

# Information Shocks and the Global Financial Cycle

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# 1 Introductory remarks

Unprecedented financial globalization, coupled with the emergence of global intermediaries, has profoundly influenced the functioning of national financial markets and the transmission mechanisms of policy shocks among increasingly interconnected nations. The United States dollar has traditionally held a position of unrivaled dominance in the international arena, to such an extent that US monetary policy has been observed to have spillover effects on other economies. Due to the extensive dollar-denominated assets, domestic decisions significantly impact the portfolios of major global banks, thereby affecting lending and credit choices, corporate spreads, price levels, and agents' risk propensity. For this reason, macroeconomists are increasingly interested in understanding the movements of capital flows and the transmission of policy across borders.

In the study of monetary policy (MP) shocks, a “price puzzle” refers to a situation where the response of prices to a MP shock is inconsistent with the predictions of standard economic theory. Specifically, it refers to an unexpected short-term relationship between MP actions and the behavior of prices and output. A contractionary MP shock, such as an increase in interest rates, is expected to dampen aggregate demand and result in lower output and inflation. However, researchers have found instances where the response of prices to MP shocks is contrary to these expectations. Understanding the causes and implications of price puzzles is crucial for improving our understanding of the dynamics of MP and its impact on the economy.

A recent paper by Miranda-Agrippino and Rey (2020) the interplay of US monetary policy and the existence of a Global Financial Cycle (GFC). The authors analyse the transmission of MP shocks via a rich information Bayesian VAR with an external instrument, which claims to reduce issues of omitted variables and manage imperfect information. MP shocks are identified from high-frequency asset prices adjustments around FOMC (Federal Open Market Committee) announcements. Such an instrument is valid only under the assumption that market agents can correctly discern monetary policy decisions from policy actions. If informational asymmetries are present, the high-frequency surprises are also a function of the “FED information effect”: information shocks about the economic fundamentals that are implicitly conveyed by the central bank's announcements. Thus, the authors are using central bank's (CB) announcements to isolate the MP shocks. However, they assume that announcements are also informative with respect to the CB's internal macroeconomic assessment.

The findings show the existence of a common global factor which accounts for roughly 20% of the variability in prices of risky assets. In terms of domestic responses, they report that a contractionary shock depresses prices and output, and housing investments, accompanied by an increase in unemployment. significantly, their work highlights a distinct reaction in global prices of risky assets, indicating the existence of spillover effects. Specifically, following a contraction in US monetary policy, there is an upsurge in risk aversion, a substantial reduction in credit provision, and a decrease in global capital inflows. Global intermediaries react faster than domestically oriented retail banks, however contract leverage.

In the presence of incorrect accounting for imperfect information, the estimated dynamic responses to shocks are dependent on the choice of instrument, sample and empirical specification of choice. Miranda-Agrippino and Ricco (2021) propose an identification strategy that is robust to the

presence of imperfect information between the public and the CB. High-frequency market based surprises around policy announcements tend to correlate with the CB's private macroeconomic forecasts. Consequently, they define the unexpected component of monetary policy shocks as the exogenous shifts in the policy instrument that surprise market participants and are unforecastable, as well as being uncorrelated with the CB's systematic response to the macroeconomic outlook. This allows to disentangle monetary policy actions from information shocks. Their results show behavior of dynamic responses coherent with economic theory and no evidence of output or price puzzles. Furthermore, they find that a monetary contraction is unequivocally and significantly recessionary, with output contracting immediately and significantly, as well as prices, domestic demand, labor market conditions, investments and household wealth. There is evidence of a credit channel which magnifies these effects through credit provision and financial markets, the yield curve flattens, borrowing costs and corporate spreads rise.

In order to estimate the effect of an information shock on the GFC and a number of relevant variables, I will exploit the information shock proxy INFO\_FF4 derived by Miranda-Agrippino and Ricco (2021). In section 2 I will estimate a VAR model to obtain the relevant impulse response functions (IRFs) to the shock. Section 3 will provide a discussion of results and conclude.

## 2 Identification and estimation

To estimate the effects of an information shock on the GFC, I employ a VAR model with three lags, a constant, and a trend. The model is estimated using Ambrogio Cesa-Bianchi's VAR Toolbox for MatLab.

The dataset consists of monthly observations from 1991 to 2015. I include all available variables in the model, namely the unemployment rate, a logarithmic transformation of the Consumer Price Index (CPI), the 3-month policy rate, and the GFC 10-year-3-month spread.

During the course, we have examined time series and IRFs for a similar VAR model based on the monetary policy proxy MPI\_FF4. Therefore, I will not present my IRFs output for the case of a MP shock and will instead refer to the provided material for any comparisons.

Figure 1 shows the IRFs in the case of a positive information shock. The responses represent the market agents absorbing information from the CB's short-term macroeconomic outlook. Initially, only the policy rate and the unemployment rate respond significantly to the shock. Employment increases and so does the policy rate, in line with the positive expectations of the CB for the future economic conditions. Prices show a positive and persistent effect as the economy heats up. Following the rest of the variables, corporate spreads drop in response to positive news about economic fundamentals. The GFC shows a positive and significant response for a few periods after the shock hits the economy, in line with what was previously discussed. Agents expect the US fundamentals to be good, therefore the spillover mechanisms boost the GFC as discussed in Section 1.

Figure 2 shows the Forecast Error Variance Decomposition for the information shock in panel (a), and the Historical Decomposition in panel (b).

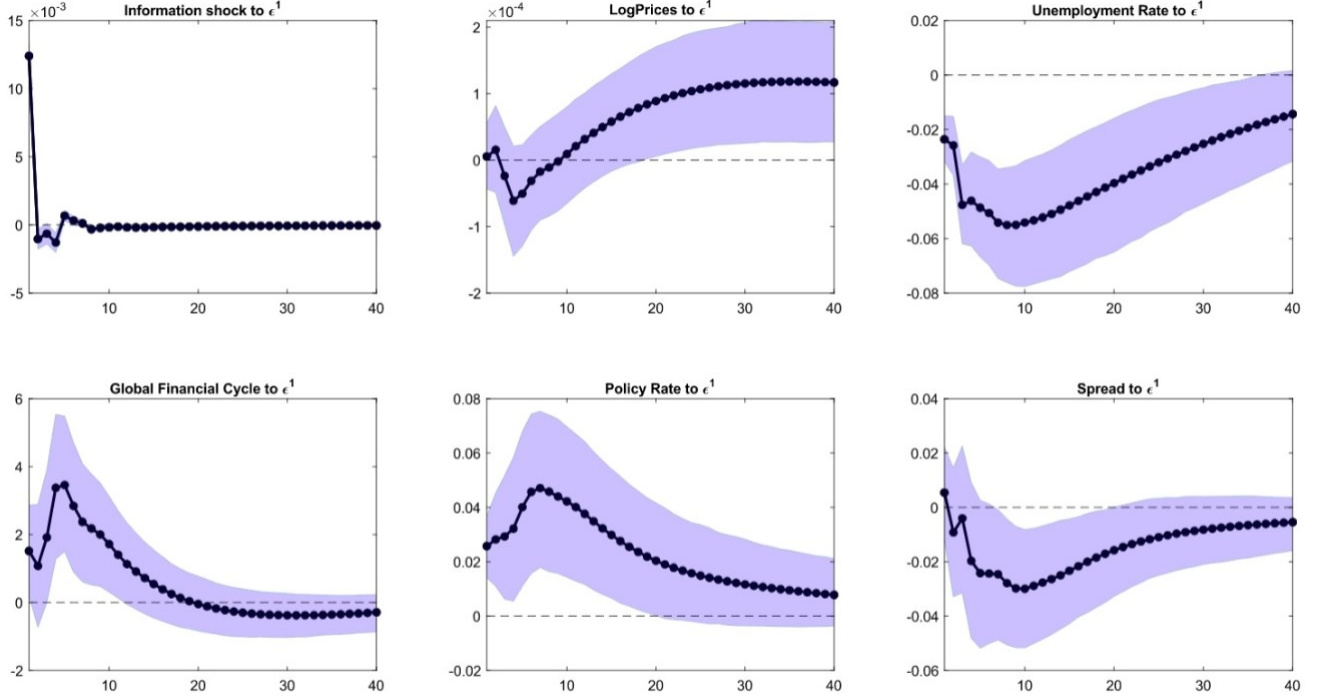
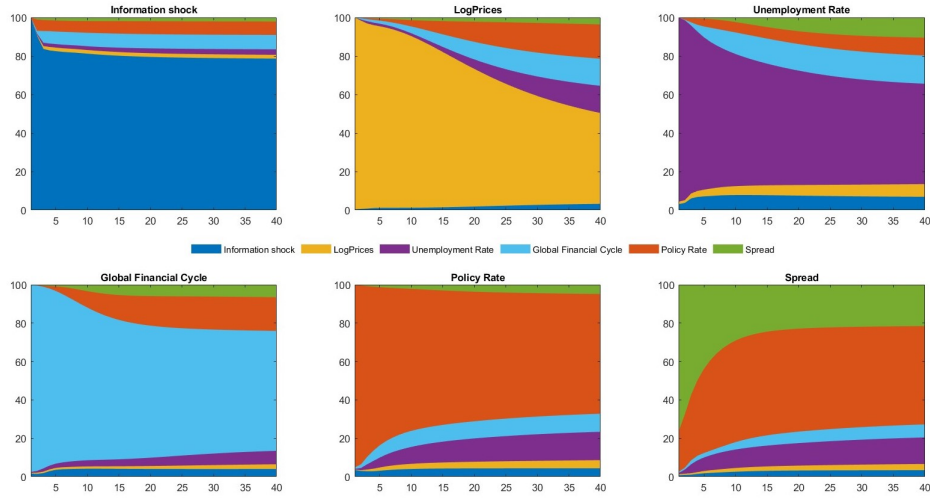


Figure 1: IRFs for an information shock - 68% confidence bands

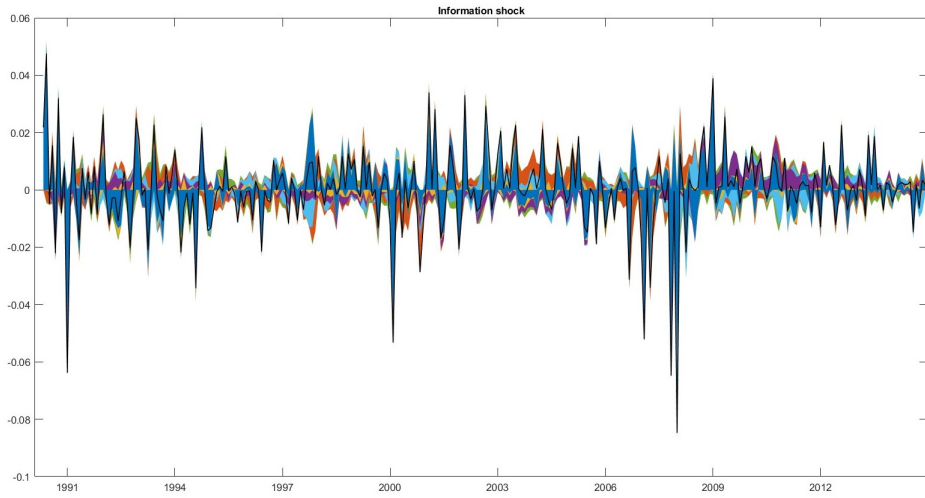
### 3 Discussion

Comparing IRFs between the MP shock and the information shock gives insight into the formation of price puzzles seen in alternative specifications. On impact, both shocks cause an increase in the policy rate. However, Miranda-Agrippino and Ricco (2021) found a MP shock to be unequivocally contractionary, as opposed to what we can ascertain from the IRFs of Figure 1. An information shock signals that the CB expects a strong economy in the near future. In this case, an increase in the policy rate is followed by economic expansion. Prices rise, spreads fall and the GFC is stronger. This would only happen if the view that economic agents react to the information implicitly conveyed by the CB is correct, and my results point to this being the case.

An instrument such as Miranda-Agrippino and Rey's (2020), based on high-frequency surprises, does not properly disentangle the MP surprise from the information one may gives rise to price puzzles and other unexpected scenarios. This could potentially result in price puzzles and other unforeseen situations due to the conflated effects of these two factors. When separated, the MP shock is always followed by a contractionary response, and the information shock is followed by an expansionary response.



(a) Forecast Error Variance Decomposition



(b) Historical Decomposition of Information Shock

Figure 2: Additional Elements

## References

- Cesa-Bianchi, Ambrogio. <https://github.com/ambropo/VAR-Toolbox>, VAR Toolbox for MatLab
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