

Decomposition of inflation in Azerbaijan into supply and demand components according to supermarket data

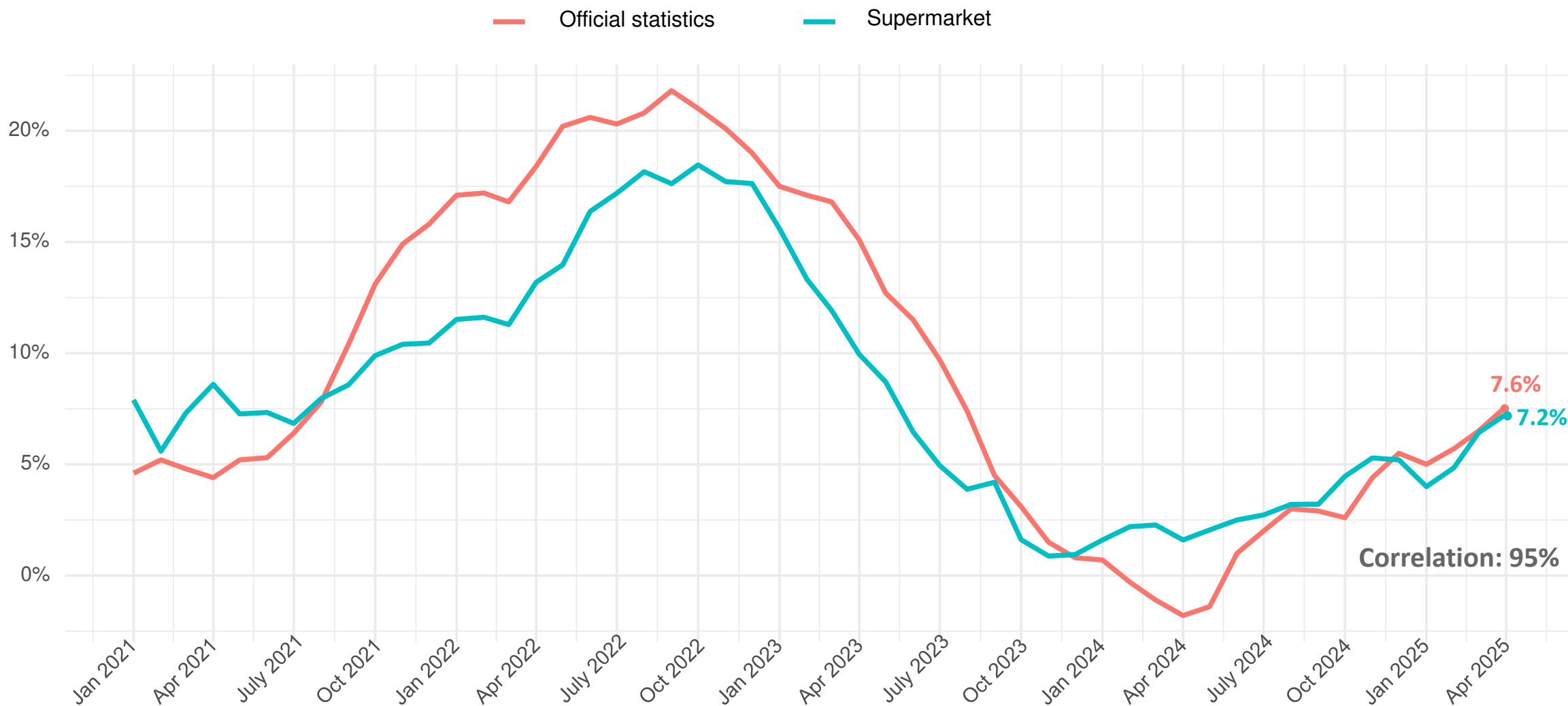
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Annual Food Inflation: Official Statistics vs Supermarket (Jan 2021 – Apr 2025)

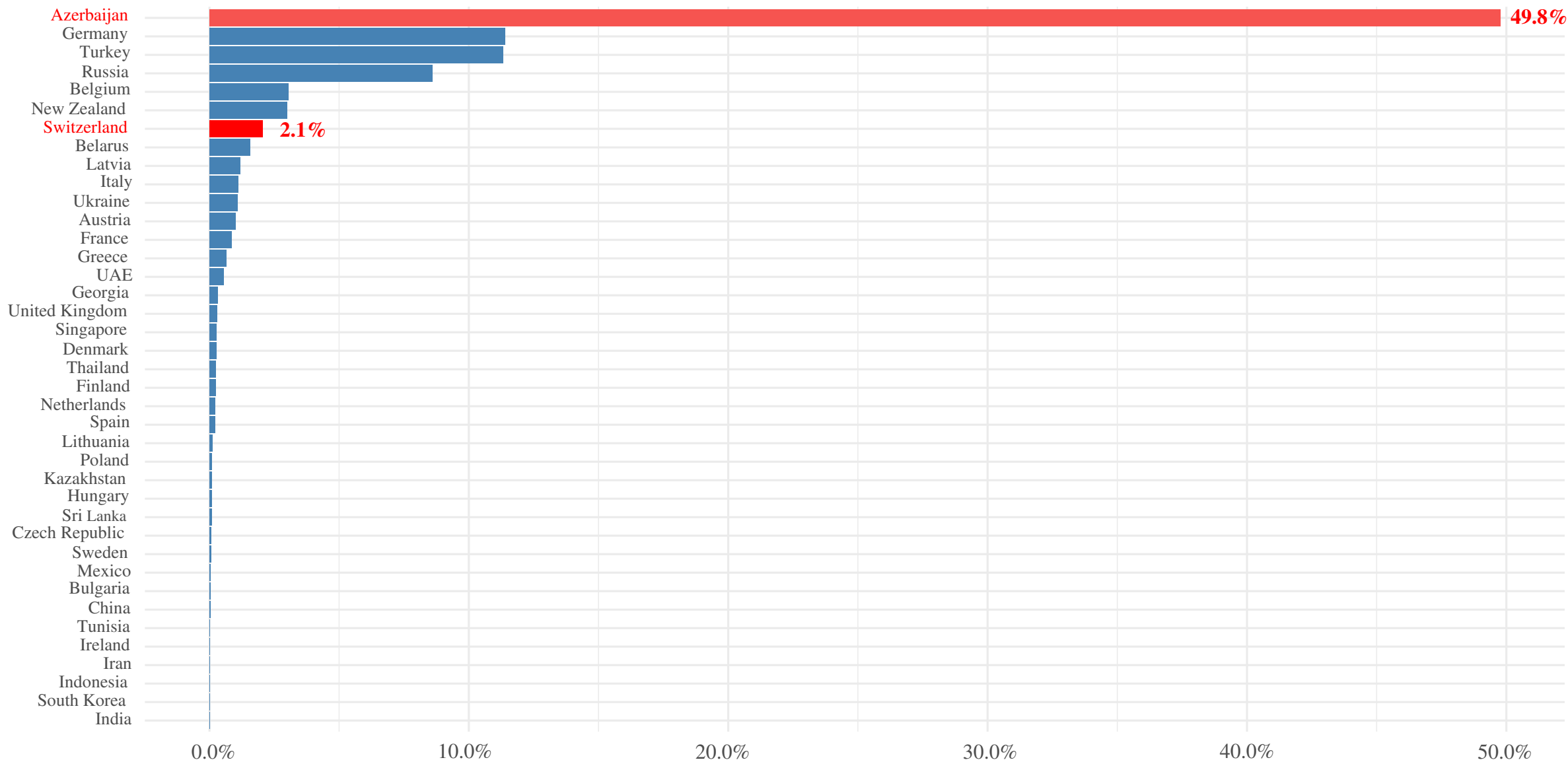


Source: The State Statistical Committee of the Republic of Azerbaijan and Supermarket

Leveraging Supermarket Price Data for Real-Time Inflation Monitoring (April 2025)

COICOP	Product	Weight	Montly inflation	Year to date inflation	Annual inflation
1	Food products, beverages, and tobacco products	100.0%	0.3%	3.5%	7.2%
101	Food and non-alcoholic beverages	82.8%	0.4%	3.5%	8.1%
1011	Food products	71.6%	0.4%	3.6%	8.5%
10111	Bread, bakery products, and groats	13.4%	0.1%	2.3%	4.9%
10112	Meat and meat products	14.3%	-0.3%	2.9%	2.9%
10113	Fish and fish products	1.2%	0.0%	-2.2%	-2.2%
10114	Milk, dairy products, and eggs	8.3%	1.0%	-0.4%	8.1%
10115	Butter and vegetable oils	13.7%	1.2%	5.2%	21.7%
10116	Fruits	4.8%	2.7%	12.5%	1.7%
10117	Vegetables	6.0%	-2.5%	1.2%	3.4%
10118	Sugar, jam, honey, chocolate, and sweets	7.3%	0.6%	6.9%	14.1%
10119	Other food products	2.5%	0.2%	0.9%	1.7%
1012	Non-alcoholic beverages	11.2%	0.3%	3.0%	6.0%
10121	Tea, coffee, and cocoa	2.5%	1.4%	3.3%	7.2%
10122	Mineral waters, soft drinks, and juices	8.6%	0.0%	2.9%	5.6%
102	Alcoholic beverages and tobacco	17.2%	0.0%	3.2%	3.5%
1021	Alcoholic beverages	3.1%	0.1%	1.6%	3.8%
10211	Vodka and brandy (cognac)	1.7%	0.0%	1.5%	4.2%
10212	Wine	0.3%	0.0%	4.1%	5.8%
10213	Beer	1.1%	0.2%	0.4%	2.8%
1022	Tobacco products	14.1%	0.0%	3.6%	3.5%

Share of Food Goods Sold in Supermarket by Country of Origin (April 2025)



| Methodology

$$A^i z_{i,t} = \sum_j^N A^i z_{i,t-j} + \varepsilon_{i,t}$$

$$z_i = \begin{bmatrix} q_i \\ p_i \end{bmatrix}, A_i = \begin{bmatrix} 1 & -\gamma_i \\ \delta_i & 1 \end{bmatrix}$$



$$z_{i,t} = [A_i]^{-1} \sum_j^N A^i z_{i,t-j} + v_{i,t}$$

$$v_{i,t} = [A_i]^{-1} \varepsilon_{i,t}$$

SVAR

Reduced-form

$$\text{Demand shock} = \begin{matrix} v_{i,t}^q > 0, v_{i,t}^p > 0 \\ v_{i,t}^q < 0, v_{i,t}^p < 0 \end{matrix}$$

$$\text{Supply shock} = \begin{matrix} v_{i,t}^q > 0, v_{i,t}^p < 0 \\ v_{i,t}^q < 0, v_{i,t}^p > 0 \end{matrix}$$

***The SVAR model uses sign restrictions to identify structural demand and supply shocks. This method provides set identification, meaning it allows us to determine whether a shock is more likely demand- or supply-driven, but does not identify the exact size of the shocks.

| Methodology

$$\omega_i = \frac{p_i * q_i}{\sum_{i=1}^{2896} p_i * q_i} - \text{weight}$$

$$\pi_t^d = \sum_i 1_{i \in \text{demand}, t} \omega_{i,t} \pi_{i,t} - \text{Demand driven inflation rate}$$

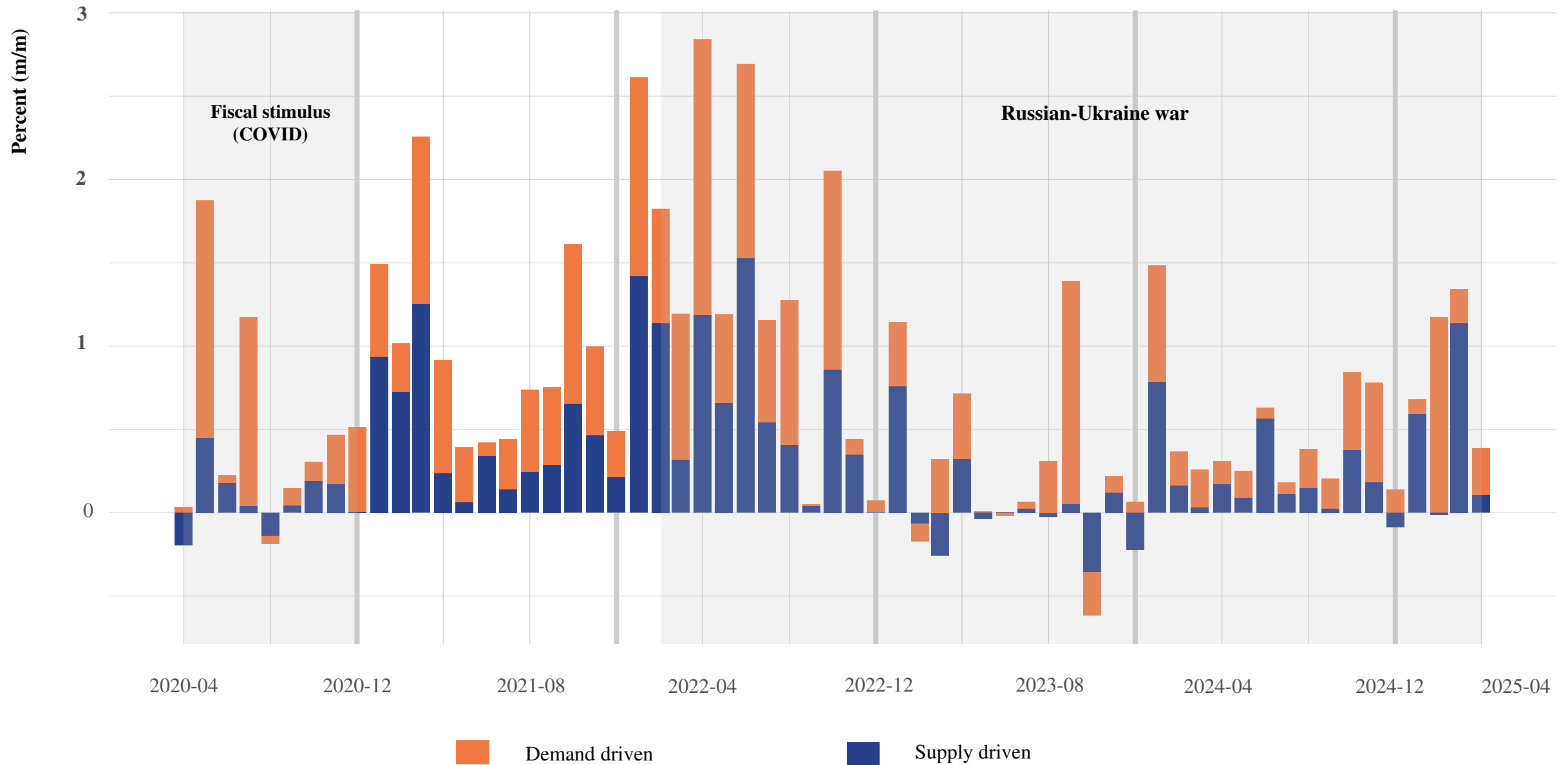
$$\pi_t^s = \sum_i 1_{i \in \text{supply}, t} \omega_{i,t} \pi_{i,t} - \text{Supply driven inflation rate}$$

$$\begin{aligned} v_{i,t}^q &> \text{Threshold}, v_{i,t}^p > \text{Threshold} \\ v_{i,t}^q &< -\text{Threshold}, v_{i,t}^p < -\text{Threshold} \end{aligned} \quad \text{Demand shock}$$

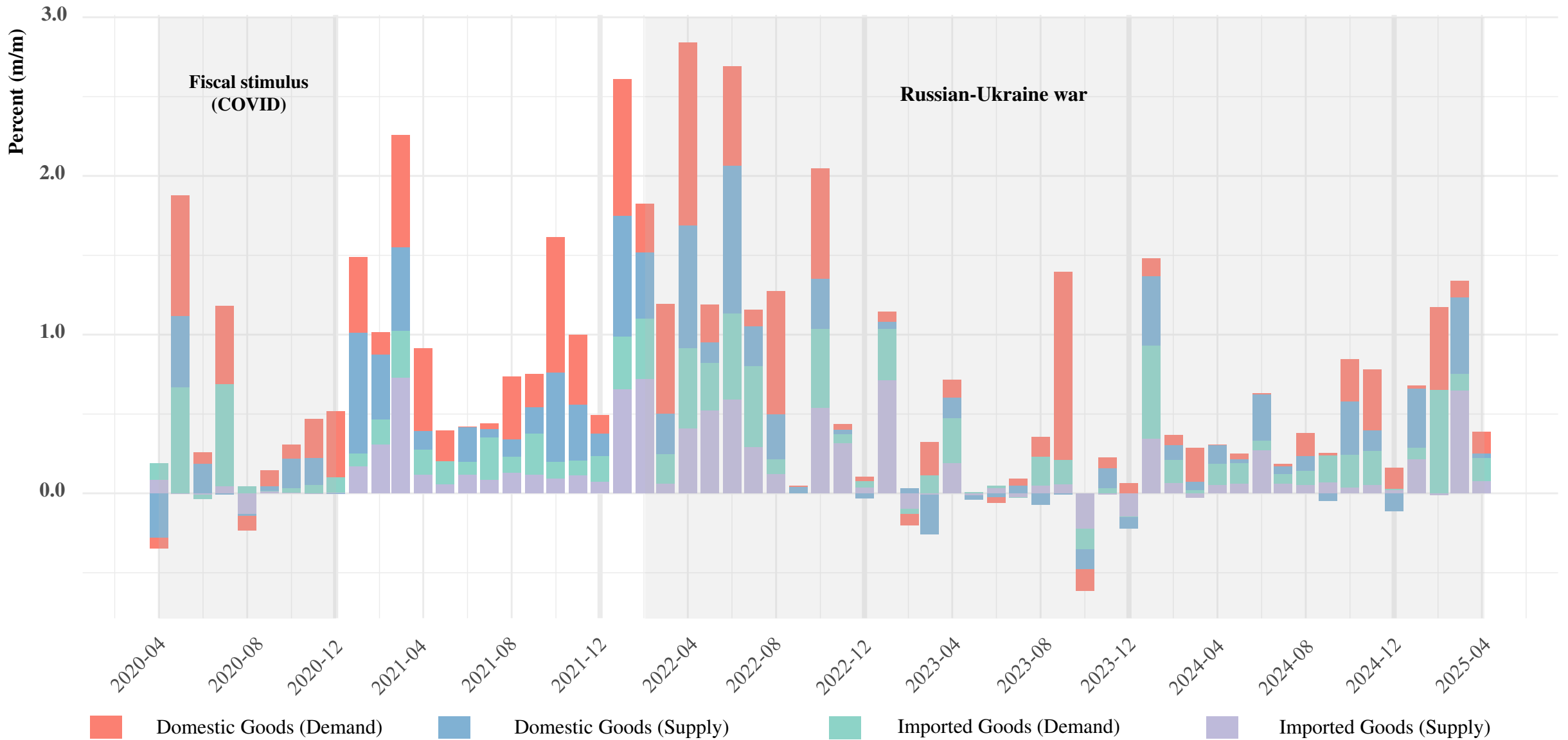
$$\begin{aligned} v_{i,t}^q &> \text{Threshold}, v_{i,t}^p < -\text{Threshold} \\ v_{i,t}^q &< -\text{Threshold}, v_{i,t}^p > \text{Threshold} \end{aligned} \quad \text{Supply shock}$$

$$\left. \begin{aligned} &\text{Threshold} > v_{i,t}^q, \text{Threshold} > v_{i,t}^p \\ &-\text{Threshold} < v_{i,t}^q, -\text{Threshold} < v_{i,t}^p \\ &\text{Threshold} > v_{i,t}^q, -\text{Threshold} < v_{i,t}^p \\ &-\text{Threshold} < v_{i,t}^q, \text{Threshold} > v_{i,t}^p \end{aligned} \right\} \text{Ambiguous shock}$$

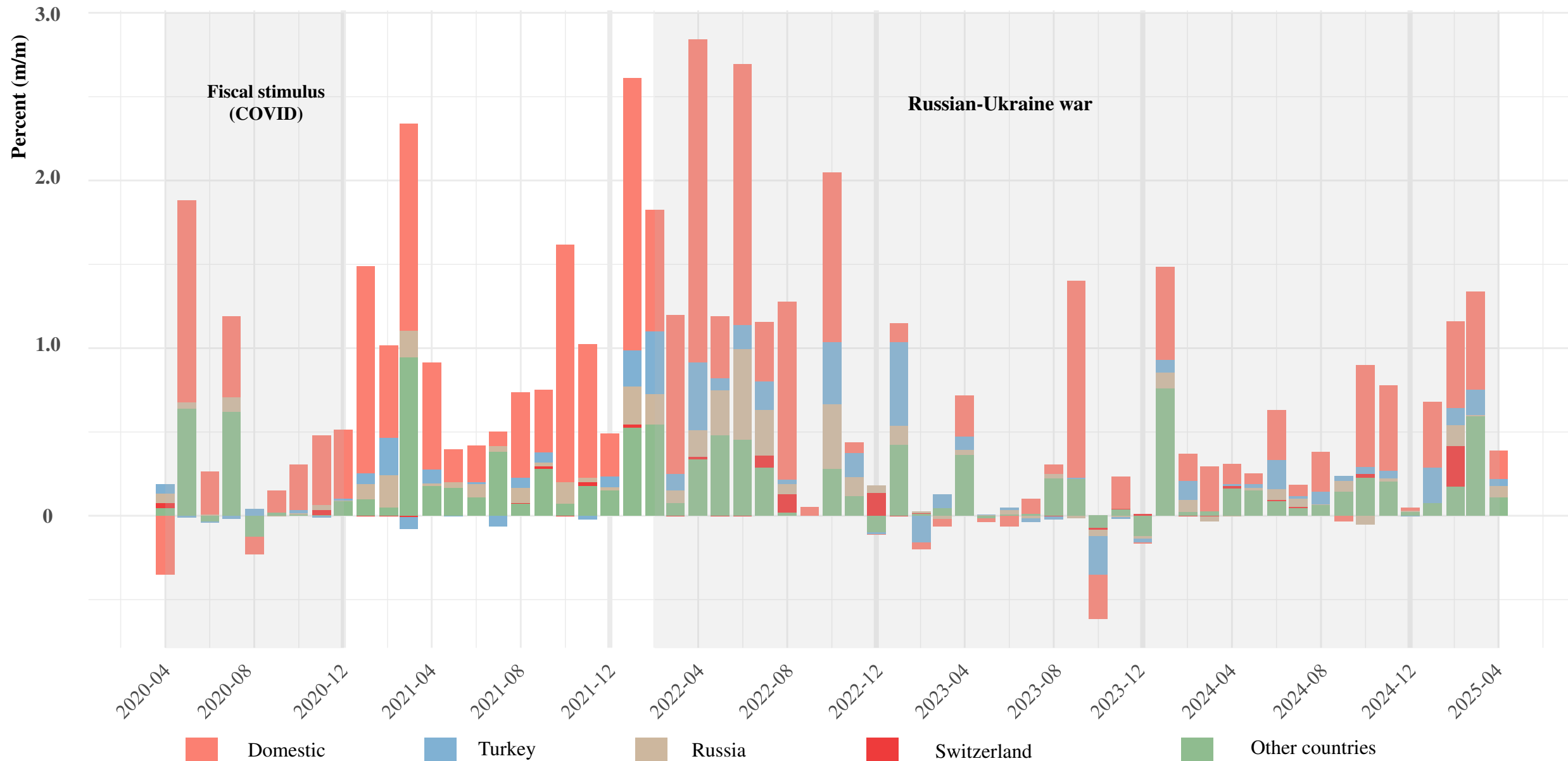
Supply and Demand Drivers of Inflation



Impact of Shocks on Inflation Components (2020-2025)



Contribution of Each Country to Monthly Inflation Dynamics (2020–2025)



Key Result: Inflation Decomposition

0.5 standard deviation

