

Inflation and Income Inequality in Russian Regions

Philipp Kartaev, Olga Klachkova, Anna Lukyanova

March 2020

Motivation

- We know a lot about the factors of inequality in Russia (Zubarevich, 2019)
- We know a lot about the long-term consequences of changing inflation in Russia (Kartaev, 2017)
- We know almost nothing about the impact of inflation on inequality in Russia

Theory

Channels through which redistribution effects of inflation may change income inequality (Bulir, 2001; Erosa, Ventura, 2002; Albanesi, 2007, Walsh, Yu, 2012):

- Incomplete indexing channel
- Unexpected inflation channel
- Branch channel

Literature

Data	Papers	Results
US Data	Blank, Blinder, 1985 Culter, Katz, 1991 Romer, Romer, 1999	high inflation mitigates inequality
Cross-country data	Bulir, 2001 Sarel, 1997	high inflation increases inequality
	Galli, 2001 Monnin, 2014	Non-monotonic dependence. The threshold is 12-13%

Data

- The annual data of Russian Federal State Statistic Service for 76 subjects of the Russian Federation
- Years 2008–2017
- Although there are 85 subjects in Russia in 2019, some subjects were excluded because of omissions in data
- The Gini coefficient was used as the main indicator of inequality. To test the robustness of the results, the coefficient of funds and the share of income of twenty percent groups of the population were also used as a dependent variable

Model

Baseline model:

$$\begin{aligned} Inequality_{it} &= \\ &= \mu_i + \tau_t + \beta_1 * GRP_{it} + \beta_2 * GRP^2_{it} + \delta * Inflation_{it} + \gamma * C_{it} + \varepsilon_{it} \end{aligned}$$

Alternative specifications:

1. Lags of inflation instead of current inflation.
2. Average inflation over the previous few years (Bulir, 2001).

Baseline model

	Model 1	Model 2
Inflation	-0,001** (0,0004)	-0,003 (0,0004)
Inflation squared		-0,0001** (0,00004)
Control variables	Yes	Yes
Regional fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Number of observations	760	760
R2-within	0,024	0,026
LSDV R2	0,796	0,796

Model with lags of inflation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of lags of inflation	1	2	3	4	5	6	7
Sum of coefficients for lags	-0,0011	-0,0019	-0,0028	-0,0037	-0,0044	-0,0058	-0,0065
P-value	0,006	0,007	0,007	0,007	0,012	0,011	0,025
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2-within	0,383	0,387	0,392	0,396	0,398	0,420	0,432
LSDV R2	0,796	0,797	0,798	0,800	0,800	0,800	0,796

Model with average inflation over the previous few years

	(1)	(2)	(3)	(4)
Number of years	2	3	4	5
Average inflation	-0,002** (0,001)	-0,003*** (0,001)	-0,004*** (0,001)	-0,004** (0,002)
Control variables	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
R2-within	0,031	0,035	0,045	0,044
LSDV R2	0,797	0,798	0,799	0,800

Unexpected inflation channel (1)

	(1)	(2)	(3)
Inflation	-0,001* (0,0004)	—	-0,001** (0,0004)
Inflation volatility	0,009** (0,004)	-0,011*** (0,004)	—
Control variables	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Number of observations	680	680	680
R2-within	0,033	0,030	0,024
LSDV R2	0,782	0,781	0,796

Unexpected inflation channel (2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable	Gini	Decile Ratio	G1	G2	G3	G4	G5
Inflation volatility	-0,011*** (0,004)	-0,933*** (0,263)	0,249*** (0,072)	0,273*** (0,075)	0,195*** (0,063)	0,076*** (0,022)	-0,793*** (0,228)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	680	680	680	680	680	680	680
R2-within	0,030	0,058	0,058	0,056	0,052	0,045	0,055
LSDV R2	0,781	0,893	0,887	0,893	0,892	0,865	0,893

Results

- The reduction of inflation is associated with rising inequality.
 - The result is robust to changes in the model specification and the dependent variable.
 - The main link between inflation and inequality is the channel of unexpected inflation.
- => Price stability is good, but other tools need to be used to overcome inequality

Threshold estimation

Fixed effects	Threshold level	95 percent confidence interval	Coefficient below the threshold	Coefficient above the threshold
Regional fixed effects + Time fixed effects	14,02	(2,26; 14,31)	-0,0004 (0,0004)	-0,0008 (0,00041)

Hansen E.B. (2000). Sample splitting and threshold estimation. *Econometrica*, Vol. 68, No. 3