

Deciphering Monetary Policy Shocks

Phillipp Gnan¹ Maximilian Schleritzko² Maik Schmeling^{3,4} Christian Wagner^{1,2}

¹WU (Vienna University of Economics and Business)

²Vienna Graduate School of Finance

³Goethe University Frankfurt

⁴Center for Economic Policy Research



Point of Departure

- A key question in economics & finance is how monetary policy impacts the economy & financial markets
- Standard approach: use of various *monetary policy shocks* based on *high-frequency reactions* of financial instruments during monetary policy announcements
- Guided by economic theory they allow to *indirectly* infer what type of news is communicated by a central bank

This Paper

- Directly** infers which type of central bank news (i.e. topic) moves certain assets
- Explains high-frequency market reactions during monetary policy announcements by innovations in central bank communication
- Connects what markets **hear** to what the central bank *actually says*

Event Setting

The ECB employs a highly consistent communication strategy for its MP announcements which consist of

- Press release (monetary policy decision at 13:45 pm)
- Press conference (communication starting at 14:30 pm)

The press conference starts with a *pre-scripted* statement of the ECB president explaining the monetary policy decision and elaborating on the economic outlook. We focus on rich communication about different topics during the press conference, separately from the policy decision itself (press release) from 2002–July 2020.

Monetary Policy Shocks

We use several sets of monetary policy shocks all based on high frequency market reactions during the ECB press conference provided by the EA-MPD (Altavilla et al., 2019)

Monetary policy shocks	Identification	Shock ↑
I. Interest rate shocks		
3M	change in the 3M OIS rate	rates ↑
2Y	change in the 2Y OIS rate	rates ↑
10Y	change in the 10Y OIS rate	rates ↑
II. Sovereign spreads		
IT 10Y - DE 10Y	Δ of change in Italian and German 10Y rates	spread ↑
ES 10Y - DE 10Y	Δ of change in Spanish and German 10Y rates	spread ↑
III. FX Rates		
EUR/USD	return of EUR against USD	appreciation of EUR
EUR/GBP	return of EUR against GBP	appreciation of EUR
EUR/JPY	return of EUR against JPY	appreciation of EUR
IV. Term structure shocks		
Altavilla et al. (2019)	PCA of yield changes: 1M to 10Y	
Timing factor (TIM)	1 st PC, rotated	short-term rates ↑
Forward guidance factor (FG)	2 nd PC, rotated, ⊥1M	medium-term rates ↑
Quantitative easing factor (QE)	3 rd PC, rotated, ⊥1M	long-term rates ↑
V. Joint interest rate and equity shocks		
Jarociński and Karadi (2020)	structural shocks: 2Y, ESX50	
Policy shock (POL)	2Y ↑, ESX50 ↓	hawkish news
Information shock (INF)	2Y ↑, ESX50 ↑	good economic news
Cieslak and Schrimpf (2019)	structural shocks: 2Y, 10Y, ESX50	
Monetary shock (MON)	2Y ↑↑, 10Y ↑, ESX50 ↓	hawkish news
Growth shock (GRO)	2Y ↑↑, 10Y ↑, ESX50 ↑	good economic news
Risk Premium shock (RP)	2Y ↓, 10Y ↓↓, ESX50 ↓	risk premium ↑

Table 1. Overview of price-based measures of monetary policy shocks.

Communication Measures

ECB press conference statements follow a clear and consistent topic structure. We directly adopt this structure and assign each paragraph to one of the following five topics

- Rate guidance, economic activity, inflation, financial & monetary conditions, fiscal policy

We then measure the ECB's stance on each topic with a standard dictionary method by counting the number of negative words (Loughran and McDonald, 2011)

$$\tau_{i,t} = 1 - \frac{\# \text{Negative Words in Topic } i}{\# \text{Total Words in Topic } i} \quad (1)$$

Only for rate guidance, we use manual classification to distinguish indications of easing (-1), unchanged policy (0), and tightening (1).

Econometric Methodology

We regress monetary policy shock (S_t) on changes in topic-specific stance ($\Delta\tau_{i,t}$) controlling for inter-press conference news ($C_{j,t}$)

$$S_t = \alpha + \sum_i \beta_i \Delta\tau_{i,t} + \sum_j \gamma_j C_{j,t} + \epsilon_t \quad (2)$$

We control for inter-press conference information in order to ensure that we capture the **unexpected** change in the ECB's topic-specific stance.

Inter-press conference information comprises

- Press Release shocks (actual MP decisions) & UMP announcements
- Lagged changes in ECB's stance
- Inter-PC ECB communication (over 2000 speeches by ECB executive board members)
- Financial market reactions between PCs (Eurostoxx 50, VSTOXX and German 2Y bonds)
- Release of numerical GDP/inflation forecasts during press conferences
- Inflation above/below target plus interaction with inflation stance

Results

The following two figures show the statistically significant drivers of monetary policy shocks based on estimating equation (2). The bars indicate the change of the respective monetary policy shock in response to a one standard deviation move in the ECB's topic-specific stance. The x-axis is scaled to represent estimated effects in percent of the mean absolute change of the respective monetary policy shock over all press conferences.

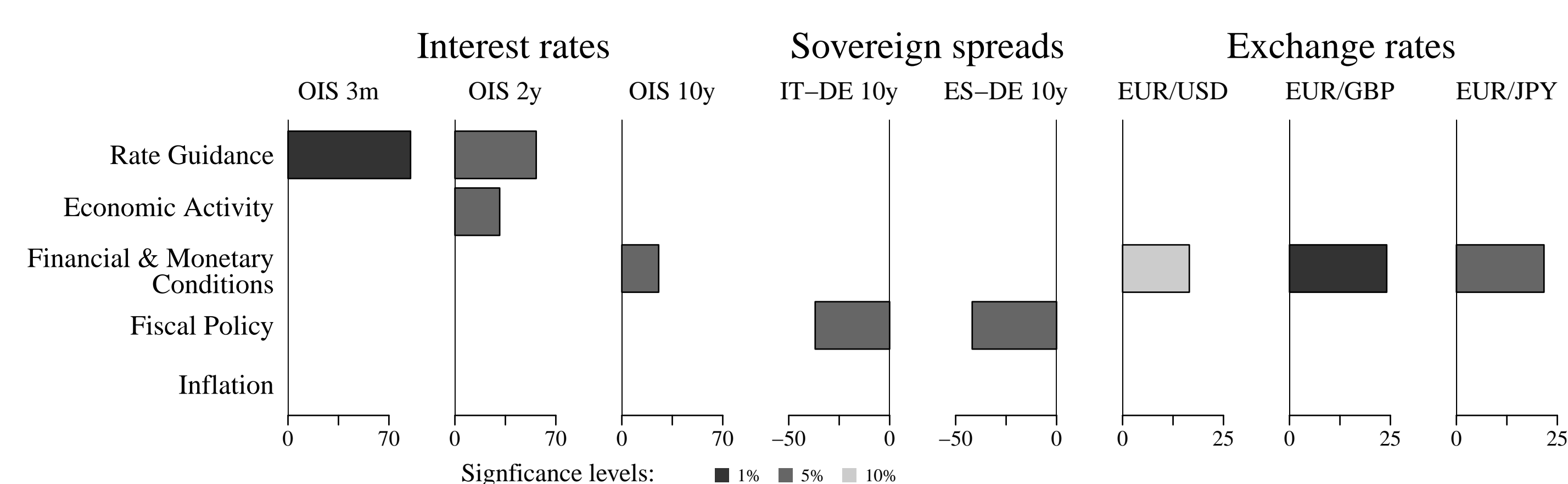


Figure 1. This figure displays drivers of monetary policy shocks based on single assets.

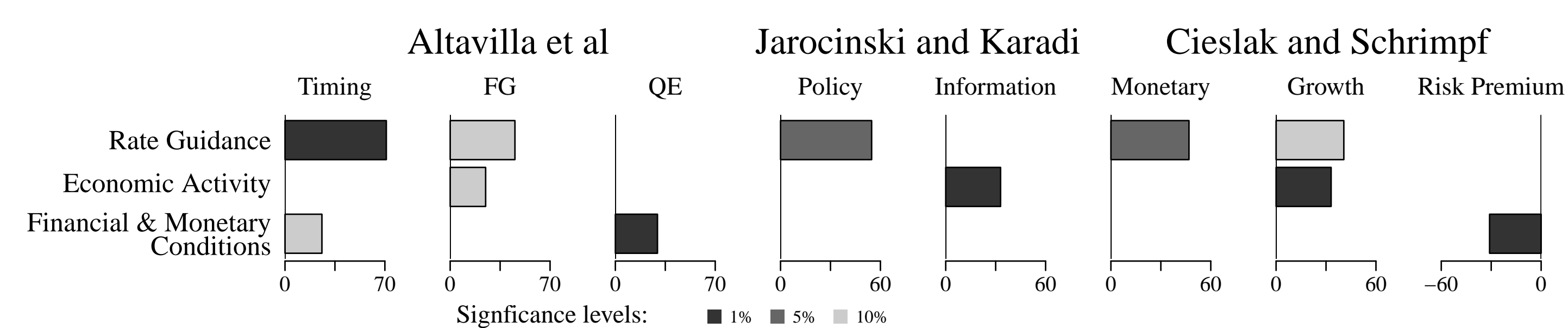


Figure 2. This figure displays drivers of monetary policy shocks based on multiple assets.

- Short-term yields increase with hawkish rate guidance
- Middle-term of the yield curve positively responds to hawkish rate guidance and positive changes in stance on economic activity
- Long-term rates increase with unexpectedly positive communication about financial & monetary conditions
- Sovereign spreads tighten in response to a more positive stance on fiscal policy
- The euro appreciates in response to positive news about financial & monetary conditions
- Policy shocks are driven by rate guidance, while information shocks indeed only react to economic activity
- Risk Premium shocks increase with more negative communication about financial & monetary conditions

Conclusion

- Central banks can affect different segments of financial markets by communicating about different topics
- As a result, using one or the other topic to explain the very same policy decision may lead to different implications for the yield curve
- Researchers should use shocks based on joint reactions of interest rates and equity prices to capture the multifaceted nature of ECB communication
- At least in the euro area we find evidence consistent with the notion of central bank information shocks

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