

# ECFIN *Economic Brief*

ECONOMIC ANALYSIS FROM EUROPEAN COMMISSION'S DIRECTORATE GENERAL FOR ECONOMIC AND FINANCIAL AFFAIRS

## Policy-related uncertainty and the euro-zone labour market

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### Introduction

At the onset of the crisis, between 2008 and 2009, the euro area labour market turned out particularly resilient, notably compared to the US. Aggregate euro-area unemployment was relatively little affected by the fall in output during the 2008-09 recession. The output recovery in 2010 was not job-rich, and employment started falling again in the course of 2011, somewhat earlier than GDP that declined in the last quarter of that year.

In the course of 2011 and 2012 this resilience has been lost. Euro-area unemployment kept rising almost continuously and is currently at its highest levels since the start of the economic and monetary union, expected to reach 11.9% in 2013.

Various factors may have contributed to the lost resilience (see, e.g., European Commission, 2012;

European Central Bank, 2012). A first key reason for the reduced employment resilience is that the room for adjusting the average hours worked by employees rather than headcount employment has become considerably smaller. A second reason is that, compared to the onset of the crisis, the financial buffers necessary to hoard labour may have narrowed.

This Focus analyses whether and to what extent uncertainty on the policy environment contributed to the different response of labour markets in the euro area.

Following the escalation of the sovereign debt crisis in the euro area, uncertainty dominated the economic outlook. In some countries, tackling the debt crisis required a resolute fiscal adjustment, which had an impact on output and employment, and that turned into a new process of job shedding in some cases. The impact of the debt crisis on the public sector was compounded by the

### Summary

The euro area, in contrast to the US, exhibited remarkable labour market resilience in the aftermath of the Lehman shock leading the Great Recession. This resilience has been recently lost. Several factors have been mentioned to account for the lost resilience in the euro-zone, including the reduced margins of adjustment of hours worked and the reduced financial buffers necessary to hoard labour.

In this Focus, we explore the role of uncertainty in driving labour market developments in the euro area. We consider a particular type of uncertainty, namely, the uncertainty on the economic policy environment. Using an indicator of economic policy uncertainty recently developed by Baker et al. (2012) we show that changes in this type of policy uncertainty influence significantly the unemployment rate both indirectly, via economic activity, and directly, thus explaining a different response of unemployment to output. We also show that policy uncertainty impacts mostly the process of job creation, as employers become more reluctant to hire as the policy environment becomes more uncertain.

Overall, this evidence corroborates and helps qualifying analogous evidence available for the US (Baker et al., 2012; Leduc and Liu, 2012).

effects of the tightening of financial conditions on the private sector linked to the on-going deleveraging process.

Uncertainty on the economic outlook was compounded by uncertainty on the policy outlook. The changing economic landscape implied repeated revisions in the required fiscal adjustment in a number of euro-area countries. Harsher economic and financial conditions led to increased willingness to carry out substantial structural reforms in welfare systems, labour and product markets, which would benefit in terms of public finance prospects and growth potential but had a counterpart in an enhanced degree of uncertainty. The overall strategy to tackle the roots of the debt crisis via the creation of new institutions and rules at supra national level was subject to uncertainty itself, both in terms of modality and timing.<sup>1</sup>

Our aim is to investigate the role of policy uncertainty in explaining the persistently high unemployment rate in the euro area after the Great Recession and the different impact of uncertainty on flows into and out of unemployment.

### Uncertainty as a factor shaping economic outcomes

Uncertainty plays an important role in output fluctuations. In an uncertain environment waiting to get more information becomes a valuable option. Uncertainty increases the likelihood of extreme outcomes and expands the range of inaction within which firms adopt a wait and see aptitude. A relatively large literature exists on the role of uncertainty in explaining the postponement of irreversible investment (e.g., Bernanke, 1983; Dixit and Pindyck, 1994; Bloom et al., 2007; Bloom, 2009).<sup>2</sup> Similar arguments have been put forward on the possibility that uncertainty could also lead

households to prefer to hoard cash and delay the purchase of durable goods (Romer, 1990). Recently, it has been shown in a DSGE model with labour market frictions that increased uncertainty may lead to reduced job finding rates and higher equilibrium unemployment, since firms refrain from posting vacancies when uncertainty is high (Leduc and Liu, 2012). At given returns the severity of bad news influences the willingness to invest independently on how good are future returns (Bernanke 1983). Higher uncertainty also induces a so-called "*caution effect*" whereby firms and households to be less responsive to policy-induced changes than in normal times due to the increased cost of wrong decisions (e.g. Bloom et al. 2007, 2012).

These mechanisms have direct and indirect effects on macroeconomic fluctuations, and acts as a fall in aggregate demand (i.e., with lower inflation accompanying higher unemployment; see, e.g., Leduc and Liu, 2012). Since uncertainty is usually countercyclical, its presence amplifies business cycle fluctuations, making recessions and recoveries respectively deeper and weaker on average (Kose and Terrones 2012).

Uncertainty is a multifaceted concept.<sup>3</sup> Some authors claim that uncertainty about the policy response to key challenges may play a major role in the economic cycle (e.g., Baker et al., 2011). For instance, in recent times, uncertainty on the solution of issues such as the US fiscal cliff, public and private deleveraging, the resolution of European sovereign debt crisis, may have led agents to postpone key economic decisions, thus hampering a recovery.

A key question arises: How to measure policy uncertainty? In their influential paper, Baker et al. (2011) construct an index of policy-related uncertainty from two types of underlining components. A *first component* combines information on the frequency of newspapers articles containing the following terms:

- (i) *uncertain or uncertainty*;
- (ii) *economic or economy*;

<sup>1</sup> The lack of euro area-wide supervisory and resolution institutions for the financial sector, the lack of an integrated EU-level framework to mutualise the response to risks coming from the banking sector and the absence of an effective mechanism to provide liquidity to Member states in distress have been identified among the major drawback fuelling the debt crisis and contagion risks. See European Commission 2012, "A blueprint for a deep and genuine economic and monetary union. Launching an European debate"; Communication from the Commission COMM(2012) 777 final.

<sup>2</sup> By delaying hiring decisions, higher uncertainty slows down reallocation and productivity growth. Tight financial constraints push up the cost of finance and reduce further the opportunities for sectoral reallocation (Gilchrist, Sim and Zakrajsek, 2010).

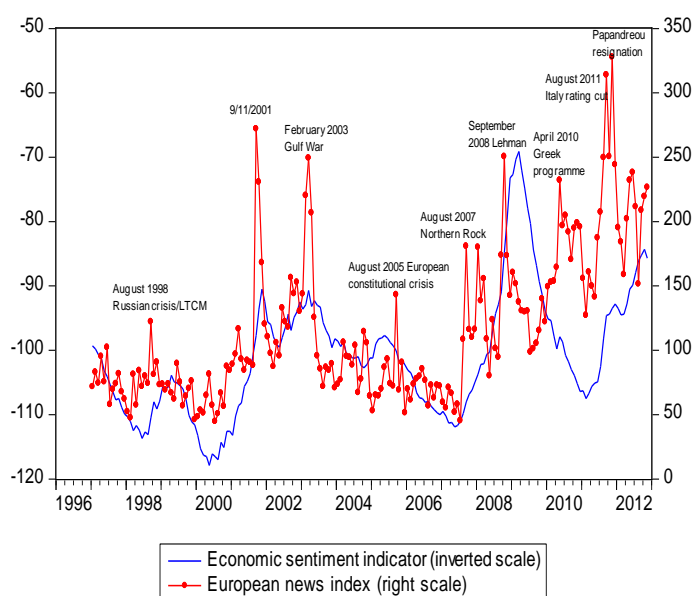
<sup>3</sup> See Kose and Terrones (2012) for a comparison of different measures of uncertainty.

(iii) policy relevant words such as *taxes, policy, spending, regulation etc.*<sup>4</sup>

A second component includes a measure of the extent the *disagreement among forecasters about inflation and government purchases*.<sup>5</sup>

Figure 1 plots the Baker et al. (2011) policy uncertainty index together with the survey-based European Commission Economic Sentiment Indicator (ESI), which tracks expectations on the economic outlook among businesses and consumers. The data concern the euro area over the past decade. The policy uncertainty index exhibits spikes in correspondence of events that many would consider as influencing policy uncertainty (e.g. 9/11, Gulf War, Lehman bankruptcy, the first financial assistance programme for Greece). The policy uncertainty and the Economic Sentiment Indicator (with inverted sign) are closely linked - with a correlation coefficient of 52 per cent. Moreover, visual inspection suggests that the policy uncertainty index anticipate swings in the ESI. Formal statistical tests confirm that the policy uncertainty index Granger-causes the ESI, but not vice versa.<sup>6</sup> Overall, this prima-facie evidence suggests that policy uncertainty has a negative impact on expectations on the economic outlook.

**Figure 1 Policy related uncertainty and economic sentiment**



<sup>4</sup> The papers include El Pais, El Mundo, Corriere della Sera, La Repubblica, Le Monde, Le Figaro, the Financial Times, The Times of London, Handelsblatt, FAZ.

<sup>5</sup> The U.S. index also includes *the number of federal tax code provisions set to expire in the next couple of years*.

<sup>6</sup> Namely, it provides additional *predictive power* over and above the information contained in the ESI. A *pairwise* Granger causality test that uncertainty does-not Granger cause ESI provides an F-statistic of 3.6 and a p-value of 0.0001; in contrast the test that ESI does-not Granger cause the uncertainty index provides an F-Statistic of 1.27 and a p-value of 0.24. These findings support the hypothesis that ESI is Granger caused by the news-based policy uncertainty index. Baker et al find that for the US policy uncertainty accounts for a large share of the variation in overall economic uncertainty since 9/11.

## Assessing the impact of policy uncertainty on unemployment

In analogy with the analysis contained in Baker et al. (2012) and Leduc and Liu (2012) for the US, the present analysis develops a Vector Auto Regression (VAR) model aimed at isolating and measuring the effects of uncertainty on unemployment and GDP in the euro area. The dynamic interactions between uncertainty, GDP and the unemployment rate are captured fitting a VAR over the period 1996Q1-2011Q4. Shocks are identified by means of a Cholesky decomposition with the following order: uncertainty, GDP and the unemployment rate. This is equivalent to imposing that uncertainty is a forward-looking variable and that GDP and unemployment respond contemporaneously and with lags to uncertainty shocks.<sup>7</sup>

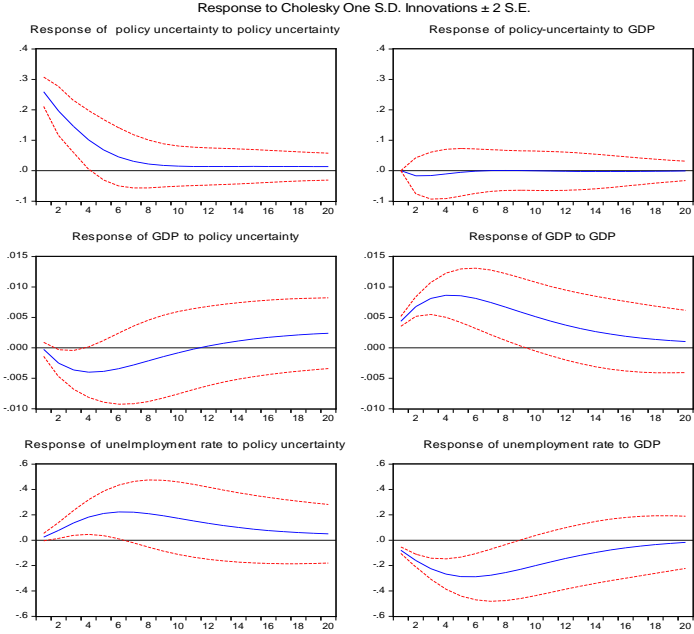
Figure 2 below displays impulse response functions to uncertainty and GDP shocks. A number of results stand out as follows:

- An uncertainty-related policy shock is persistent and lasts for at least one year. In response to this shock, unemployment increases and GDP contracts over about 1-1 ½ year. This means that falling GDP coupled with much increased uncertainty implies unemployment raising more than predicted by a standard Okun relation. Following a one standard deviation shock to uncertainty, unemployment rate rises for 2 years before reverting back to the pre-shock level.
- It is also worth noticing that the news-based measure of uncertainty does not respond to changes in the business cycle conditions, which confirms that it is a truly exogenous measure of policy-related uncertainty.

These findings are confirmed also if policy uncertainty is allowed to respond with a lag to business cycle shocks.

<sup>7</sup> All variables except unemployment are in logs. The order with uncertainty coming first reflects also the lags with which macroeconomic data are made available and the timeliness of the news-based indicator.

Figure 2: Effects of uncertainty shock on unemployment and GDP



How much of the fluctuations to unemployment can be explained by shocks to GDP and uncertainty? The table below reproduces the percentage of the variance of the error made in forecasting a variable due to a specific shock at a specific time horizon. For the euro area, unexpected shocks to GDP account for 50% of the error in the one quarter ahead forecast of unemployment up to 60% for longer horizons. Conversely, policy related-shocks drive unemployment fluctuations more at medium-to-long term than at short-term horizon.

Table 1 Forecast error variance decomposition of the unemployment rate

	Uncertainty	GDP	Unemployment rate
1 quarter	4.6	48.4	47.0
2 quarters	21.6	56.9	21.5
4 quarters	29.7	56.0	14.3
8 quarters	29.7	56.0	14.3
16 quarters	32.7	53.6	13.7

Source: authors' calculations.

Changes in unemployment are driven by continuous process of job creation and job destruction; the rate at which workers find and lose jobs balance between flows into and out of unemployment determines the change in the overall unemployment rates. How different the job creation and job destruction margins respond to shifts in policy-related uncertainty? To this end a VAR has been fit also on uncertainty, GDP, the job finding and separation rates over the same period.<sup>8</sup> Shocks are identified imposing a recursive identi-

fication structure which assumes that uncertainty is a forward looking variable, with shocks to output affecting possibly contemporaneously the job finding and job separation rates.

Figure 3 reports the impulse responses to output and uncertainty shocks. It shows the dynamic response of each variable to a shock hitting all the variables in the system, including the variable itself. Thus, the response of uncertainty to a policy uncertainty shock gives an indication of the persistency of policy related shocks. The graphs show that within the year, separation rates react to GDP shocks, but less to uncertainty. Conversely, the response of the finding rate to a transitory GDP shock is of the same magnitude as the responses to a shock to uncertainty at all horizons.

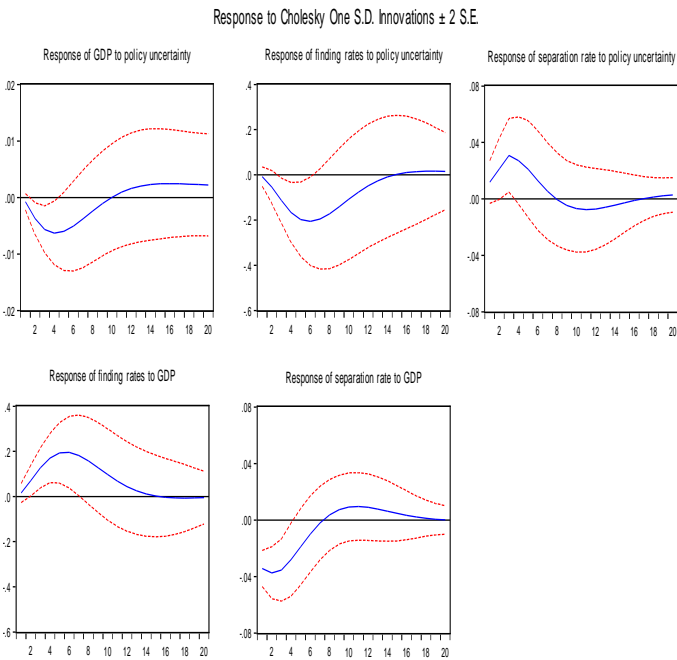
To examine the relative importance of uncertainty shocks and SDP shocks, Table 2 reports the proportion of the total variance of the job finding and separation rates at business cycle frequency (forecast horizon of about 4 years). Over short horizons, most of the variation in finding rates is due to own past shocks.<sup>9</sup> However, at horizons above 1 year, temporary shocks to GDP and policy-related uncertainty account both for about 40 per cent of the total variance of job finding rates, with uncertainty shocks having a greater incidence at longer horizons. As for job separation rates, about 50% of their fluctuations is accounted for by GDP shocks, while shocks to uncertainty account, after one year, for about 30% of overall fluctuations.

Overall, these findings indicate that policy-related shocks in the short term have a relatively stronger impact on job findings, consistently with the idea borrowed from theory that employers would delay hiring. After one year, both job finding and separation rates contribute to unemployment fluctuations in response to GDP and policy-related shocks for job finding rates. An unexpected shock to the news based measure of uncertainty explains a larger proportion of the fluctuations of the finding rate; in contrast, the separation rate is driven to a larger extent by shock to output growth.

<sup>8</sup> Job finding and separation rates are constructed as in Arpaia and Curci (2010) following the methodology proposed by Shimer (2007) and adapted to OECD countries by Elsby et al (2009).

<sup>9</sup> This is suggested by the analysis of the impulse response function of the job finding rate, not shown for brevity; conversely the job separation rate is much less persistent.

Figure 3 Effects of uncertainty shock on GDP, job finding and separation rates



Source: authors' calculations.

Table 2 Forecast error variance decomposition of finding and separation rates (% of total variance explained by shocks to the four variables)

	finding rate				separation rate			
	Uncertainty	GDP	finding rate	separation rate	Uncertainty	GDP	finding rate	separation rate
1 quarter	0.4	1.3	98.4	0.0	5.8	48.1	0.9	45.3
2 quarters	5.6	9.8	83.6	1.0	12.9	56.1	4.0	27.0
4 quarters	26.3	30.4	41.7	1.6	25.9	52.5	4.7	16.9
8 quarters	42.6	40.5	15.9	1.0	28.8	50.6	5.4	15.3
16 quarters	43.9	40.7	14.2	1.2	28.6	50.3	6.4	14.7

Source: authors' calculations

Conclusions

In a Vector Auto Regression framework we find that changes in the indicator of economic policy uncertainty developed by Baker et al. (2012) influence significantly the euro area unemployment rate both indirectly, via economic activity, and directly, thus explaining a different response of unemployment to output. We also show that policy uncertainty impacts mostly the process of job creation, as employers become more reluctant to hire as the policy environment becomes more uncertain. Although such findings need to be interpreted with caution, as many factors not captured in the VAR framework are likely to drive simultaneously both policy uncertainty and macroeconomic variables including unemployment, they corroborate and help

qualifying analogous findings for the US (Baker et al., 2012; Leduc and Liu, 2012).

References

Arpaia, A. and N. Curci (2010), "EU Labour Market Behaviour during the Great Recession", European Economic Papers 405.

Baker, S.R., Bloom, N. S. and Davis, S.J. (2012), "Measuring Economic Policy Uncertainty", University of Chicago, mimeo.

Bernanke, Ben S. (1983). "Irreversibility, Uncertainty and Cyclical Investment." Quarterly Journal of Economics 98 (February): 85-106.

Bloom, N., Bond, S. and Van Reenen, J. (2007), "Uncertainty and Investment Dynamics", Review of Economic Studies, April, 74, pp. 391.415.

Bloom, N. (2009), "The Impact of Uncertainty Shocks", Econometrica, May 77, pp. 623-685.

Dixit, A., and R. S. Pindyck (1994), Investment under Uncertainty, Princeton University Press, Princeton.

European Central Bank (2012), Euro Area Labour Markets and the Crisis, Structural Issues Report.

European Commission (2012), Labour Market Developments in Europe, European Economy 5/2012.

Elsby, M. W. L., B. Hobijn, and A. Şahin (2009), "Unemployment Dynamics in the OECD", NBER Working Paper 14617.

Kose, M A. and M. Terrones (2012), "How Does Uncertainty Affect Economic Performance?"; Box 1.3, World Economic Outlook, October, 49-53.

Leduc, S., and Z. Liu (2012) "Uncertainty Shocks are Aggregate Demand Shocks", Federal Reserve Bank of San Francisco Working Paper Series No. 2012-10.

Shimer, D. (2007), "Reassessing the ins and outs of unemployment", NBER Working Paper 13421.