The Determinants of the Inflation Surge in Europe

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Motivation

- A new era of high inflation? (Bordo et al., 2023)
- "Taming inflation should be the first priority for policymakers" (IMF WEO, July 2022)

Research questions:

1. What are the main drivers (for example, *supply vs demand*)?
2. Is the inflation surge transitory or persistent?

This work:

- We identify 4 macroeconomic shocks: Supply Chain Bottlenecks, Oil, Gas, and Monetary Policy shocks
- Novel approach to identify a shock to gas supply exploiting **high-frequency data** and **weather data**

Empirical strategy

We implement a mixed *Proxy/Recursive-VAR*, where we identify 4 structural shocks:

- **Supply chain disruptions shock**[3], identified recursively;
- **Gas price shock**, identified using exogenous variation in TTF Dutch gas price from
  1. High-frequency instrument based on gas-related news
  2. Unexpected extreme temperatures
- **Oil price shock**, extension of Känzig (2021), using Brent;
- **MP shock**, extension of Altavilla et al. (2019).

We look at IRFs and historical decompositions to assess the relevance of each series of shocks in the recent high-inflation period.

[3] We use the GSCPI, (Benigno et al., 2022)

Gas price shock

Figure: Gas price surprises series constructed from changes in gas futures prices around announcements (principal component spanning first year of TTF gas term structure).

Warm shock

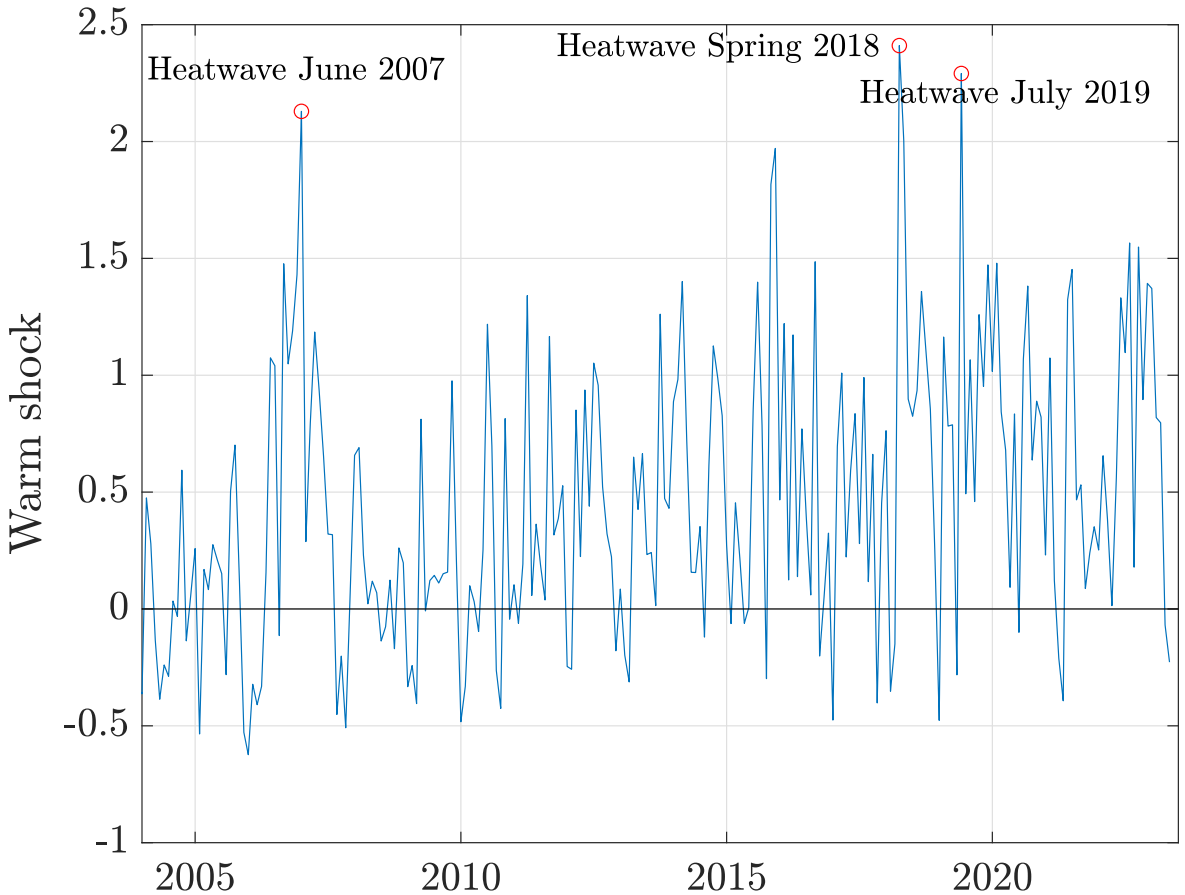


Figure: Standardized anomaly computation wrt reference period 1981-2010, averaged across countries in Europe, weighted by GDP. Constructed from ERA5 data.[4]

[4] See E^{3}CI by IFAB.

Impulse response functions

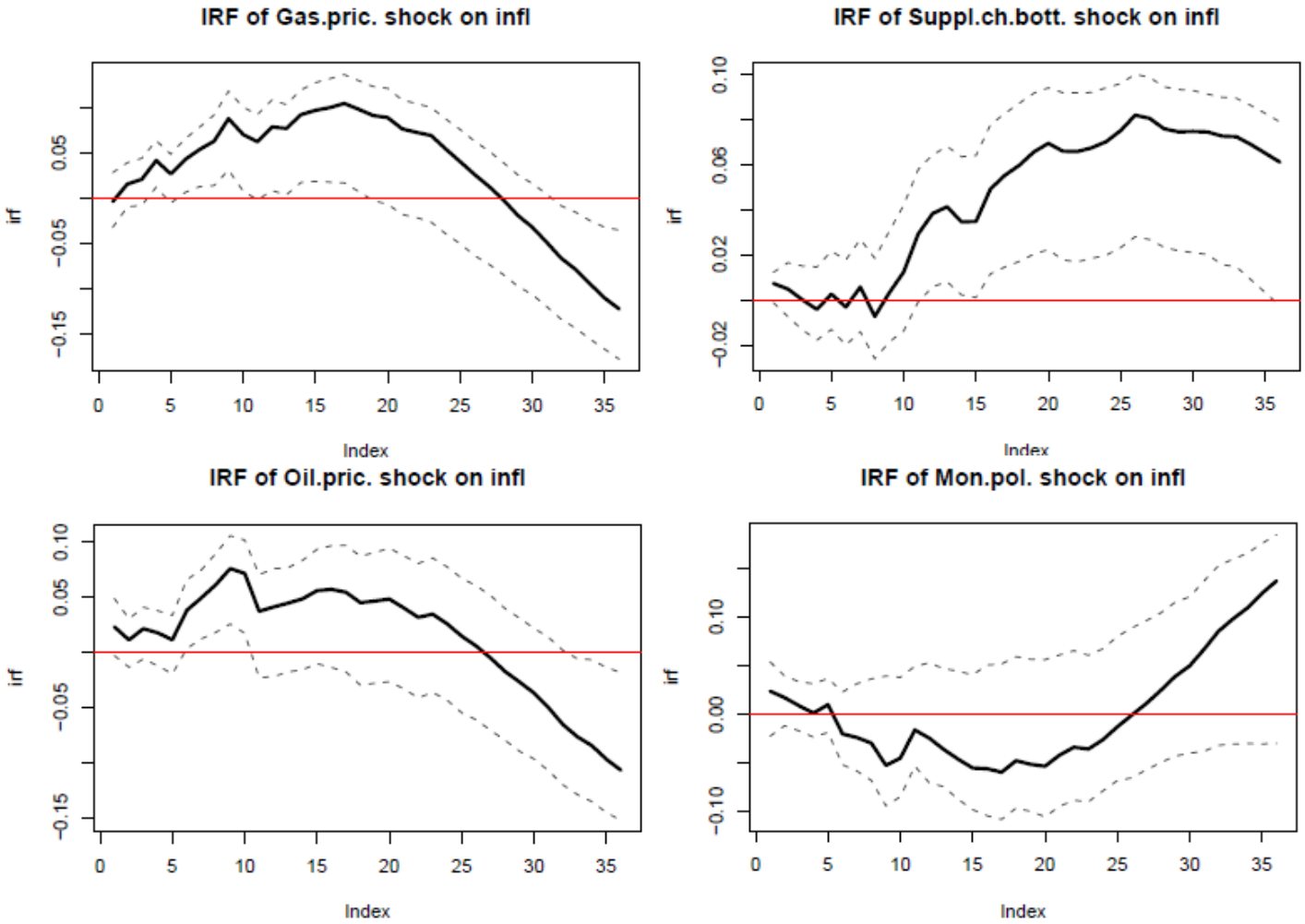
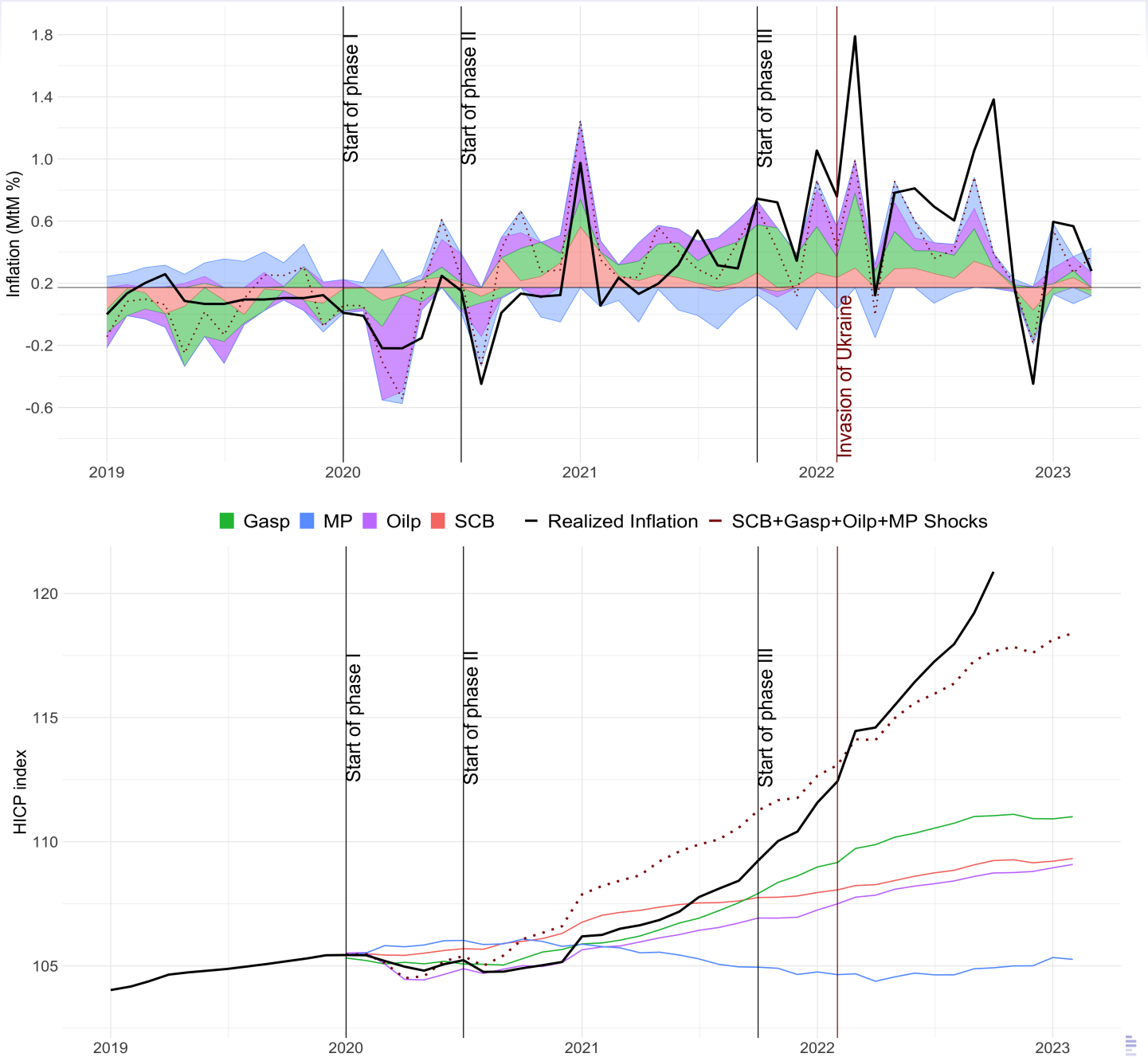


Figure: IRFs on YtY inflation.


Inflation (MtM %)
1.8
1.4
1.0
0.6
0.2
-0.2
-0.6
Start of phase I
Start of phase II
Start of phase III
Invasion of Ukraine
2019
2020
2021
2022
2023
Gasp
MP
Oilp
SCB
Realized Inflation
SCB+Gasp+Oilp+MP Shocks
HICP index
120
115
110
105
Start of phase I
Start of phase II
Start of phase III
2019
2020
2021
2022
2023

Conclusions

Table: Cumulated contributions of the structural shocks to the realized series of price levels.[5]

Shock contribution to the price level	*Date and price level*		**SCB**	**Gasp**	**Oilp**	**MP**	**Residual**
Phase I	*2020M01*	105,02	0,15	-0,16	-0,86	0,53	0,00
	2020M06	104,68					
Phase II	*2020M07*	104,96	1,91	2,43	1,82	-1,02	-2,13
	2021M09	107,97					
Phase III	*2021M10*	108,7	1,61	3,22	2,23	0,42	5,29
	2023M02	121,47					

[5] Chronological categorization of the COVID-19 pandemic period proposed by Ascari et al. (2023).

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Appendix A

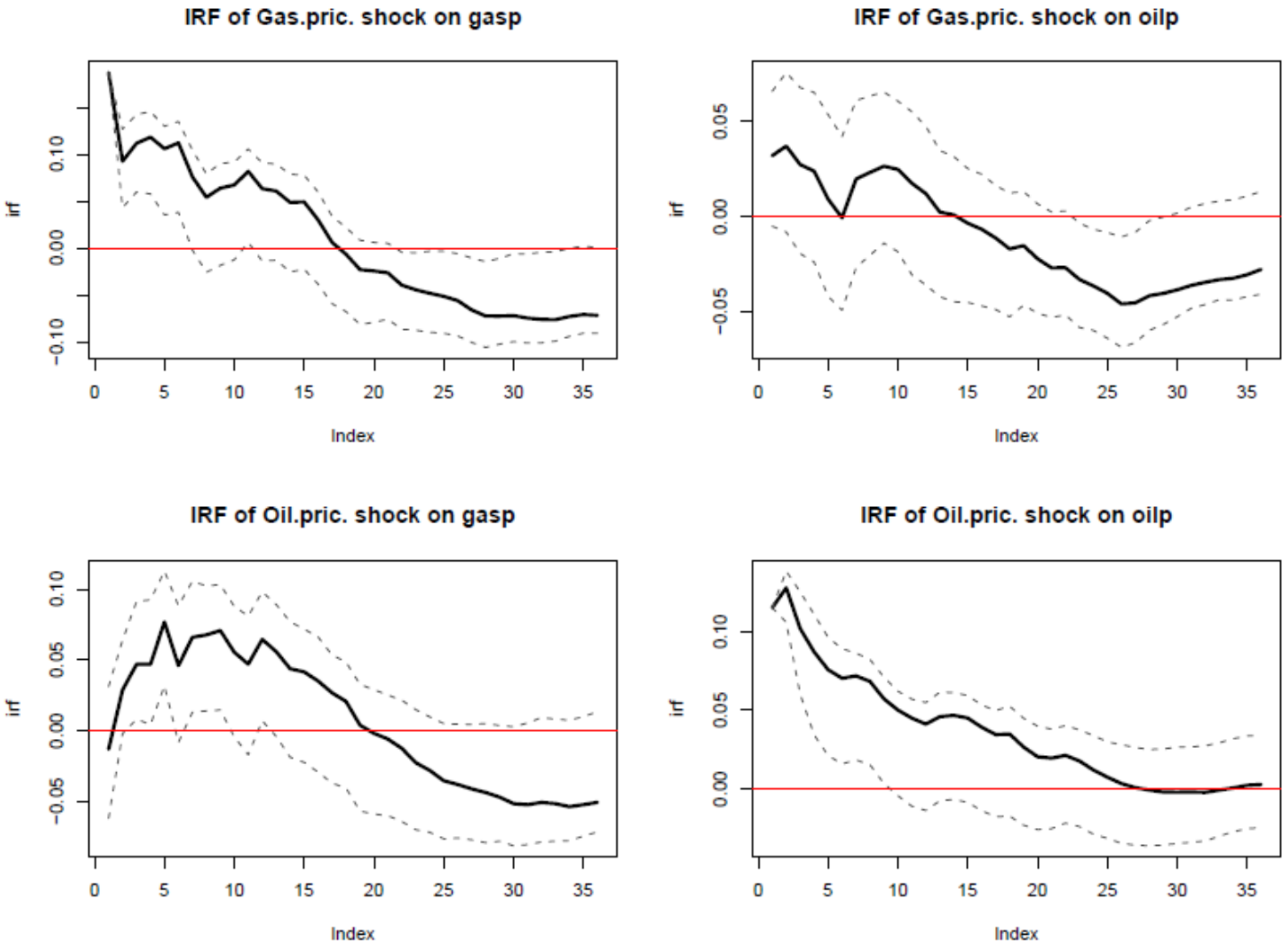

Figure: IRFs on log-deflated Gas (TTF) and Oil (Brent) prices .

Appendix B

Table: Percentage contributions of the structural shocks to the realized series of inflation.

Shock contribution		**SCB**	**Gasp**	**Oilp**	**MP**	**Residual**
Pre-COVID	*2007M01* *2019M12*	15%	21%	23%	18%	23%
Phase I	*2020M01* *2020M06*	7%	15%	33%	13%	32%
Phase II	*2020M07* *2021M09*	17%	25%	22%	21%	15%
Phase III	*2021M10* *2023M02*	10%	23%	13%	14%	40%
All phases	*2020M01* *2023M02*	12%	22%	20%	16%	30%