

Inflation and its Impact on Different Social Groups: The Case of the Czech Republic

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Motivation

Who is vulnerable in Czechia..?

- General assumptions concerning the asymmetric impacts on different socio-economic groups (Argente & Lee, 2021; Claeys & Guetta-Jeanrenaud, 2022)
- Turbulent situation in the CZE – high overall inflation, rapid increases in energy prices, influx of war refugees

Approach & Structure

- The construction of CPIs for different social groups (McGranahan & Paulson 2005) based on the Czech Household Budget Survey and Consumer Price Index (12 product categories)
- The quantification of the impact of energy prices separately via the compilation of data from the Czech Statistical Office, Eurostat, Czech Household Budget Survey, ONS and OECD

Methodology & Data

Monthly consumer price indices (CPI) for each of the target population subgroups based on shares of expenditure on various product categories, as reported by the Czech Household Budget Survey (McGranahan & Paulson, 2005). The following equation measures the inflation in month t for population subgroup k :

$$\pi_{t,k} = \sum_{j=1}^m W_{j,t-12,k} \pi_{j,t}$$

where j represents a specific product category, m signifies the various product categories, $\pi_{j,t}$ is the year-on-year inflation rate for item j and $W_{j,t-12,k}$ is the share of expenditure of item j for members of group k twelve months previously. Specifically,

$$W_{j,t-12,k} = \frac{X_{j,t-12,k}}{\sum_{j=1}^m X_{j,t-12,k}}$$

where $X_{j,t-12,k}$ is the expenditure on product category j by population group k one year prior to time t . The expenditure weighting of each product category $W_{j,t-12,k}$ is available in the Czech Household Budget Survey for 2017 to 2021.

National inflation mitigation policies

Blanket vs. target support..?

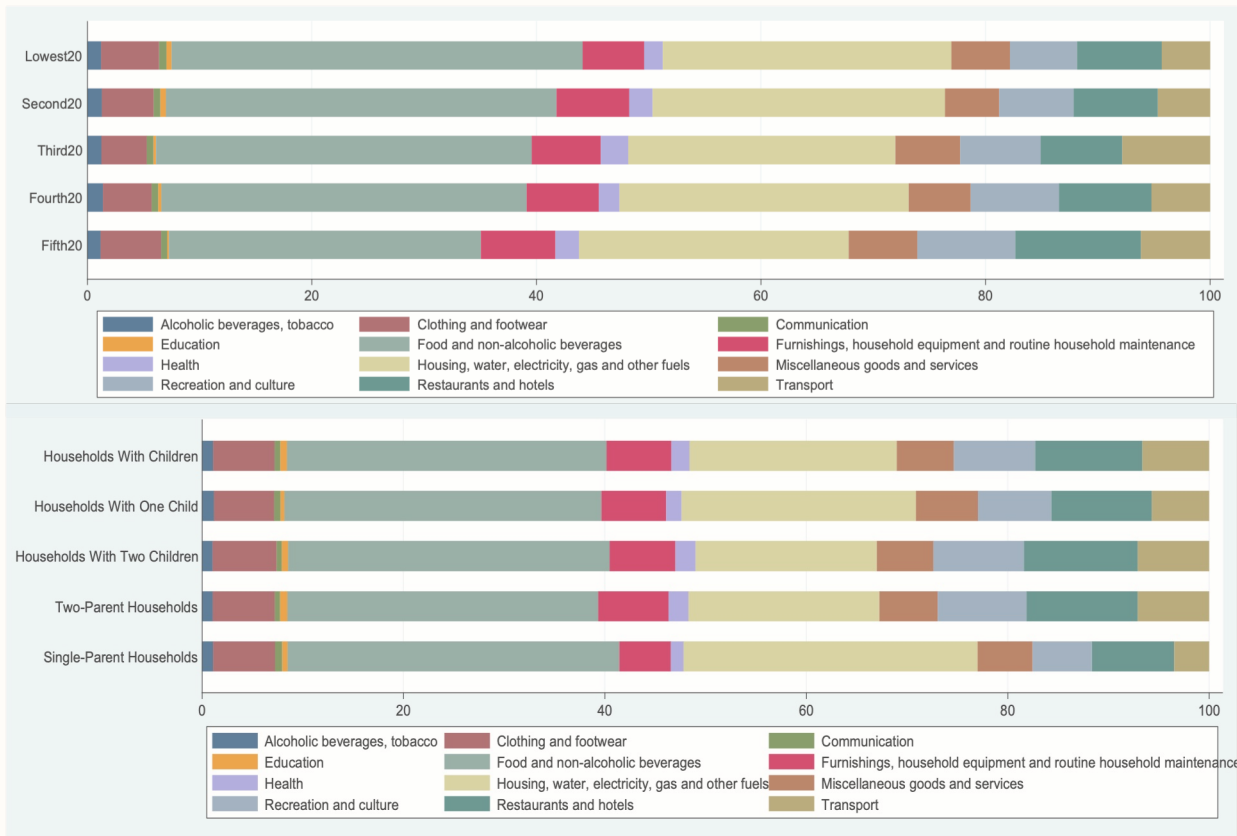
Energy Policy	Countries Implementing at the Moment
Reduced energy tax or VAT	All EU countries (except for Malta and Slovakia), Norway, and UK.
Transfers to vulnerable groups	All EU countries (except for Hungary and Malta), Norway, and UK.
Business support	All EU countries , Norway, and UK.
Retail price regulation	All EU countries (except for Finland, Ireland, and Lithuania), Norway, and UK.
Mandate to state-owned firms	Cyprus, France, Greece, Malta, Portugal, and Slovakia. Proposed in the Czech Republic.
Windfall profits tax	All EU countries , Norway, and UK.
Wholesale price regulation	France, Malta, Portugal, Slovenia, and Spain.

Note: The information used to construct the table is taken from Sgaravatti et al. (2023).

Results

Overall inflation

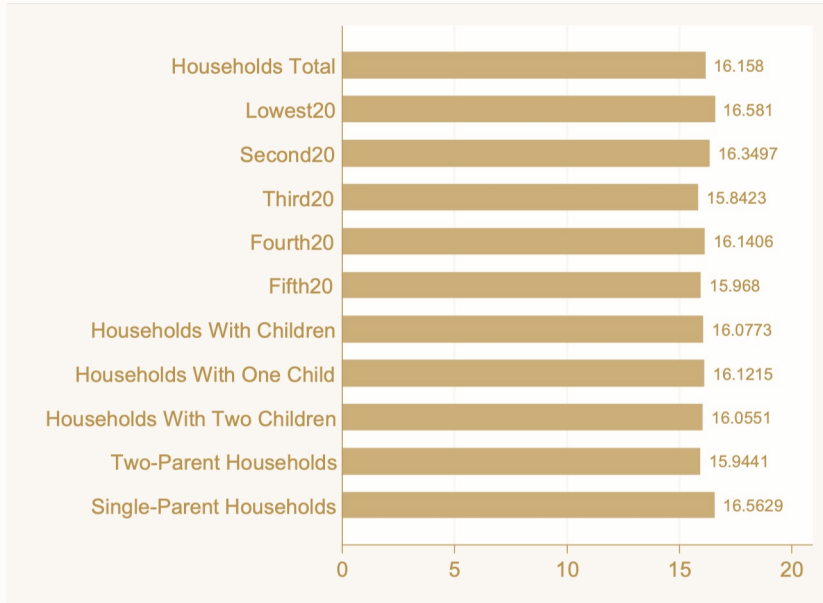
Contributions to the year-on-year change in the CPI from the considered product categories for five population subgroups based on income quantiles and for the defined population subgroups based on family characteristics, CZE 2022



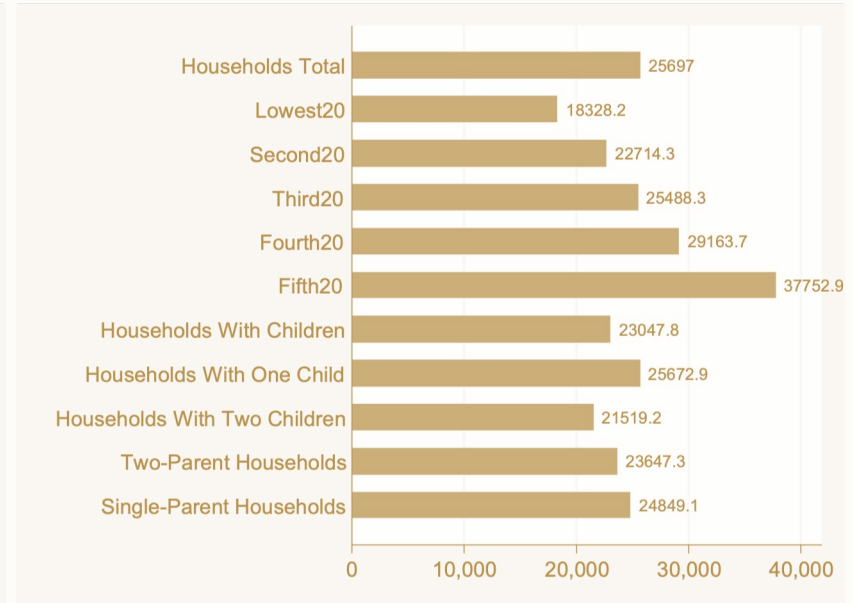
Source: Own calculation based on Czech Statistical Office data

Results

Overall inflation



YoY % Changes in the consumer price index by household income quantiles and family characteristics, CZE December 2022



YoY loss of purchasing power in CZK over the last 12 months by income group and family characteristics, CZE December 2022

Source: Own calculation based on Czech Statistical Office data

Results

Energy inflation

Annual average per capita household energy expenditure, CZE (2018-2021)

Consumer Group	2018		2019		2020		2021	
	Perc.	Value	Perc.	Value	Perc.	Value	Perc.	Value
All Households	17%	25 481 CZK	16%	25 131 CZK	14%	22 145 CZK	14%	22 077 CZK
EMPLOYMENT STATUS								
Employees	16%	24 692 CZK	15%	22 858 CZK	13%	19 880 CZK	13%	20 827 CZK
Self-employed	16%	25 527 CZK	16%	24 868 CZK	12%	19 328 CZK	12%	20 293 CZK
Pensioners	20%	26 481 CZK	18%	26 964 CZK	17%	25 706 CZK	18%	26 680 CZK
MUNICIPALITY SIZE								
< 10 000	19%	26 228 CZK	19%	26 757 CZK	18%	24 559 CZK	17%	24 983 CZK
10 000 - 49 999	16%	23 262 CZK	15%	22 082 CZK	13%	18 815 CZK	12%	19 627 CZK
50 000+	14%	23 875 CZK	12%	21 184 CZK	10%	17 557 CZK	10%	18 899 CZK
INCOME								
Quintile 1	17%	19 054 CZK	16%	18 283 CZK	14%	15 187 CZK	14%	15 816 CZK
Quintile 2	18%	22 290 CZK	18%	22 830 CZK	16%	20 154 CZK	15%	21 298 CZK
Quintile 3	17%	24 335 CZK	16%	24 876 CZK	15%	21 414 CZK	14%	22 950 CZK
Quintile 4	17%	27 963 CZK	15%	25 514 CZK	13%	23 740 CZK	13%	24 050 CZK
Quintile 5	15%	32 757 CZK	15%	33 196 CZK	13%	29 299 CZK	13%	30 031 CZK
FAMILY STATUS								
No children	18%	29 897 CZK	17%	29 482 CZK	16%	26 724 CZK	16%	27 515 CZK
Children	15%	19 895 CZK	14%	19 065 CZK	13%	16 378 CZK	12%	16 942 CZK
Two-parent	14%	20 069 CZK	14%	19 191 CZK	12%	16 318 CZK	11%	16 337 CZK
Single-parent	17%	21 548 CZK	13%	18 796 CZK	11%	15 769 CZK	12%	17 587 CZK

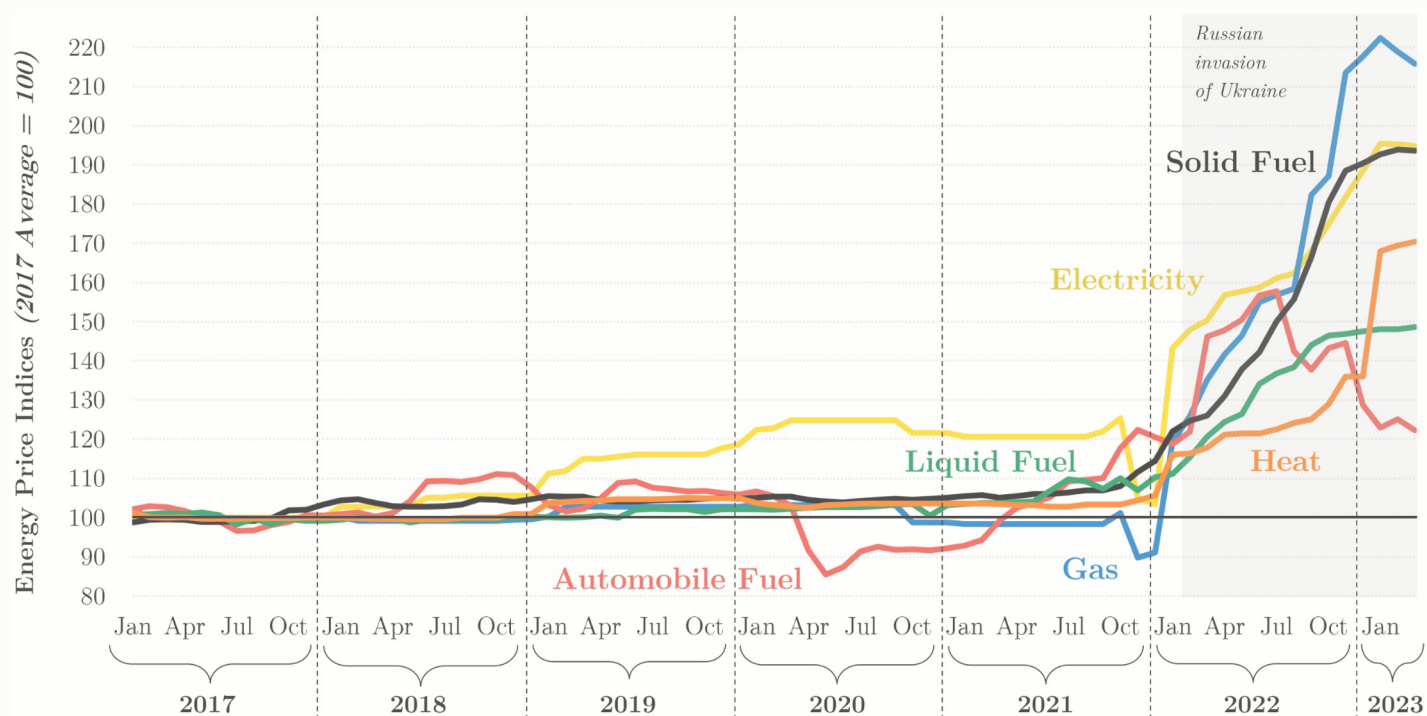
Note: The columns *Value* show the annual average per capita energy expenditure in CZK. The columns *Perc.* show the share of energy expenditure in total household expenditure (CZSO).

Source: Own calculation based on Czech Statistical Office (CZSO) data, specifically the Czech Household Budget Survey

Results

Energy inflation

Development of monthly disaggregated energy price indices in the Czech Republic (2017–2023) – prices of electricity, gas, solid fuel, liquid fuel, heat and automobile fuel

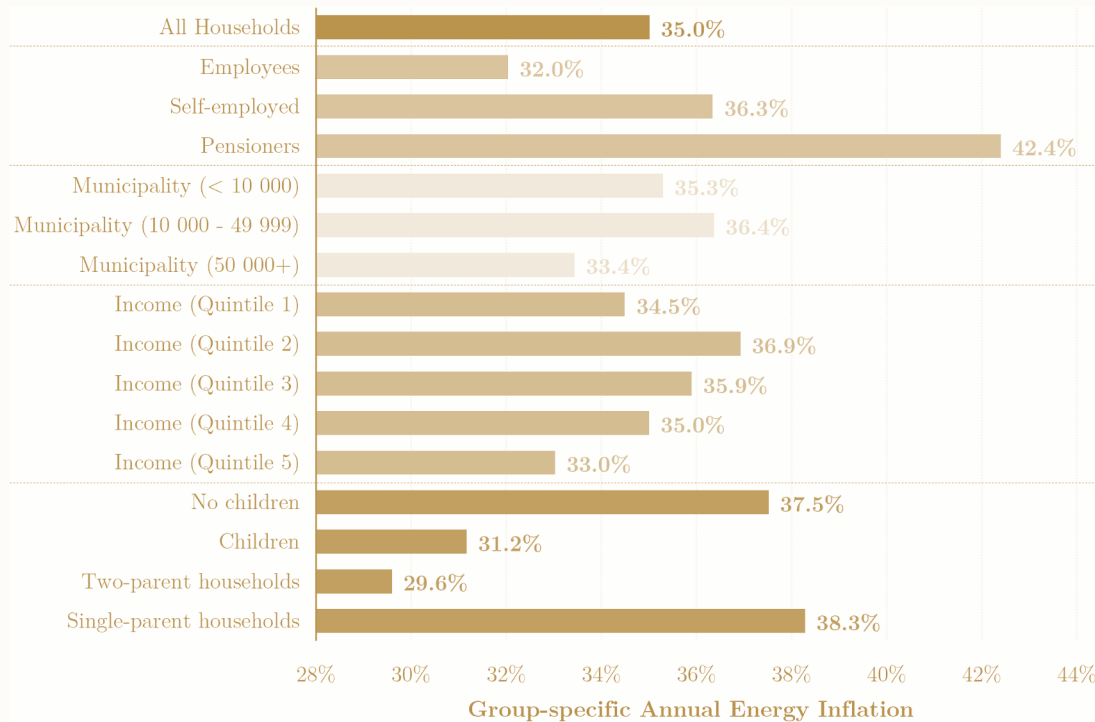


Source: Own calculation based on CZSO and Eurostat data

Results

Energy inflation

Percentage annual increase in energy prices by consumer socio-economic group between February 2022 and 2023

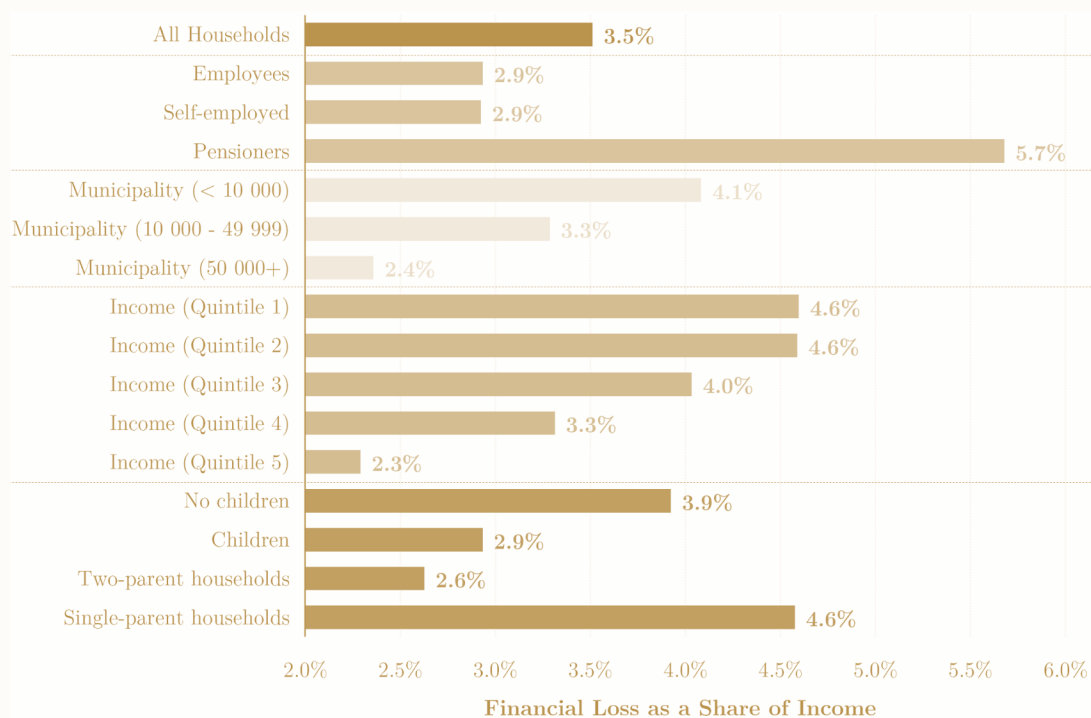


Source: Own calculation based on CZSO and Eurostat data

Results

Energy inflation

Financial loss as a share of income across socio-economic groups between February 2022 and 2023

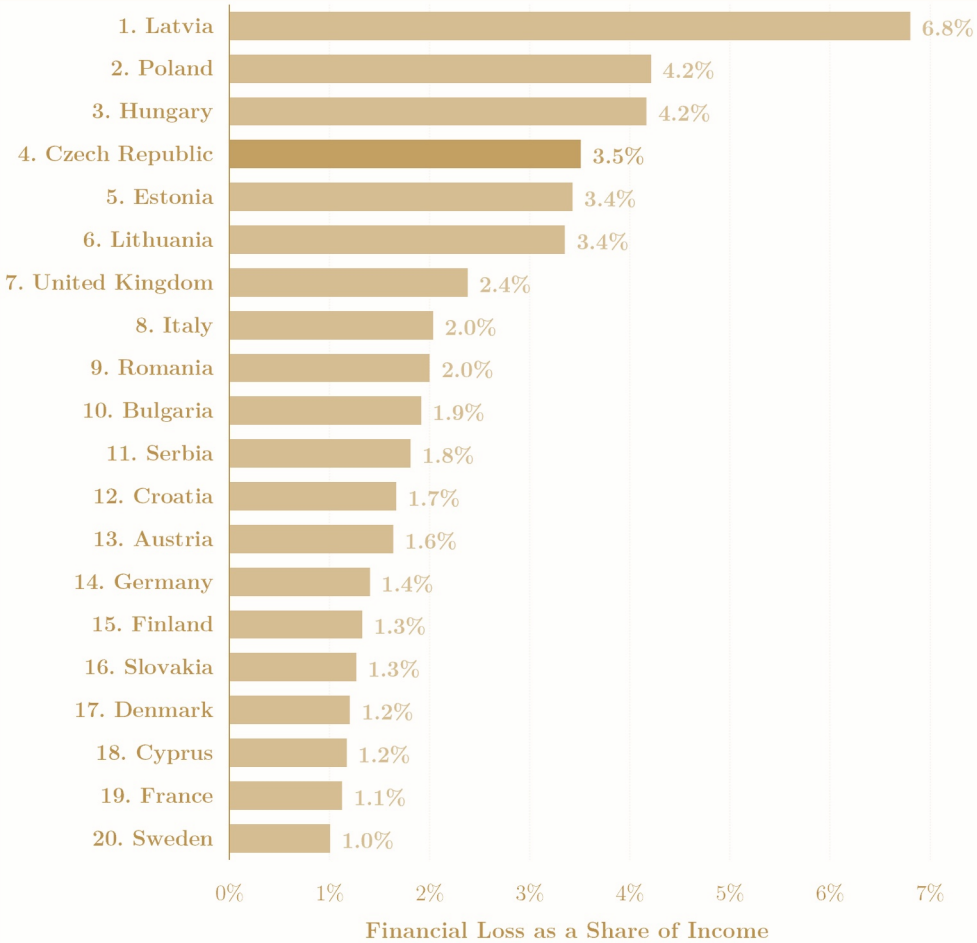


Source: Own calculation based on CZSO and Eurostat data

Results

Energy inflation

Twenty European countries with the highest household financial loss as a share of income between February 2022 and 2023



Source: Own calculation based on Eurostat data

Results

Summary

- The lowest and second-lowest household income quantiles spent relatively larger shares of their expenditure on food and non-alcoholic beverages and on housing, water, electricity and other fuels than the fourth- and fifth-income quantiles.
- In terms of family characteristics, single-parent households spent a significantly larger share of their expenditure on housing, water, electricity and other fuels, suggesting that single-parent households are more affected by recent increases in electricity and fuel prices.
- Energy inflation exerted a disproportionate impact on pensioners and the poorest and single-parent households.
- An increase in the prices of essential goods such as food, electricity and gas exerts a more negative impact on low-income households.

Lessons learned

Anything surprising..?

- Low-income households have a higher share of subsistence consumption of total expenditure than higher-income households
- Inflation is driven predominantly in those product categories related to subsistence consumption (energy, housing and food & beverages)
- Inelastic demand → high margins → profit inflation..?
- Regulation of privatised network industries

References

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- McGranahan, L., & Paulson, A. L. (2005). Constructing the Chicago Fed Income Based Economic Index-Consumer Price Index: Inflation Experiences by Demographic Group: 1983-2005, Working Paper 2005-20.
- Sgaravatti, G., Tagliapietra, S., Trasi, C., & Zachmann, G. (2023). National fiscal policy responses to the energy crisis. Bruegel, EU Policies [Accessed: 3rd May 2023].