The role of confidence shocks in business cycles and their global dimension☆

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This paper uses survey data on consumer sentiment to identify the causal effects of confidence shocks on real economic activity in a selection of advanced economies. Starting from a set of closed-economy VAR models, we show that these shocks have a significant and persistent impact on domestic consumption and real GDP. In line with the existing literature, we find that confidence shocks explain a large share of the forecast error variance of real economic activity. At the same time, the shocks we identify are significantly correlated across countries. In order to account for common global components in international confidence cycles, we extend the analysis to a FAVAR model. This approach proves effective in removing the correlation in country-specific confidence shocks and in isolating mutually orthogonal idiosyncratic components. As a result, the (domestic and cross-border) effects of country-specific confidence shocks are attenuated and the forecast error variance contributions are reduced. Overall, our findings suggest that, while confidence shocks play an important role in domestic business cycle fluctuations, they contain a strong common component, which confirms their global dimension.

1. Introduction

Economic theory has long ago claimed that waves of optimism and pessimism could be important drivers of business cycles (see, e.g., Pigou, 1927). Survey data on consumer sentiment might provide information about such optimistic or pessimistic views regarding future economic developments, in particular regarding uncertainty that may have substantial implications for real economic activity. The global financial crisis, which started as a sub-prime debt crisis in the U.S. and has subsequently undergone a number of different stages (e.g. the bankruptcy of Lehman Brothers or the euro area sovereign debt crisis) has been repeatedly qualified as a "confidence crisis". The global nature of this crisis has highlighted the importance of the international dimension of confidence shocks.

As summarised in Barsky and Sims (2012), there are two contrasting approaches to the role of confidence in macroeconomics: the "information" or "news" view, which suggests that confidence indicators contain information about future economic developments (see, e.g., Beaudry and Portier, 2006, Jaimovich and Rebelo, 2009), and the "animal spirits" view, which claims that changes in beliefs which are unrelated to economic fundamentals have a causal effect on the business cycle, as in Angeletos and La'O (2013). To this day, the conclusions

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in the empirical literature remain ambiguous. At one extreme, confidence measures are shown to have both predictive power for and a role in understanding business cycle fluctuations (see, e.g., Carroll et al., 1994; Ludvigson, 2004). At the other extreme, some researchers conclude that the concept of confidence does not play an important role in macroeconomics (e.g. Bartsy and Sims, 2011).

First, this paper aims at identifying confidence shocks in a vector autoregression (VAR) model and assesses the impact of such shocks on macroeconomic developments. Following Beaudry et al. (2011), we extend previous analyses on the macroeconomic impacts of confidence shocks to a number of economies. In addition to the United States, which was analysed already in Beaudry et al. (2011) and Bartsy and Sims (2012), we also focus on the euro area as a whole as well as on Germany, France and Italy, taken individually, and the United Kingdom. Due to data limitations, the sample used to estimate all VAR models includes quarterly observations from 1985Q1 to 2011Q4.

The identification scheme relies on the penalty function approach for sign restrictions proposed by Uhlig (2005) and Mointford and Uhlig (2009). Our VAR models comprise widely-used macroeconomic variables, such as total factor productivity (TFP), real private consumption, real GDP, interest rates and unemployment. Moreover, we include survey indicators of consumer confidence, based on the notion that innovations in these measures might reflect supplementary information that private consumers have or believe to have about future economic developments. We think that survey measures of consumer confidence are (i) more timely than changes in actual real private household consumption and (ii) more adequate than stock prices in accounting for broad swings in consumer sentiment. While household surveys are supposed to be representative for the entire population, the generalisability of share prices as a measure of optimism or pessimism hinges on the assumption that selection into stock market participation is uncorrelated with sentiments. In order for this to hold, in general, participation would have to be complete. Although one can make a point that stock ownership is widespread in the U.S. and UK, this is not the case for the other countries in our sample or the euro area as a whole.

Importantly, our identifying approach is agnostic with regard to the “information” and “animal spirits” interpretation of consumer confidence. Accordingly, the confidence shocks we identify might represent a conglomerate of different influences, including, e.g., (expected) changes in fiscal policy or idiosyncratic mood swings. As a consequence, our confidence shocks could function both as a channel and as an independent driver of business cycle fluctuations.

The analysis of impulse response functions reveals that confidence shocks have qualitatively similar effects for all countries in our sample: consumption increases on impact and remains significantly higher in the long term, in most countries. Real GDP hardly responds on impact but tends to be higher persistently in most countries. We find that confidence shocks explain a large share of the variance in real output growth. Interestingly, the confidence shocks we identify feature large contemporaneous correlations across countries.

In order to remove these common global components in the confidence cycle, we extend the previous analysis to an international factor-augmented VAR (FAVAR) model, which introduces so-called factors, i.e. common components that are prevalent in all other and possibly third countries, in the benchmark VAR model. With this methodology, we aim at analysing the global dimension of confidence shocks in order to assess their domestic and cross-border effects.

This approach proves effective in removing the correlation in country-specific confidence shocks, thus isolating the idiosyncratic components. As a result, the impact of country-specific confidence shocks on real GDP and consumption becomes smaller and less persistent. The fact that the impulse response functions are attenuated indicates that a noticeable share of the confidence shocks identified in a closed-economy VAR must be attributed to common global components. Moreover, the transmission of a confidence shock to other countries is, in most cases, significant in the short run for foreign consumer confidence, but not for consumption and real GDP. This result supports the idea of a confidence channel in the international transmission of shocks. Finally, the contribution of country-specific confidence shocks to business cycle fluctuations is also reduced, confirming the global dimension of confidence shocks. Several robustness checks with regard to the number of endogenous variables, the identification scheme, or the variable used to capture ‘confidence’ (i.e. survey data on consumer sentiment vs. stock market indices) do not invalidate these findings.

Overall, our analysis provides robust evidence that confidence shocks play an important role in business cycle fluctuations. At the same time, we show that they have a strong global component, supporting their relevance for international business cycles.

The plan of the paper is as follows: Section 2 presents the benchmark VAR model and the country-specific effects of confidence shocks. Section 3 compares these results with those based on a FAVAR approach, which also allows us to study the international transmission of country-specific confidence shocks. Section 4 provides a number of robustness checks. Section 5 concludes.

2. The Benchmark VAR model

2.1. VAR specification

The benchmark is a country-specific VAR model in the $(6 \times 1)$ vector $y_t = (\text{tfp}_t, \text{conf}_t, \text{cons}_t, \text{inr}_t, \text{unem}_t, \text{gdp}_t)'$, where $\text{tfp}_t$ denotes a country index of TFP, $\text{conf}_t$ denotes the value of a seasonally adjusted survey measure of consumer confidence, $\text{cons}_t$ denotes real household consumption, $\text{inr}_t$ is an inflation-adjusted measure of short-term interest rates, $\text{unem}_t$ is the unemployment rate, and $\text{gdp}_t$ denotes real domestic GDP of country $i$ in period $t$, respectively. We use realised rather than expected inflation to deflate nominal interest rates. Accordingly, $\text{inr}_t$ should be interpreted as an ex-post measure of real short-term interest rates.

All the data are quarterly. For the sake of comparability, the measures of consumer confidence are standardised to have zero mean and unit variance. Interest and unemployment rates are in levels (%), while TFP, household consumption and GDP are in log differences. Thus, we explicitly account for the presence of a unit root in the latter variables.

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2 Although the survey is conducted on a monthly basis both in the U.S. and the European Union, the quarterly availability of national accounts data and TFP restricts our VAR analysis to quarterly frequency.

3 For consistency, we take all TFP data from Bergeaud et al. (2014).
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