



Economic policy uncertainty and inflation expectations

Klodiana Istrefi
Banque de France

Anamaria Piloiu
Deutsche Bank Research

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This Rue de la Banque explores the dynamic relationship between uncertainty concerning economic policy and inflation expectations, for the US and the euro area, during the period 1999-2012. We find that, in response to an increase in policy uncertainty, economic activity contracts and short-term inflation expectations fall. Moreover, our results suggest that during this period, policy uncertainty posed risks to the anchoring of long-term inflation expectations.

It is widely accepted that policy uncertainty has been unusually high in recent years. The policy responses to the latest crisis have raised considerably the uncertainty about tax, spending, regulatory, and monetary policies. More specifically, some of these uncertainties related to the timing and size of financial bailouts, the adoption of unconventional monetary policies, government expenditures and the risk of sovereign-debt defaults. Evidence suggests that high policy uncertainty is worrying because it causes households and businesses to hold back on spending, investment and hiring. Therefore, the effect on the economy is negative.

In turn, the effectiveness of monetary policy depends greatly on how it affects private agents' expectations. It is thus important to assess how policy uncertainty feeds back on these expectations. In this *Rue de la Banque*, we explore the dynamic relationship between policy-related uncertainty and inflation expectations of professional forecasters for the US and the euro area for the period 1999-2012. We find that a transitory increase in policy uncertainty has the following effects. First, it leads to a contraction in economic activity and a reduction in short-term inflation expectations. Second, long-term inflation expectations rise in response to increased policy uncertainty. For policy uncertainty shocks of the size observed during the recent crisis, the rise in these expectations is about 10 basis points. The magnitude

of the response is not negligible given the low variation of long-term inflation expectations in the period under review (standard deviations around 7 and 8 basis points, for the United States and the euro area, respectively).

Our analysis shows that policy uncertainty can have opposite effects on the term structure of inflation expectations. Inflation expectations one year ahead decrease while inflation expectations five to ten years ahead increase in response to policy uncertainty shocks. This in turn suggests competing and ambiguous effects of policy uncertainty on realised inflation, depending on which of the channels is the strongest, that through the weak economy or the dis-anchoring channel. For the period under review the latter channel appears to be weak and short-lived.

We also observe that the central bank lowers the interest rate in response to the transitory increase in policy uncertainty. This is because the central bank wants to offset the negative impact of this shock on the economy. However, it is also important that long-term inflation expectations remain well-anchored (to a level in line with their inflation objective) in response to temporary news or economic shocks. The central bank may therefore be faced with a trade-off between stabilising short-term and long-term inflation expectations. Our result suggests that, while stabilising the economy, the central bank would pay the price of dis-anchoring long-term inflation expectations.

How do we measure economic policy uncertainty?

Uncertainty is hard to quantify, therefore researchers rely on proxy measures for it. For our purposes, we use the news-based index of economic policy uncertainty (hereafter EPU) proposed by Baker, Bloom and Davis (2016). The EPU is constructed for several developed countries and is based on newspaper coverage of policy-related economic uncertainty. This measure captures uncertainty about what policy actions the decision makers will undertake and uncertainty about the economic effects of current and future actions and/or inactions. This can be uncertainty about fiscal, monetary or other regulatory policies (the overall EPU). Baker, Bloom and Davis (2016) also provide EPU measures specific to monetary and fiscal policy respectively. For example, the monetary policy uncertainty index would be constructed on the basis of the number of articles referring to monetary policy uncertainty. In our study we use three measures: an overall EPU, a monetary EPU and a fiscal EPU index.

Chart 1 shows that high levels of policy-related uncertainty are observed especially around events with unpredictable outcomes. For the euro area and the US we can observe common spikes corresponding to 2001, 9/11, the Gulf War II in 2003, the Lehman Brothers collapse

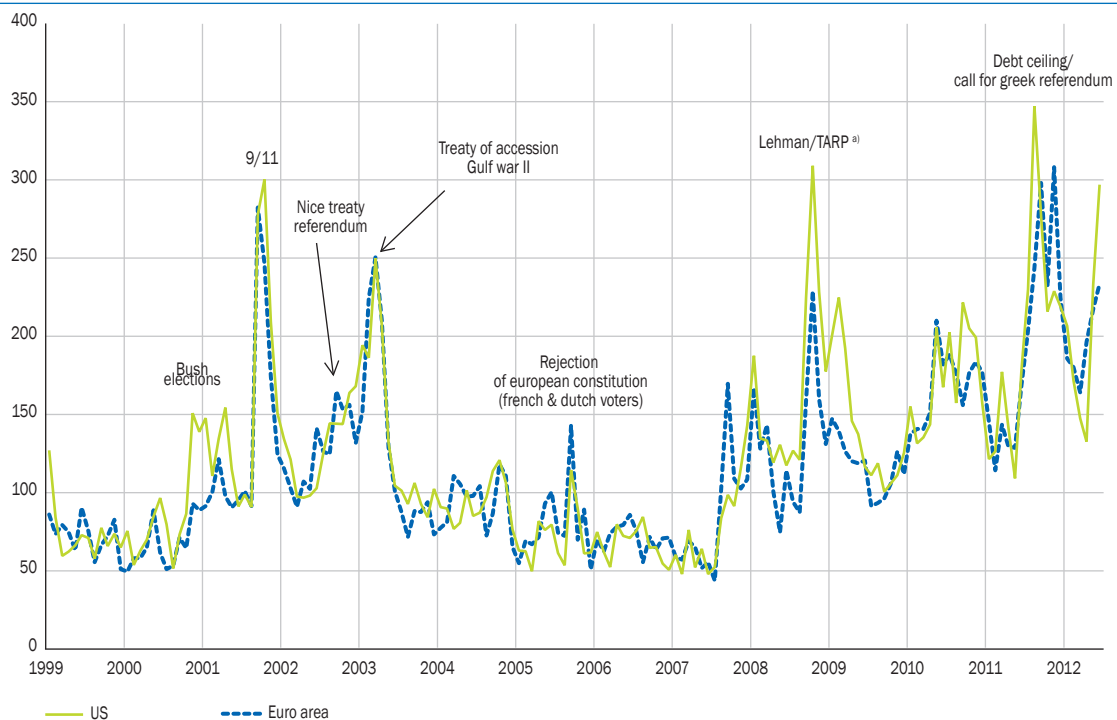
in 2008 and the intensification of the European debt crisis in 2012. Specific spikes for the euro area appear around events related to the Treaty referendums in 2001 and 2005, the Greek bailout in 2010, the rating cuts in 2011, and the call for referendum by Greece’s prime minister in 2011.

How do we measure inflation expectations?

In our study, we focus on the survey-based measures of inflation expectations where respondents are professional forecasters (i.e. banks, universities, financial firms, consulting groups and economic forecasters at large companies). Respondents are asked about their expectations for future inflation, from one quarter ahead up to ten years ahead. We use expectations from three sources, the Consensus Economics (CE) and the Survey of Professional Forecasters (SPF) of the Fed of Philadelphia and of the ECB, respectively. These expectations are part of the indicators regularly monitored by both central banks (along with other measures of inflation expectations as well).

Inflation expectations are measured at different horizons. Usually, expectations up to two years ahead are referred to as short-term expectations and expectations five years ahead and above as long-term inflation expectations.

C1 News-based component of overall EPU for US and the euro area



Source: Baker, Bloom and Davis (2016) and <http://www.policyuncertainty.com>
 a) Troubled Asset Relief Program, or Paulson plan

Short-term expectations are vulnerable to temporary shocks and more volatile than long-term ones. Because long-term expectations can profoundly influence current economic behaviour, monetary authorities monitor them carefully with the aim of providing a nominal anchor for the economy. Well-anchored long-term inflation expectations help both the monetary transmission mechanism and are a crucial indicator of central bank credibility. They are a benchmark of success in the conduct of monetary policy.

Chart 2 shows that long-term inflation expectations in the euro area have generally been lower than in the US and have moved within a narrow band. However, they have been somewhat more volatile since the Lehman bankruptcy. Several analyses show that during the crisis long-term inflation expectations became less firmly anchored, to a larger extent in the UK and in the US, relative to the euro area (see Galati, Poelhekke and Zhou (2011)).

Does policy uncertainty affect inflation expectations?

To answer to this question we use statistical models developed by Christopher Sims, a Nobel laureate in Economics in 2011. These models are widely used to capture interdependencies among many economic variables. As it is standard for these models, we have to make certain assumptions about the causal structure of the data under investigation. Our assumption is that transitory movements in the policy uncertainty variable can have an immediate effect on the other economic variables in the model but not vice versa. This assumption is actually consistent with the timing of the surveys and of the publication of statistics on economic activity.

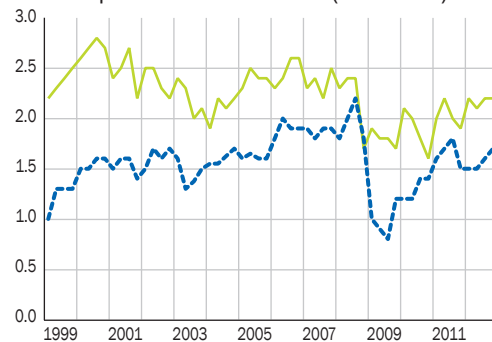
The data in our model are aligned so that policy uncertainty is observed before forecasters give their expectations and before the statistics on economic activity for the same period are published. This allows us to explore the effect of innovations or shocks to policy uncertainty on the variables of interest. We summarise this impact with impulse response functions (hereafter response), shown in Chart 3. They trace the effect of a one-period shock to policy uncertainty on current and future values of the variables of interest, at different time horizons.

We use data for the US and the euro area, over the period 1999Q1-2012Q3. We account for a measure of economic activity (industrial production) and monetary policy (interest rate). Short-term inflation expectations refer to the expected inflation one year ahead and long-term inflation expectations refer to the expected inflation five years ahead. Only in the case of the Fed's SPF do

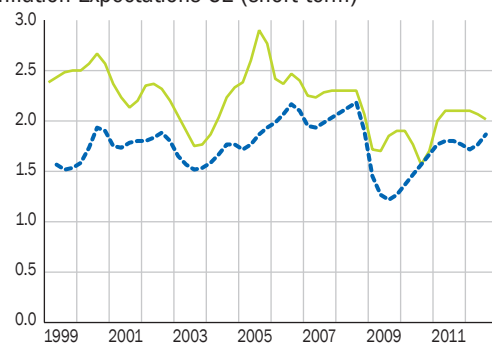
C2 Recent developments in short- and long-term inflation expectations

(%)

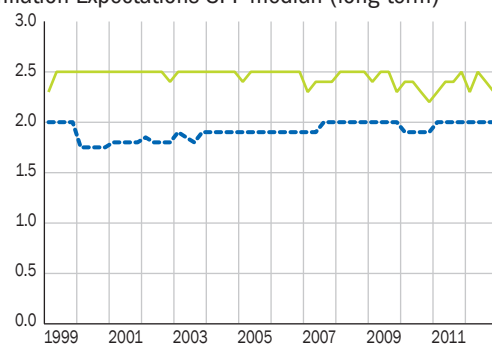
a) Inflation Expectations SPF median (short-term)



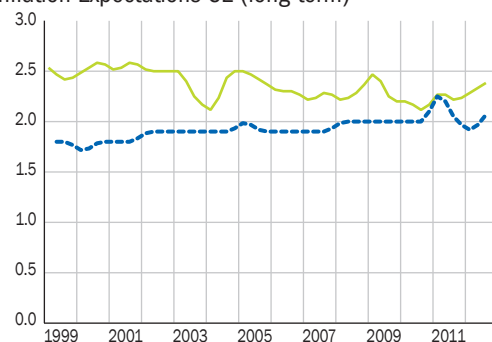
b) Inflation Expectations CE (short-term)



c) Inflation Expectations SPF median (long-term)



d) Inflation Expectations CE (long-term)



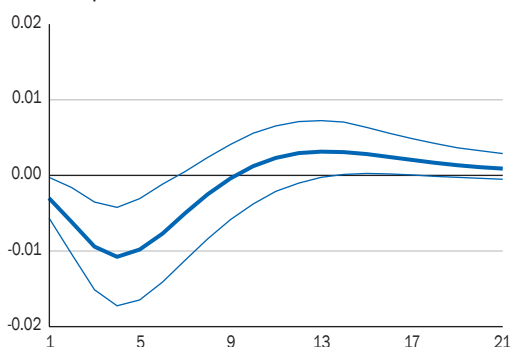
— US - - - Euro area

Sources: Consensus Economics, European Central Bank and Federal Reserve Bank of Philadelphia.

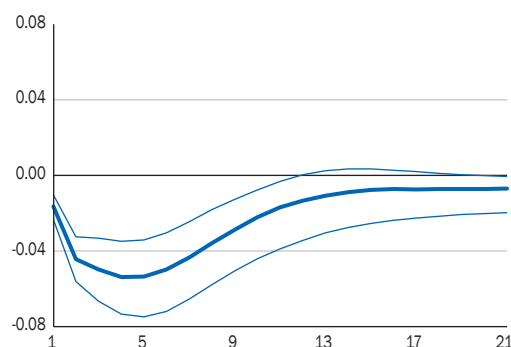
C3 Responses to the MPU shock

(x-axis: horizon in quarters; y-axis: percentage and percentage points)

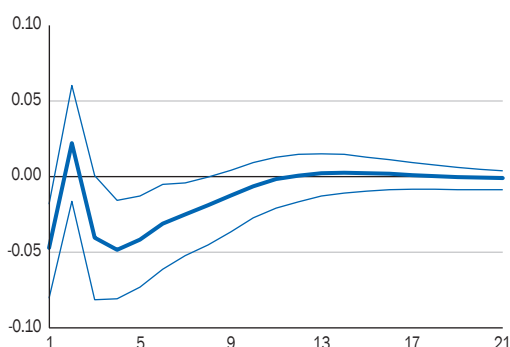
a) Industrial production



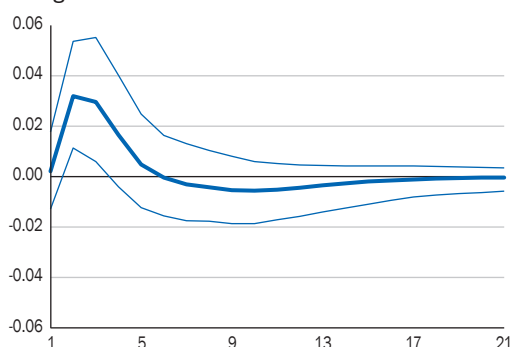
b) Interest rate



c) IE short



d) IE long



— 68% confidence band — Median impulse response from the panel-BVAR(2) for the US and the euro area

Source of inflation expectations: Consensus Economics and authors' calculations.

Notes: BVARs include a constant and an exogenous variable, log level of crude oil prices. Policy uncertainty and industrial production are in log levels. IE Long and IE Short represent five- and one- year ahead inflation expectations, in percent. In statistics, Bayesian vector autoregression (BVAR) uses Bayesian methods to estimate a vector autoregression. In that respect, the difference with standard VAR models lies in the fact that the model parameters are treated as random variables, and prior probabilities are assigned to them.

long-term inflation expectations refer to expectations over the next ten years.

Below we discuss the results from the estimation of our model. Chart 3 displays the responses of our variables of interest, including the short-term (IE Short) and long-term (IE Long) inflation expectations, to a one period shock in the monetary policy uncertainty (MPU). We observe that, in response to this shock industrial production contracts and short-term inflation expectations and interest rates fall. On the other hand, long-term inflation expectations rise. This effect peaks around the third quarter but is short-lived.

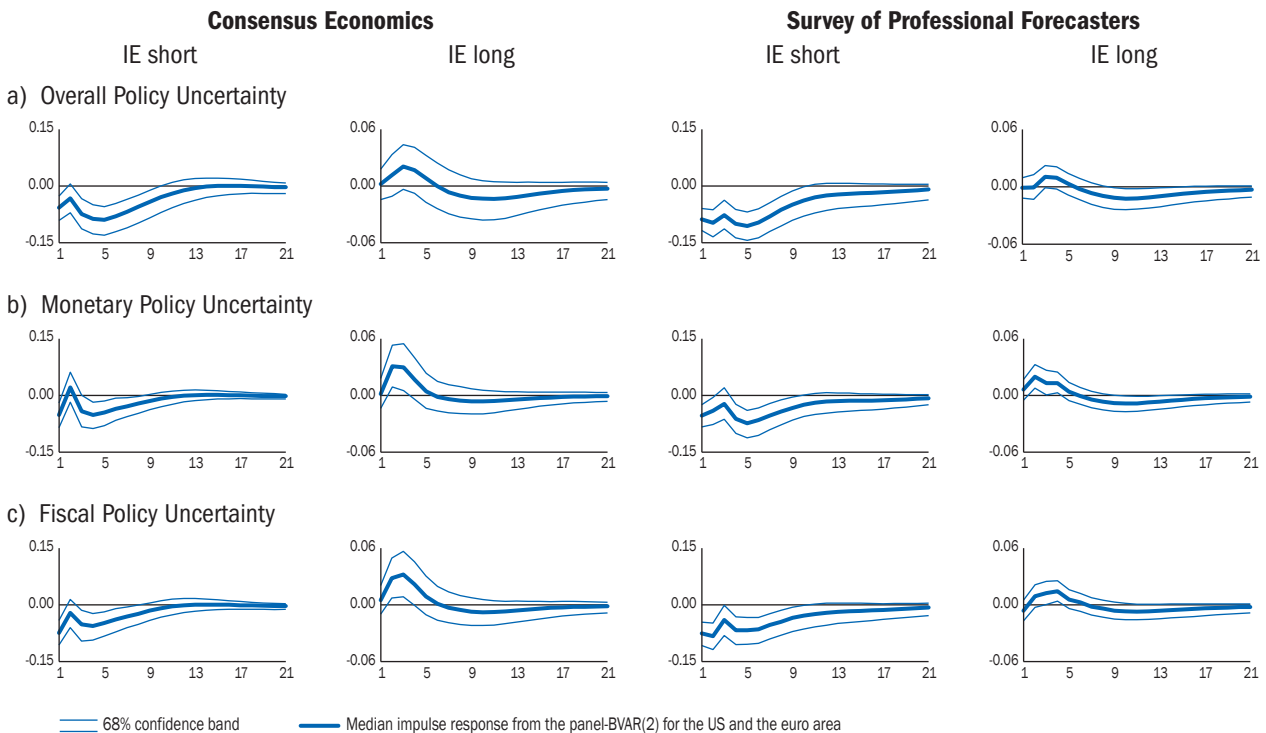
Similar patterns are observed for responses of CE and SPF inflation expectations to different policy uncertainty shocks (Chart 4). In all panels of this chart, an innovation

in the respective measure of policy uncertainty induces an increase in the response of long-term inflation expectations, peaking in about three quarters, irrespective of the source. In addition, we observe that the rise of long-term inflation expectations appears stronger to monetary and fiscal policy-related uncertainty shock than to overall policy uncertainty. Conversely, the response of short-term inflation expectations to policy uncertainty shocks remains on the negative side. The latter also exhibit higher degrees of responsiveness and volatility compared with long-term expectations.

With respect to other variables, we observe that in all versions of our model, a policy uncertainty shock is associated with an economic contraction (the median response being a 0.5 percent reduction in growth).

C4 Responses of inflation expectations to different EPU shocks

(x-axis: horizon in quarters; y-axis: percentage points)



Sources: Consensus Economics, European Central Bank and Federal Reserve Bank of Philadelphia.
 Notes: IE Long and IE Short represent five – and one – year ahead inflation expectations, in percent.

Different channels through which policy uncertainty affects economic activity could be at work, such as the precautionary saving motive or the “wait and see” dynamics. On the other hand, central banks respond by lowering interest rates strongly given a transitory increase in all types of policy uncertainty measures that we consider. If we take into account that short-term inflation expectations are highly correlated with actual inflation (about 60 to 70 percent in our sample), then this move resembles the response of a central bank that follows a typical Taylor rule – easing its policy in response to falling output and prices.

Output decline and its relatively quick reversal are in line with previous findings in the literature. The size of the effect is also comparable. Moreover, a new result that we find is that monetary – and fiscal policy – related uncertainties are equally harmful to economic growth.

With regard to long-term inflation expectations, conventional wisdom suggests that in an environment

of well-anchored expectations, they should not be affected by temporary news or shocks to economic variables. Our results suggest that although we are generally in such an environment, policy uncertainty shocks pose risks to the anchoring of long-term inflation expectations. On the other hand, these shocks weaken the economy and affect negatively expectations about inflation in the short-term, a situation that we are observing currently in the US and in the euro area. Furthermore, we show that this effect is not only due to uncertainty about monetary policy but also to fiscal policy-related uncertainty.

Overall, our results suggest that even though the commitment of central banks to a stable and low inflation had not changed, in light of high policy uncertainty, agents seemed to believe that central banks’ ability to achieve their targets will be put to the test. This is likely to be the case given the unprecedented policies monetary authorities implemented in response to the recent crisis and the problems concerning actual and expected large fiscal deficits.

The SPF of the Fed of Philadelphia conducted in May 2012 provides an illustration of these concerns. The Fed provides the following analysis: “The eight panellists (out of 35) whose long-run projections are in excess of the FOMC’s goal gave several reasons for their views. Some thought the FOMC would be too slow to tighten monetary policy at the appropriate time. They worried about the political pressure the FOMC would face as the time approaches for tighter monetary policy. Others worried that some members of the FOMC have a bias toward higher inflation or asymmetric preferences for inflation above and below target and would thus be reluctant to vote for tighter monetary policy in the face of future adverse supply shocks. One panellist questioned the credibility of the FOMC’s inflation target and pointed to the US inflation experience of the 1970s as a source for concern.”¹

Looking from where we stand today, both the US and the euro area are experiencing weak inflation rates and (past) long-term expectations of higher inflation by professional forecasters do not appear to be materialising.

Although future work including the recent sample period is warranted, our analysis suggests that economic policy uncertainty poses an additional risk to the anchoring of inflation expectations, and thus to the credibility of the central bank.

The credibility of a central bank’s commitment in the eyes of the public is especially crucial for the success of monetary policy at the zero lower bound. However, this credibility is in doubt when there is uncertainty concerning the details of the policy in place, its effectiveness and the firmness of the commitment to future policies. Uncertainty over policies is reduced with clear communication on what policy makers can do and what they know, with prompt responses to present challenges, and long-term policy consistency.

1 Source: SPF, Second Quarter 2012. Research Department, Federal Reserve Bank of Philadelphia.

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