be aware of the difficulties that the world economy has experienced in recent years: the financial crisis that began in 2007 and led to the deepest recession since World War II. Devising appropriate policy responses to the crisis has been a challenge for central banks everywhere. Many decisions have had to be made under exceptionally uncertain conditions, sometimes with very limited information and in constantly changing circumstances.

Today I would like to discuss with you our recent experience of decision-making in an uncertain world. I will outline how the crisis developed and then describe how we at the European Central Bank (ECB) responded – the kinds of information we draw on, the tools we use and the principles on which we base our decisions. I will close with some brief reflections on dealing with uncertainty.

II. Uncertainty and the crisis

The origins of the crisis lay in changes in the economic and financial environment over the past two decades. During that time, there was a marked decline in the volatility of such aggregate economic indicators as total household consumption and total business

production. This led to a widespread perception that we were living in very benign economic conditions.

At the same time, some developed countries underwent a process of financial deregulation and innovation aimed at improving efficiency. New financial products were developed with the promise of enabling financial institutions to manage the risks in their lending activities more effectively. As a result, larger segments of the population obtained mortgage financing, and credit generally was more easily available.

But the promised benefits of financial risk management turned out to be illusory. Risk did not disappear, indeed in many cases it was magnified. And the process of deregulation led to a huge increase in private indebtedness and an accumulation of financial imbalances.

At the global level, a number of developed economies were able to finance increased household consumption by borrowing from fast-growing emerging economies that had an abundance of savings. These sustained global imbalances contributed to lower interest rates, which further encouraged the process of credit creation in countries that were receiving capital inflows.

It was clear to many careful observers that this process eventually should come to a halt. With the considerable benefit of hindsight, warning signals of the subsequent financial distress in the data for 2006–07 are clearly evident. In the name of my colleague central bankers, I gave myself a clear warning in January 2007 on the likelihood of a major market correction due to a significant under-assessment and under-pricing of risks in the financial markets. But the specifics of how a crisis might be triggered and the course of its subsequent propagation proved hard to predict in real time.

Ultimately, the crisis was ignited in August 2007 by unprecedented tensions in the interbank market, in which financial institutions lend to and borrow from one another. Following the bankruptcy of Lehman Brothers in September 2008, the financial market tensions developed into a loss of confidence across the whole economy and eventually a deep recession. After years of benign economic developments, all policy-makers suddenly faced very uncertain circumstances.

A key feature of the uncertainty generated by financial crises is that it places decision-makers in uncharted territory. Events happen that were deemed to be almost impossible before the crisis, and were therefore difficult to forecast on the basis of statistical methods.

This was the case for developments in the interbank market in the first phase of the crisis. Up until July 2007, the general perception among market participants was that loans between financial institutions were essentially safe. Banks trusted each other, both because bank defaults in developed economies had previously been rare events and because the very short loan periods minimised the risks that borrowers would not repay their loans.

As a result, banks were happy to lend to other banks in large amounts at the same interest rate that they were charged when borrowing from the central bank. Occasional differences of a few hundredths of a percentage point between these interest rates were interpreted as signs of stress, but they were often due to technical factors and therefore very short-lived.

But in August 2007, in response to negative developments in the market for US sub-prime mortgages, uncertainty about the creditworthiness of many financial institutions suddenly increased. Banks became unwilling to lend in the money market. As funds disappeared from the market, the difference between the cost of unsecured short-term funding from other banks – what in the euro area is called EURIBOR – and the interest rate on money provided by central banks suddenly jumped from near zero to unprecedented levels of around 60 basis points.

This sudden widening in the interest rate differential – what is known as the spread – happened simultaneously in the euro area, the US and the UK (see Figure 1). Not only was this unpredictable, but policy-makers and market participants were also extremely uncertain

about whether the spread would widen further and when there would be a return to normal conditions.

Some researchers have drawn a parallel between the money market crisis and Nassim Taleb's¹ description of "black swan" events. The idea of black swan events originates from the assumption, based on centuries of experience in Europe, that there was only one kind of swan: white swans. This assumption was invalidated only in the eighteenth century by the observation of a black swan in Australia.

In Taleb's analogy, "black swans" are extreme outcome but low probability and highly unpredictable events. The parallel arises as the opening up of interbank market spreads in August 2007 could not be predicted based on historical data, because it was a low probability event. It became predictable – and justifiable – only with hindsight.

What happened next was that tensions remained high for a protracted period. In September 2008, spreads increased much further with the bankruptcy of Lehman Brothers. Economic uncertainty – as reflected, for example, in stock market volatility – rose dramatically.

The unpredictability of rare events highlights an important distinction between "risk" and "uncertainty", which was first made by the famous economist Frank Knight in 1921.

According to Knight, "risk" refers to a situation of randomness where the range of possible events and the associated probability distribution are known. Risk therefore characterises situations such as the toss of a coin or weather forecasting. In both cases, we can characterise the set of possible outcomes and we can compute their likelihood.

"Uncertainty" refers instead to a situation where events cannot be enumerated and/or it is not possible to attach a probability to them. Events like the "black swan" can more easily be characterised as uncertain, rather than risky. Since they have never been observed before, we do not know how to judge their likelihood.

III. Permanent alertness, judgement and experience

So how did central banks respond to the crisis?

I would like to highlight one simple principle: the timing of the policy response is crucially important. Financial crises can strike suddenly. The response to the crisis should be commensurably swift and decisive. This requires a stance of what I call permanent alertness, to identify promptly new threats to economic stability and price stability, including those arising from the crisis itself.

The decline in banks' ability to raise funds on the interbank market led to a tightening of credit conditions facing households and businesses. There was a clear danger that this tightening would lead to a serious decline in economic activity, further credit losses and a vicious downward cycle of distress in financial markets and the real economy. When the crisis intensified in 2008, permanent alertness led to a resolute sequence of actions using the ECB's standard policy tool, the short-term nominal interest rate.

But the crisis also demonstrated that deeper market failures in the financial sector might mean that standard policy responses alone prove insufficient to restore economic stability and price stability. Identifying these market failures and introducing measures to address them was a second dimension of the ECB's policy response. This led to the introduction of a variety of what we call "non-standard" measures to complement the reduction of policy interest rates.

¹ John Taylor and John Williams (2011) and Nassim Taleb (2007).

Permanent alertness is my lesson on how to deal with the unpredictability of events. But alertness *per se* may suggest that we should simply be ready to adopt a specific, known reaction, once we observe a certain, possibly unpredictable, event. The problem in situations of “Knightian” uncertainty is that we are also uncertain in our assessment of the overall consequences of the unpredictable event and how we respond to it.

Let me again illustrate this point with an example. Once the crisis intensified in September 2008, central banks faced the major new difficulty of assessing how the combination of this exceptional event and of the unprecedented response of policy authorities would affect the medium-term outlook. We normally employ various statistical tools to help make this assessment, but would these tools provide useful guidance at this particular time?

Figure 2 provides an answer showing the evolution of our projections for annual economic growth in the euro area in 2009 together with the corresponding forecasts from a range of private sector and international organisations. Observations correspond to forecasts for GDP growth in 2009 made at different points. Over the months, information is updated and the forecast horizon becomes shorter and shorter. At the end of 2009, forecasting GDP growth in 2009 is almost tantamount to forecasting the past, so forecasts converge to the actual value indicated by a constant red line.

In 2008, all projections were strongly lagging actual developments. Only at the end of the year did public and private institutions begin to make downward adjustments to their growth forecasts for 2009, while nonetheless clearly underestimating the actual developments.

There is a similar pattern in Figure 3, which shows the forecasts for 2010 produced during the period 2009–10. In this case, forecasts systematically underestimated the strength of the recovery. In 2009, most forecasters expected very slow growth in 2010. As more positive news emerged in the second half of 2009, the forecasts were steadily revised upwards but still remained well short of the final outcome until the last quarter of the year.

The lagging nature of the information contained in most projections, together with the large projection errors, highlight the relative inadequacy of standard tools to deliver accurate forecasts during times of heightened economic distress.

What can guide a decision-maker in such circumstances?

A well-known recommendation of control theory is to apply robust control. This is designed to achieve robust performance in the presence of potential modelling errors. One approach will deliver the best possible outcome in the worst case scenario. This strategy is used widely in engineering applications, and it has the advantage of avoiding nasty surprises.

But the strategy also has disadvantages, should the worst case scenario be too extreme or highly unlikely. For example, if students think that the worst case scenario is that they will never find a job after gaining a degree, they may act accordingly and immediately abandon their studies. But that choice would be very far from ideal in the event that jobs are indeed available for graduates.

In very uncertain circumstances, judgement and experience may be the safest bets for a policy-maker. To illustrate this point, I like to draw a comparison to chess.

Over several decades, psychologists have explored how chess grandmasters obtain their advantage over lesser players. The evidence indicates that grandmasters rely significantly on a vast store of carefully structured knowledge of game positions, which has been accumulated over many years. So their advantage is not necessarily due to innate superior mental computation ability, but rather the stock of knowledge built up from countless hours of practical experience.

Monetary policy is not chess. Nevertheless, knowledge and experience are always useful in complementing a strong analytical exploration of the possible decisions. When dealing with a very high degree of uncertainty the analytical work might be less reliable and experience appears to be playing a more important role in the decision-making process. The

occurrences of such very uncertain situations are also an additional reason for central banks to rely upon what I call “collegial wisdom”. From different vantage points we could take stock of our knowledge of the sovereign debt crisis of the emerging countries in the 1980s, of the crisis of the European monetary system in 1992 and 1993 of the Mexican and Asian crisis of the 1990s and the dotcom bubble burst in the 2000s. Pooling experiences of members of the members of the Executive Board and the Governing Council of the ECB proved extremely important in the circumstances.

IV. Conclusions

Let me sum up my three simple lessons for dealing with highly uncertain circumstances: first, remain permanently alert and ready to respond to change when it happens; second, always ask the analytical preparation to be as comprehensive and robust as possible; and third, do not forget that in such circumstances collegial wisdom and experience are always of the essence.

I am of course fully aware that my three lessons are not a straightforward solution to life’s uncertainties. Nor are they contingent mathematical laws that you can apply when you see fit. As the great physicist and Nobel laureate Richard Feynman once said “Imagine how much harder physics would be if electrons had feelings!”

Monetary policy-making – and life – would certainly be much simpler, but also much duller, if as in physics a few basic laws could explain most experiences.

Thank you for your attention – and may I wish you well in your studies and in your future when making decisions in an uncertain world.

Figure 1

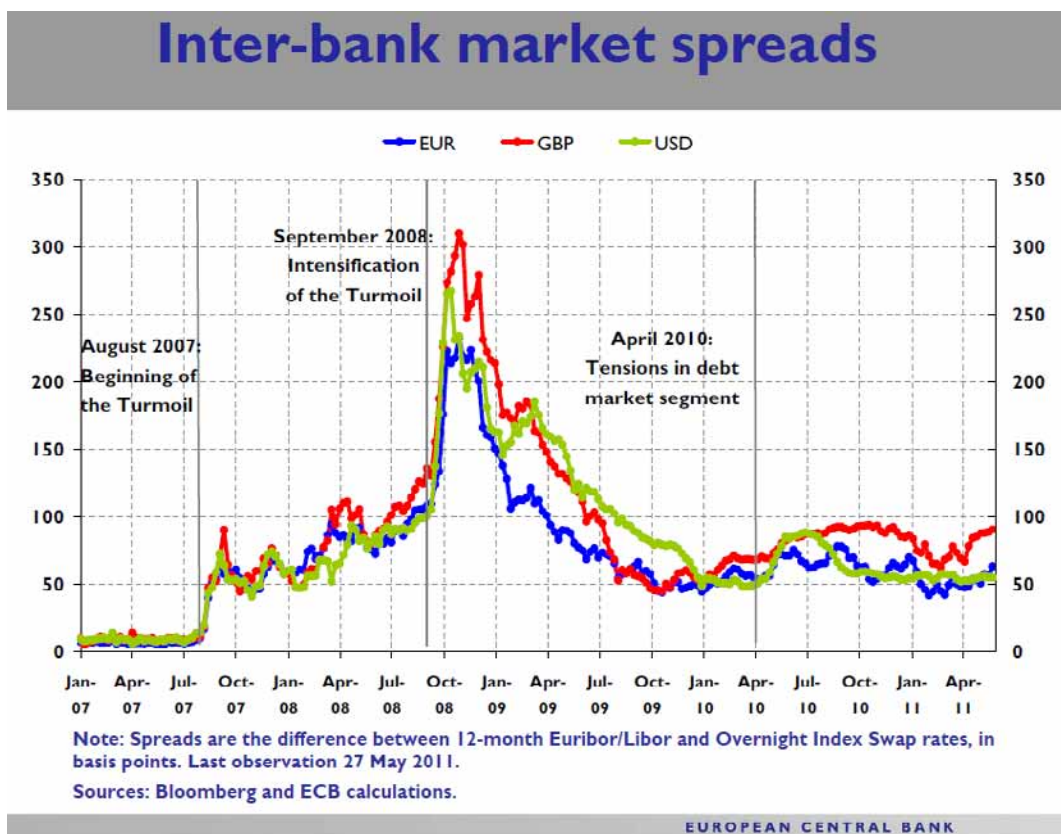
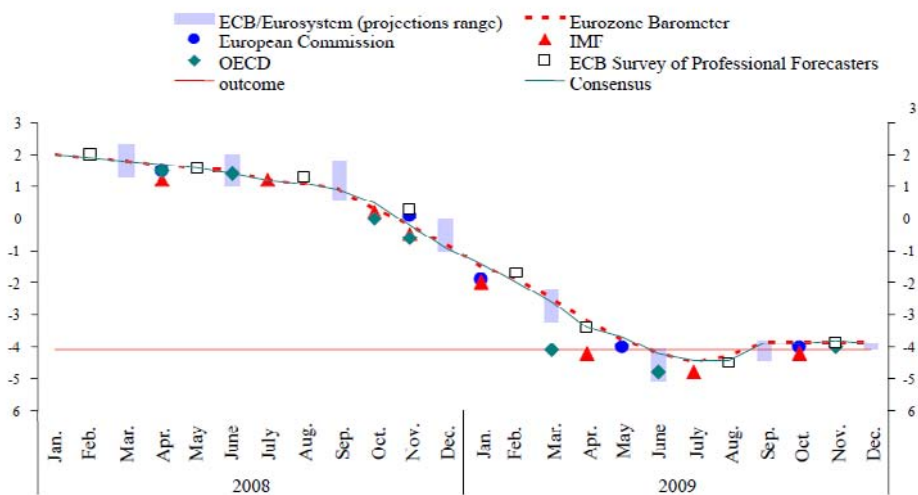


Figure 2

Euro area GDP forecasts for 2009

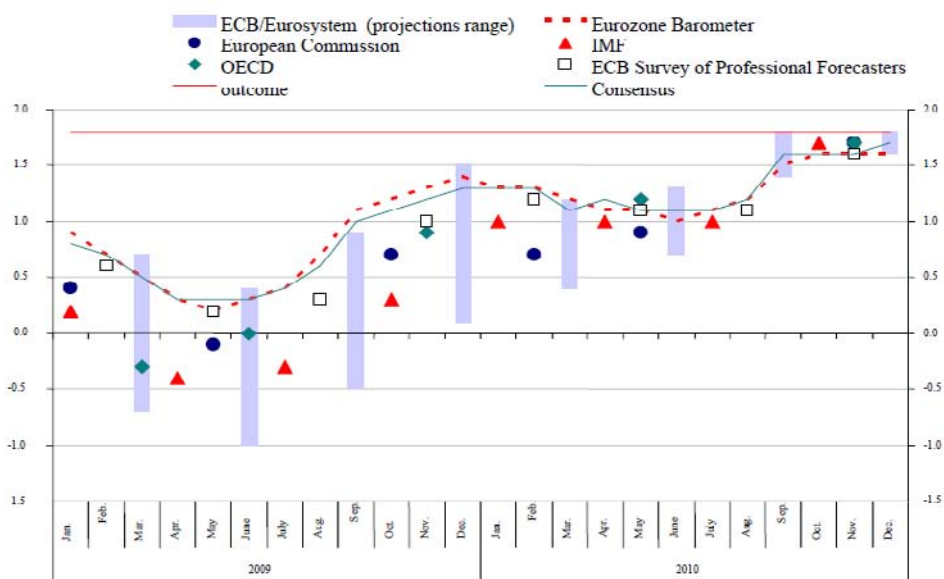


Note: Annual average percentage changes. The x-axis indicates the time of release of the projection.
Source: Kenny and Morgan (2011).

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Figure 3

Euro area GDP forecasts for 2010



Note: Annual average percentage changes. The x-axis indicates the time of release of the projection.
Source: Kenny and Morgan (2011).

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