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Economic policy uncertainty in the US: Does it matter for the Euro area?

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HIGHLIGHTS

- We quantify the possible spillovers going from the US to the Euro area economics.
- We focus on shocks to the US economic policy uncertainty.
- We document a negative and significant reaction of Euro area price and quantity indicators.
- The contribution of US uncertainty shock is estimated to be larger than that of a Euro-area specific uncertainty shock.

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ABSTRACT

We investigate the effects of a US economic policy uncertainty shock on some Euro area macroeconomic aggregates via Structural VARs. We model the indicators of economic policy uncertainty recently developed by Baker et al. (2013) jointly with the aggregate price indexes and alternative indicators of the business cycle for the two above indicated economic areas. According to our SVARs, a one standard deviation shock to US economic policy uncertainty leads to a statistically significant fall in the European industrial production and prices of −0.12% and −0.06%, respectively. The contribution of the US uncertainty shock on the European aggregates is shown to be quantitatively larger than the one exerted by an Euro area-specific uncertainty shock.

1. Introduction

The attention on the macroeconomic effects of uncertainty has been recently reignited by Bloom's (2009) highly influential paper. A number of VAR investigations have been proposed to quantify the impact of uncertainty shocks at a macroeconomic level (see e.g., Alexopoulos and Cohen (2009), Bloom (2009), Baker et al. (2013), Caggiano et al. (2013), Leduc and Liu (2013) and Nodari (2013)). Such investigations have typically followed a within-the-US-country approach, i.e., they have focused on the reaction of a set of US variables to a shock to the level of uncertainty affecting the US economy itself. While being a somewhat natural approach, shocks hitting a leading economy such as the United States may very well spillover onto other countries. Investigations documenting the existence of spillovers include Kim (2001), who quantified the role of US macroeconomic shocks in triggering business cycles at an international level, and Favero and Giavazzi (2008) and Ehrmann and Fratzscher (2009), who look at spillover effects regarding financial markets. As for the literature dealing with uncertainty shocks, Mumtaz and Theodoridis (2012) estimate an open-economy VAR focusing on the potential impact of the volatility of shocks to US real activity on UK. They find that spillovers across these two areas may very well be important.

This paper asks the following question: "*Are there spillovers from the US economy to the Euro area due to economic policy uncertainty shocks?*" To answer this question, we model a VAR including both US and Euro area aggregates. Then, we identify a US uncertainty shock via the imposition of short-run restrictions and focus on the responses of Euro area prices and quantities. The uncertainty shock is identified by appealing to the "economic policy uncertainty indicator" recently developed by Baker et al. (2013). *The answer* provided by our empirical investigation *turns out to be positive:* a one-standard deviation shock to US economic policy uncertainty leads in the short-run to a statistically significant fall in the

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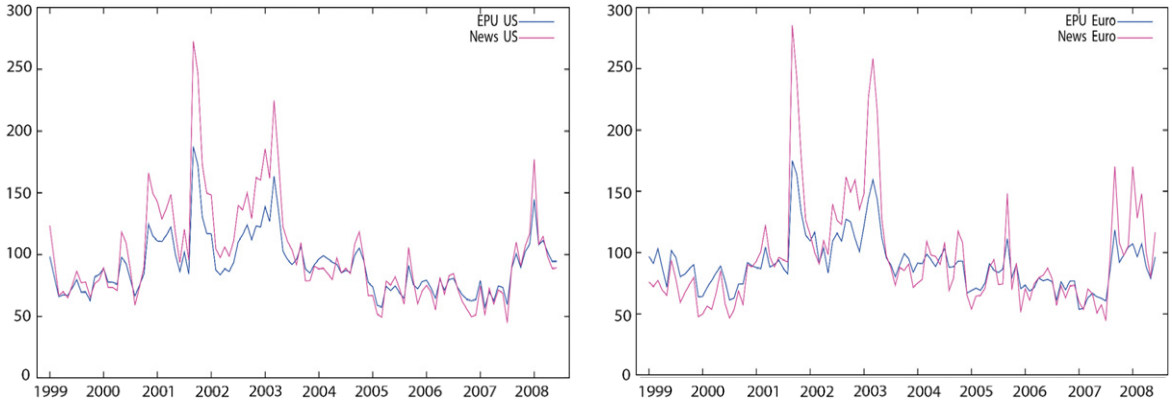

Fig. 1. Plots of time series of EPU and news policy uncertainty indexes for US and Euro (1999M1–2008M6).

European industrial production and prices of −0.12% and −0.06%, respectively.

Our paper is structured as follows. Section 2 focuses on the data and the identification scheme employed in our VAR-approach. Section 3 presents our results. Section 4 concludes.

2. Data definition and VAR specification

We analyze the transmission of structural shock from the US to Euro area within a two-country Structural Vector Autoregressive model (SVAR). A common representation of the SVAR is;

$$B_0 y_t = B(L) y_{t-p} + \varepsilon_t \tag{1}$$

where $B(L)$ is an autoregressive lag-polynomia, and ε_t is the vector of structural innovations. The vector $y_t = [\text{CPI}^{\text{US}}\ \text{IPI}^{\text{US}}\ i^{\text{US}}\ \text{News}^{\text{US}}\ \text{HCPI}^{\text{Euro}}\ \text{IPI}^{\text{Euro}}\ i^{\text{Euro}}\ \text{News}^{\text{Euro}}]'$ includes all the endogenous variables in our model and relies on two blocks: the first one refers to "foreign" variables (US), whereas the second one includes "domestic" variables (Euro area). Each regional block includes the consumer price index (CPI for the US and HCPI for the Euro area), as a measure of prices; the industrial production index (IPI), as a proxy for the business cycle; the short-run interest rate (indicated with "i" in the vector above), which is the Federal Funds Rate for the US and the three-month interest rate for the Euro area, as a proxy for the monetary policy instrument. To account for economic policy uncertainty in the US and the Euro area, we employ two country-specific empirical proxies carefully constructed by Baker et al. (2013). The policy-related economic uncertainty for the US (EPU^{US}) relies on three components: a news-based component quantifying newspaper coverage on economic policy uncertainty (News^{US}); a measure of the federal tax code provisions; and a measure of disagreement among forecasters. The Euro area uncertainty index (EPU^{Euro}) relies on two components: a news-based component ($\text{News}^{\text{Euro}}$), and a measure of disagreement among forecasters. Since the overall economic policy uncertainty indexes rely on different components, we focus on uncertainty indexes based on news coverage. The correlation between the EPU indicator and its news-based component is 0.97 and 0.93 for the US and Euro area, respectively. Hence, we include in vector y_t the news-based components, News^{US} and $\text{News}^{\text{Euro}}$, as proxies for the economic policy uncertainty.[1] Fig. 1 plots the monthly time series of the overall uncertainty indexes and news components, both for the US and the Euro area.

We need to recover the structural shocks ε_t from $\varepsilon_t = B_0 u_t$, where B_0 contains the contemporaneous relationships between the reduced-form residuals u_t and the structural shocks ε_t. To identify B_0, we employ a standard Cholesky decomposition imposing a lower triangular matrix. Since we are interested in the effects of an external policy uncertainty shock (US) on the domestic macroeconomic variables (Euro area), we impose short-run restriction following a country-based exogenous approach. Because we are using a Cholesky decomposition, the ordering of the variables in our vector y_t is important. Following Favero and Giavazzi (2008), we assume that shocks hitting the Euro area exert no contemporaneous effects on the US variables. Consequently, the US block is ordered before the Euro area block in our vector. Second, within each country-block, we order uncertainty last. We do so to "purge" the uncertainty indicator in our VAR from the contemporaneous movements of our macroeconomic indicators (prices, industrial production), therefore sharpening the identification of uncertainty shocks.

Our data are monthly and span the period 1999M1–2008M6. The beginning of the period is motivated by the creation of the Euro area, whereas the end is chosen to avoid possible non-linearities due to the intensification of the financial crisis. All variables are in log-levels, except for the interest rate and the uncertainty indexes, which are in levels.[2] We select the optimal number of lags in the SVAR model combining an initial lag selection based on information criteria with an LMF test for no serial correlation in the error terms.[3] Our SVAR(3) includes equation-specific constants and linear trends. The data have been retrieved from the Federal Reserve Bank of St. Louis database (US industrial production, price level, and federal funds rate), the European Central Banks Statistical Warehouse (industrial production, price level, and the three-month interest rate), and the "Economic Policy Uncertainty" website (http://www.policyuncertainty.com/).

3. Results

Fig. 2 depicts the impulse response functions to a one-standard deviation shock to the US uncertainty index. The responses of US industrial production and consumer price index are statistically significant and suggest a decline in production and a deflationary phase after an increase in uncertainty. Both the industrial production and prices hit their lowest values after three months, reaching a minimum around −0.13% and −0.08%. The Federal Reserve reacts

[1] Our results are robust to the use of the overall indexes instead of their news components.

[2] Sims et al. (1990) show that VARs in log-levels provide consistent estimates of the IRFs even in the presence of co-integrating vectors. We do not attempt to model co-integrating vectors given the small size of our sample.

[3] SIC and BIC information criteria suggest a VAR(1), whereas AIC a VAR(2). However, the results are robust to different lag-length choices.

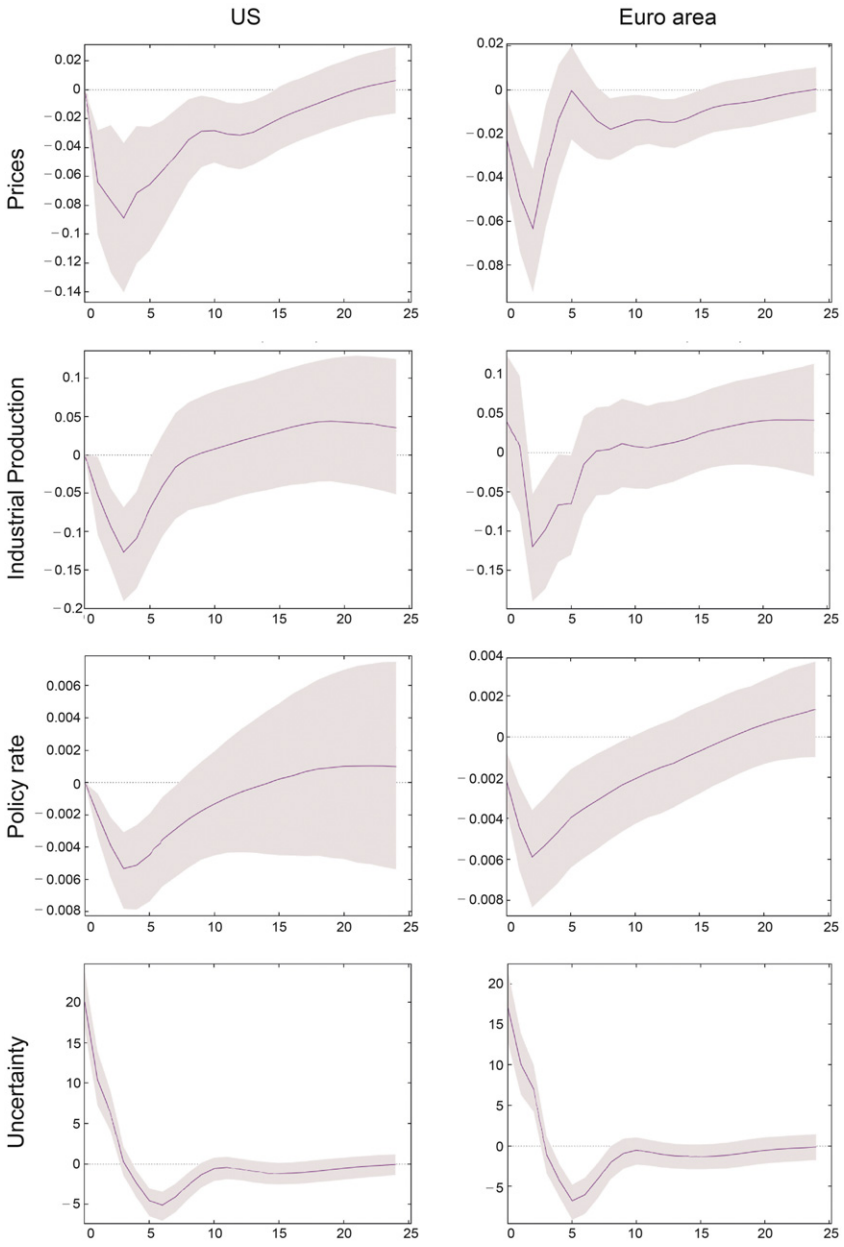

Fig. 2. Empirical impulse responses to a US economic policy uncertainty shock. Notes: the figure reports orthogonalized impulse responses to an unanticipated US economic policy uncertainty shock. The columns on the left and on the right report the IRFs for the US and European variables, respectively. The solid lines denote the median IRFs. The shaded areas identify the bootstrap-after-bootstrap (Kilian, 1998) confidence intervals at 90% level (2000 replications). The economic policy uncertainty indexes are expressed in levels, whereas all the other variables are expressed in percent deviations with respect to their steady state. The horizontal axis identifies months.

fast to the economic condition by adopting an expansionary monetary policy. As the economy settles on the recovery path, the interest rate goes back to its steady state. Our results corroborate those reported in previous contributions on the "demand" type of effects triggered by uncertainty shocks in the US economy (Alexopoulos and Cohen, 2009; Bloom, 2009; Baker et al., 2013; Caggiano et al., 2013; Leduc and Liu, 2013; Nodari, 2013).

Moving to our research question, our VAR predicts *a negative and significant reaction of Euro area price and quantity indicators to an unexpected increase in the US policy uncertainty*. The industrial production and consumer prices drop to −0.12% and −0.06%, respectively, two months after the shock. Then, they slowly go back to their pre-shock level. One possible explanation is that increases in uncertainty lead both households and firms to postpone their consumption and investment decisions due to a precautionary saving-motive (the former) and an increase of the option-value of waiting (the latter). The fall in aggregate demand may be responsible for the temporary deflation predicted by our VARs. The monetary policy easing associated with a temporary reduction in the nominal interest rate is consistent with an inflation-targeting strategy pursued by the monetary policymakers.[4] Notably, our impulse responses suggest that, following an exogenous increase in the US economic policy uncertainty, the Euro area-related

[4] Our results are robust to: (i) ordering the news indexes first in each country-specific block; (ii) different lag-length specifications; (iii) the introduction of extra-variables in the VAR (i.e., nominal effective exchange rate, Chicago Fed National Activity Index and EuroCoin business cycle indicator, University of Michigan Consumer Sentiment Index); (iv) the employment of alternative uncertainty indexes (EPU^{US}/EPU^{Euro} and VIX/VSTOXX); (v) the inclusion of the financial crisis period in our sample. The robustness checks are available in the online supplementary material.

Table 1
Forecast error variance decomposition of the European variables due to US and European economic policy uncertainty shock (percentage).

Horizon (in months)	Consumer prices		Industrial production		Policy rate	
	$News^{US}$	$News^{Euro}$	$News^{US}$	$News^{Euro}$	$News^{US}$	$News^{Euro}$
1	2	0	0	0	7	0
6	7	1	4	2	18	3
12	6	1	3	2	11	2
18	6	1	2	2	7	2
24	6	1	2	2	6	2
6 (GSDF)	0	2	8	1	4	0
6 (CPIDF)	2	2	2	0	1	1
6 (SFC)	1	3	3	3	2	2

Notes: GSDF: government spending disagreement forecasts, CPIDF: CPI disagreement forecasts, SFC: sample with financial crisis.

uncertainty also increases. Obviously, given the high level of contamination involving the US and the Euro area at commercial and financial levels, policy (in)decisions in the United States may very well increase the perceived uncertainty surrounding policy moves in Europe. Admittedly, our VARs do not distinguish between reactions by European aggregates due to an increase in the US uncertainty *per se* vs. reactions to an increase in the endogenous component of the Euro-area related uncertainty. This, however, does not affect our main message, i.e., US economic policy uncertainty shocks exert a significant effect on Euro area macroeconomic aggregates.

How important is a US uncertainty shock? Table 1 highlights the contribution of the US and European policy uncertainty shocks in explaining the short-run fluctuation in the European variables.

In the short-run, the Euro area variables are estimated to respond more strongly to US uncertainty shock than to the European counterpart. At a six month horizon, the US shock explains 4% of the variation in the European industrial production, whereas the European policy uncertainty accounts for 2%. The change in the European consumer prices and policy rate in response to a US uncertainty shock is six times larger than under the European counterpart. Therefore, the US policy shock explains an appreciable share of the variance of the forecast error of the Euro area variables (above all, the policy rate). More importantly, such shock appears to be more relevant on European aggregates than its European counterpart.

Table 1 also reports the results obtained by estimating the impact of US uncertainty shocks with the two alternative proxies for uncertainty that compose the Economic Forecast Disagreement recently proposed by Baker et al. (2013): the Government Spending Disagreement Forecast (GSDF), and the CPI Disagreement Forecasts (CPIDF).[5] The GSDF proxy confirms the relatively larger role played by US uncertainty shocks on European variables as for industrial production and the policy rate. The CPIDF measure of uncertainty plays a milder role for both US and European uncertainty shocks, therefore suggesting that different measures of uncertainty may very well depict different contributions as for the macroeconomic dynamics of the Euro area. Finally, Table 1 (see Sample with Financial Crisis observations, line SFC) documents the reduction of the relevance of US uncertainty shocks (in the context of our baseline model), possibly due to the increased variability in the policy uncertainty index.

4. Conclusions

We investigate to what extent US economic policy uncertainty shock may trigger reactions at a macroeconomic level in the Euro area. Our VARs find a negative and significant reaction of Euro area price and quantity indicators to such a shock. We find the contribution of exogenous variations of the US uncertainty indicator to be larger than that induced by its European counterpart.

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Appendix. Supplementary data

Supplementary material related to this article can be found online at http://dx.doi.org/10.1016/j.econlet.2013.06.024.

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[5] The US government spending disagreement forecast refers to the federal, state, and local purchases for the US, whereas the European one only concerns to the federal budget balances.