

WORKING PAPER

WHY NARRATIVE INFORMATION MATTERS: EVIDENCE FROM THE ASSET PURCHASE PROGRAM OF THE ECB

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Why narrative information matters: Evidence from the asset purchase program of the ECB*

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Abstract

In this paper, I evaluate the effects of public sector purchase program announcement shocks in the Euro area estimating a Bayesian VAR with sign–restrictions augmented by narrative information taken from event studies. Using monthly data, I find that the shocks persistently increase inflation and output. The exchange rate, market volatility, borrowing costs, and systemic risk fall while the quantity of household credit and economic and consumer sentiment rises. Most importantly, I find that the additional narrative information substantially reduces the uncertainty around these effects, shedding new light on the effectiveness and the pass-through of unconventional monetary policy.

Keywords: Unconventional monetary policy, APP, Narrative sign–restrictions

JEL Codes: E50, E51, E52, E58

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1 Introduction

Several studies investigate the short-term effects of unconventional monetary policy announcements on financial variables using event studies. Examples for the Euro area (EA) are Eser and Schwaab (2016), Szczerbowicz (2015), Urbschat and Watzka (2019) and Gagnon et al. (2011) while Chodorow-Reich (2014) looks at the US. Boeckx et al. (2017), Altavilla et al. (2016) and Garcia Pascual and Wieladek (2016) look at the medium-run macroeconomic effects of quantitative easing (QE) in the EA, Baumeister and Benati (2013) in the US, Weale and Wieladek (2016) in the UK, and Beck et al. (2019) in a large panel of countries. They find QE being expansionary in the US, the UK, and to a lesser extent, the EA. There is, however, no final consensus yet about the magnitude of the effects and the transmission mechanisms of unconventional monetary policy.

This paper gives new insights on the effectiveness of QE using a SVAR with narrative sign-restrictions as proposed by Antolin-Diaz and Rubio-Ramirez (2018). I concentrate on the public sector purchase program (PSPP) as 90% of the asset purchase program (APP) of the ECB until end-2018 was conducted via the PSPP. I find that PSPP announcement shocks persistently increase inflation, real GDP and economic and consumer confidence, while reducing market volatility and systemic risk. Moreover, they improve credit conditions and lower the exchange rate. The effects indicate that inflation and growth would have been even lower in the EA absent the QE-program. Furthermore, I find that including narrative information shrinks the credible intervals substantially and in an economically meaningful way thereby uncovering the transmission channels of unconventional monetary policy more clearly.

2 Methodology and data

The benchmark estimation is a four variable Bayesian–VAR model with monthly EA data from 2012m06, when the short–term rate reached the (zero) lower bound, until 2018m12 when the net purchase of the APP ended.

$$Y_t = c + A(L)Y_{t-1} + B\epsilon_t, \quad (1)$$

where Y_t is a vector of endogenous variables including the log of core HICP, the log of real GDP, the EA long–term interest rate (average of the EA’s 10–year government bonds), and the log of real EA equity prices.¹ c is a vector of constants, B the contemporaneous impact matrix, and ϵ_t are the structural shocks.

To test transmission channels and further macroeconomic reactions, I re–estimate the BVAR in a second step including each time a different fifth variable. I include the CISS and Vstoxx to analyze the reactions of systemic risk and market volatility. To inspect market expectations, I include the 5year–5year inflation swaps and the economic and consumer confidence index. To verify whether the credit easing channel is operational, I evaluate how rates and stocks for household and non–financial corporation credit react. I also include the unemployment rate, the ECB’s balance sheet and the real effective exchange rate (REER) to check for further possible transmission channels. All variables are in log–levels except for rates, the CISS, and the Vstoxx which are in levels.

2.1 Identification

Sign–restrictions are generally less restrictive than exclusion restrictions and allow for more realistic reactions of variables to structural shocks. These weaker restrictions, however, mean that the set of accepted possible impulse response functions (IRFs) is large and many of these IRFs may imply economically senseless structural relations. Therefore, I apply the narrative sign–restriction approach by Antolin-Diaz and Rubio-Ramirez (2018) to meaningfully shrink the number of accepted

¹Monthly real GDP index (Source: Eurocoin/Banca d’Italia).

IRF draws, and only retain those supported by prior knowledge derived from historical events.

Table 1: Sign–restrictions

| Shock \ Variable | log HICP | log real GDP | Long–term rate | log real equity |
|------------------|----------|--------------|----------------|-----------------|
| PSPP | ? | ? | ↓ | ↑ |

Note: The signs are binding on impact and one month after.

Therefore, I firstly identify a PSPP shock via ‘traditional’ sign–restrictions which are shown in Table 1. I assume that there is a portfolio rebalancing from long–term government bonds towards stocks (Altavilla et al., 2015; De Santis, 2020) after a PSPP announcement shock. Secondly, I impose narrative sign–restrictions to shrink the set of accepted IRF draws excluding all sampled draws in which the shock does not have the assigned sign in the specified month. I concentrate on the seven most important events around the PSPP which are summarized in Table 2. The signs of the shocks are based on an event study by Urbschat and Watzka (2019) and Financial Times’ headlines following the events.

Table 2: Narrative restrictions

| Date | Description | Sign of shock |
|----------|--|---------------|
| Jun 2014 | Governing Council meeting (GovC) : Preparatory work on outright purchases of asset–backed securities. | ↑ |
| Sep 2014 | GovC: Decision to start purchasing non–financial private sector assets including ABSs and covered bonds (CBPP3). | ↑ |
| Jan 2015 | GovC: Expanded PSPP: EUR 60bn until end–September 2016. | ↑ |
| Sep 2015 | GovC: Increase issue share limit from 25% to 33% subject to a case–by–case verification. | ↑ |
| Dec 2015 | GovC: Extension of PSPP until the end of March 2017, or beyond, if necessary. | ↓ |
| Jan 2016 | FT Article: Mr Draghi: “There are no limits to our actions.” | ↑ |
| Mar 2016 | GovC: Expansion of PSPP to EUR 80bn. | ↓ |

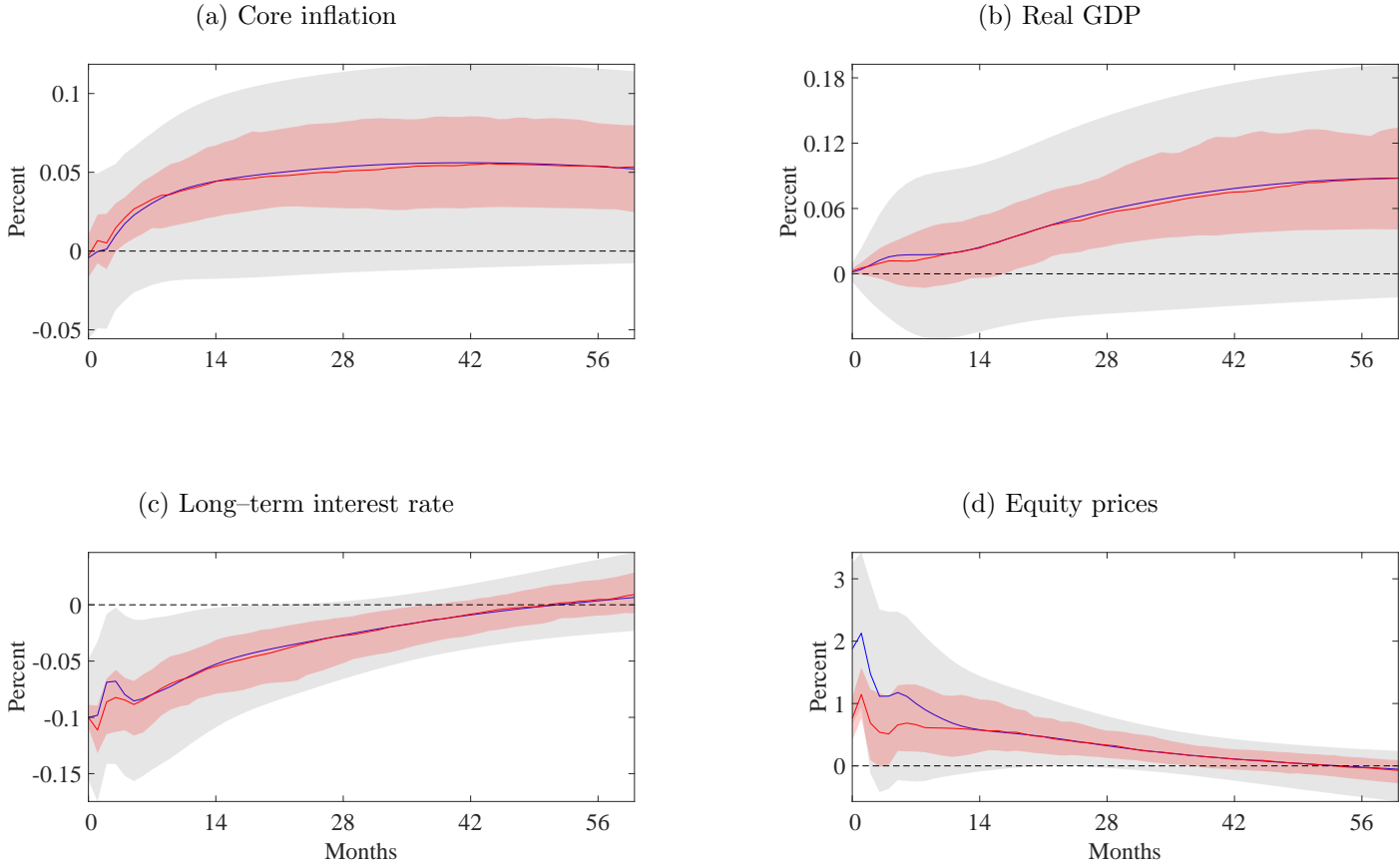
Sources: ECB, Beck et al. (2019), Urbschat and Watzka (2019).

3 Results

Each panel of Figure 1 shows the IRFs of the benchmark-BVAR, using both ‘traditional’ sign-restrictions (grey) and the narratively augmented IRFs (red). The shock is scaled to reduce the long-term rate by 10bps on impact. The substantial reduction in uncertainty reveals the importance of the narrative information. HICP and real GDP increase significantly and persistently by around 0.05% and 0.1% respectively over five years. Long-term rates drop and equity prices rise according to their restrictions. The results are comparable to earlier findings. Garcia Pascual and Wieladek (2016) report an increase by 0.11% of real GDP and 0.075% of HICP four years after an APP which decreased the 10-year yield by 9.3bps. Using a VAR with the four biggest EA-countries, Altavilla et al. (2016) find positive effects of 0.34%–2.01% on GDP and 0.28%–1.21% on HICP four years after a QE shock while the respective long-term yields drop by 20–100bps. Beck et al. (2019) report that CPI is 1% higher three years after a QE shock finding only insignificant impacts on output.

Figure 2 depicts the IRFs for the five-variable BVAR. Economic and consumer sentiment increase only in the short run indicating a transitory effect of the shock. Inflation expectations react slightly positive and only on impact of the shock. The Vstox and the CISS react negatively. Credit to households increases substantially while credit to non-financial corporations does not react. The latter finding is somewhat puzzling. Nevertheless, the interest rates decrease indicating easier lending conditions. Total assets of the ECB increase on impact. The REER and the unemployment rate drop. The results are in line with the earlier findings (e.g. Beck et al. (2019)). The smaller confidence intervals again show clearly how important the narrative information is in revealing the underlying structural relationships. The reaction of the CISS, for example, is exclusively driven by the shrinkage of the credible interval.

Figure 1: Reactions after a normalized PSPP shock



Note: Figure shows respective median responses in blue ('traditional' sign-restriction) and red (narratively augmented) with the 16th and 84th percentiles of the posterior distribution in grey ('traditional') and red (narratively).

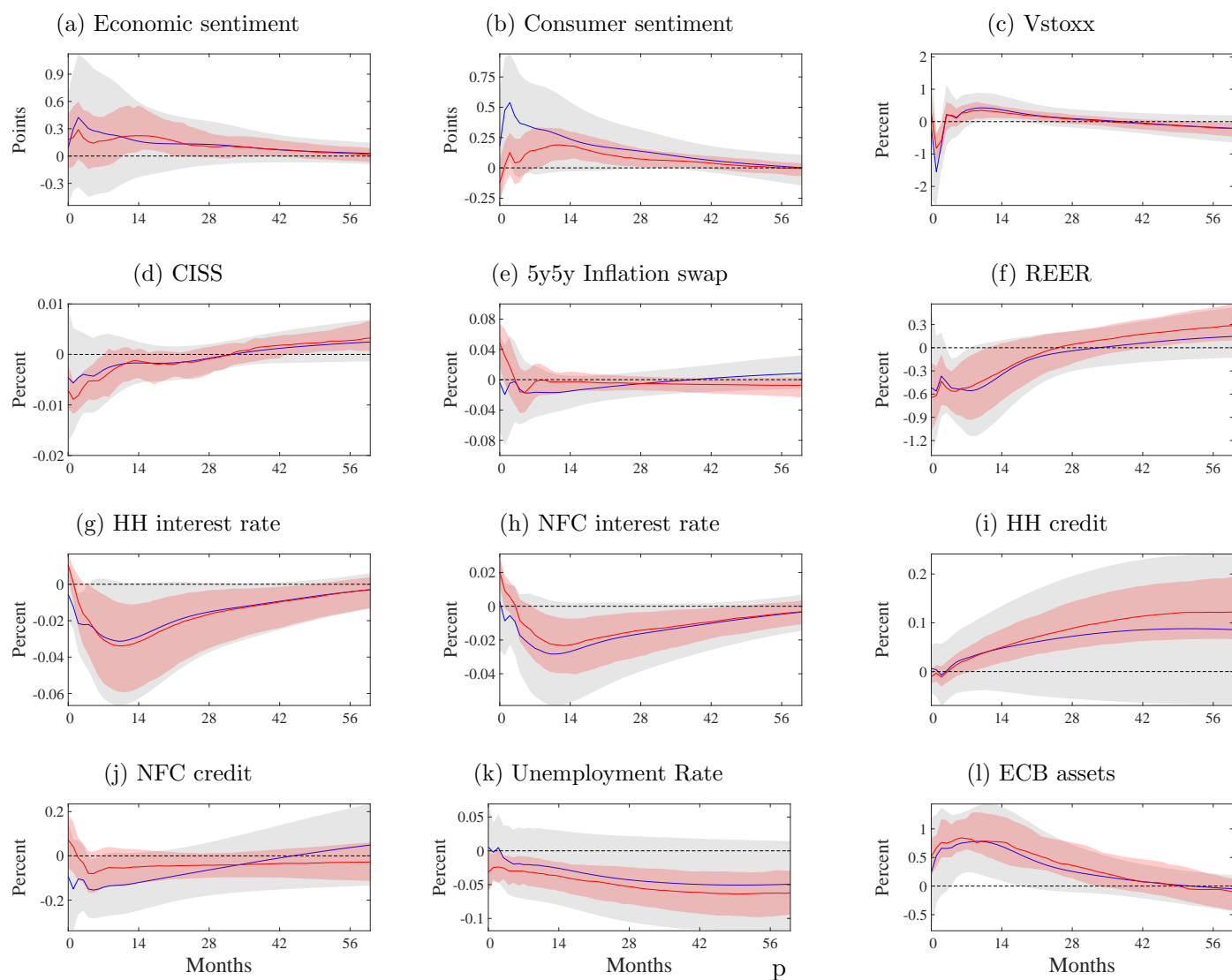
4 Conclusion

This paper shows that PSPP announcement shocks increase prices, output, and economic and consumer sentiment while reducing market volatility and uncertainty. Moreover, interest rates drop and household borrowing increases. The reason why inflation remained below target in the recent years does not seem to stem from the ineffectiveness of QE but from its insufficient size. Furthermore, the findings show how important the inclusion of narrative information is in meaningfully reducing the uncertainty around the responses. Researchers can take the finding as a further confirmation to include narrative information in their identification strategies.

References

- Altavilla, C., Carboni, G., and Motto, R. (2015). Asset purchase programmes and financial markets: lessons from the euro area. Working Paper Series 1864, European Central Bank.
- Altavilla, C., Giannone, D., and Lenza, M. (2016). The Financial and Macroeconomic Effects of the OMT Announcements. *International Journal of Central Banking*, 12(3):29–57.
- Antolin-Diaz, J. and Rubio-Ramirez, J. F. (2018). Narrative Sign Restrictions for SVARs. *American Economic Review*, 108(10):2802–29.
- Baumeister, C. and Benati, L. (2013). Unconventional Monetary Policy and the Great Recession: Estimating the Macroeconomic Effects of a Spread Compression at the Zero Lower Bound. *International Journal of Central Banking*, 9(2):165–212.
- Beck, R., Duca, I. A., and Stracca, L. (2019). Medium term treatment and side effects of quantitative easing: international evidence. Working Paper Series 2229, European Central Bank.
- Boeckx, J., Dossche, M., and Peersman, G. (2017). Effectiveness and Transmission of the ECB’s Balance Sheet Policies. *International Journal of Central Banking*, 13(1):297–333.
- Chodorow-Reich, G. (2014). Effects of Unconventional Monetary Policy on Financial Institutions. *Brookings Papers on Economic Activity*, 45(1 (Spring)):155–227.
- De Santis, R. A. (2020). Impact of the Asset Purchase Programme on euro area government bond yields using market news. *Economic Modelling*, 86:192 – 209.
- Eser, F. and Schwaab, B. (2016). Evaluating the impact of unconventional monetary policy measures: Empirical evidence from the ECB’s Securities Markets Programme. *Journal of Financial Economics*, 119(1):147–167.
- Gagnon, J., Raskin, M., Remache, J., and Sack, B. (2011). The Financial Market Effects of the Federal Reserve’s Large-Scale Asset Purchases. *International Journal of Central Banking*, 7(1):3–43.
- Garcia Pascual, A. and Wieladek, T. (2016). The European Central Bank’s QE: A new hope. CEPR Discussion Papers 11309, C.E.P.R. Discussion Papers.
- Szczerbowicz, U. (2015). The ECB Unconventional Monetary Policies: Have They Lowered Market Borrowing Costs for Banks and Governments? *International Journal of Central Banking*, 11(4):91–127.
- Urbschat, F. and Watzka, S. (2019). Quantitative easing in the Euro Area – an event study approach. *The Quarterly Review of Economics and Finance* (In press).
- Weale, M. and Wieladek, T. (2016). What are the macroeconomic effects of asset purchases? *Journal of Monetary Economics*, 79(C):81–93.

Figure 2: Reactions after a normalized PSPP shock



Note: Each panel refers to a distinct estimation with the respective fifth variable included.