

Single-industry settlements: the case of Russia

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- 1 Motivation
- 2 Data and methodology
- 3 Spatial model of real income growth: case of monotowns
- 4 Conclusion

In the Soviet time, a typical urban settlement

- the majority of labor force was employed at one large industrial plant.
- the town-forming enterprise (core plant, *градообразующее предприятие*) was responsible for social services and wide range of amenities, from health care and schools to heat, water, and electricity for between 5,000 to 700,000 residents

In modern Russia, “**monotown**” (single-industry town) is an official status.

In 2014, **313** monotowns:

- about 30 per cent of the total number of urban settlements,
- almost 20 per cent of Russian urban population.

- Monotowns are subsidized by the Federal government
- The criteria used to grant the “monotown” status are neither transparent nor publicly available.
- Our question: are monotowns really monotowns?

We show that:

- real incomes in monotowns are higher than in non-monotowns,
- settlements with a “monotown” status are polytowns,
- regional subsidies do not have positive impact on real income growth in cities.

Literature on the Russian monotowns:

- dominance of a single industry,
- high unemployment,
- low incomes,
- subsidies (to town-forming enterprises and to a city budget).

Mikryukov (2016), Zubarevich (2017):

- industrial structure of most monotowns has been rapidly diversifying!

Zubarevich (2017):

- single industry towns have been undergoing rapid changes in labor market structure. More than two thirds of towns and a third of urban-type settlements have changed their single-industry nature by 2016.

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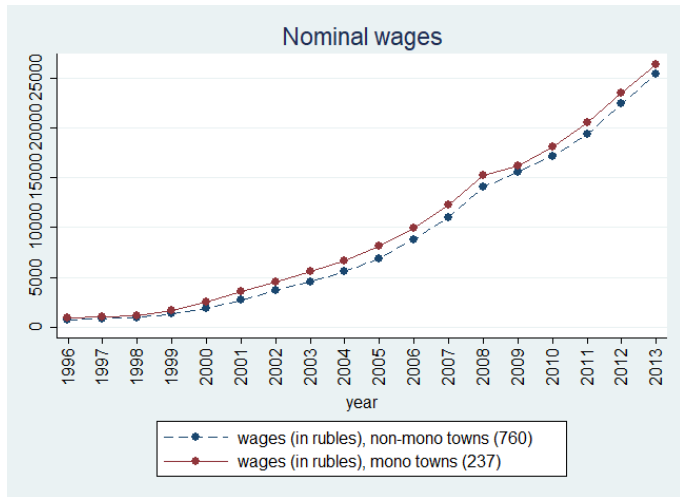
Examples of requirements to get a “monotown” status

- there is at least one company (or several of them with common production process) employing a minimum of 25 percent of labor force of the settlement,

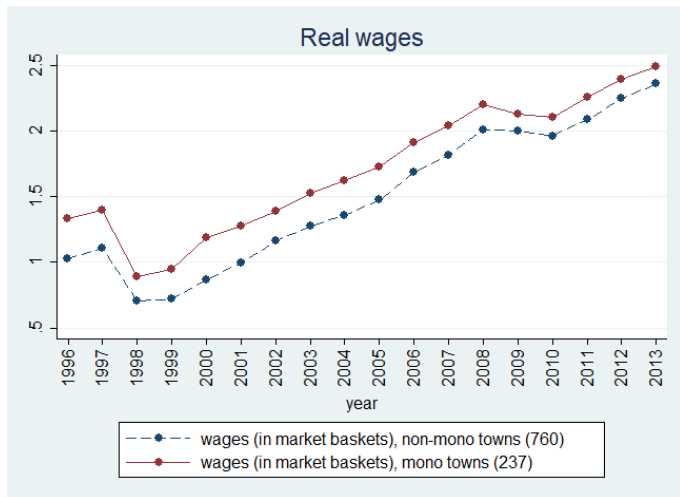
or

- there is at least one company (or several of them with common production process) producing a minimum of 50 percent of total manufacturing output of the settlement.

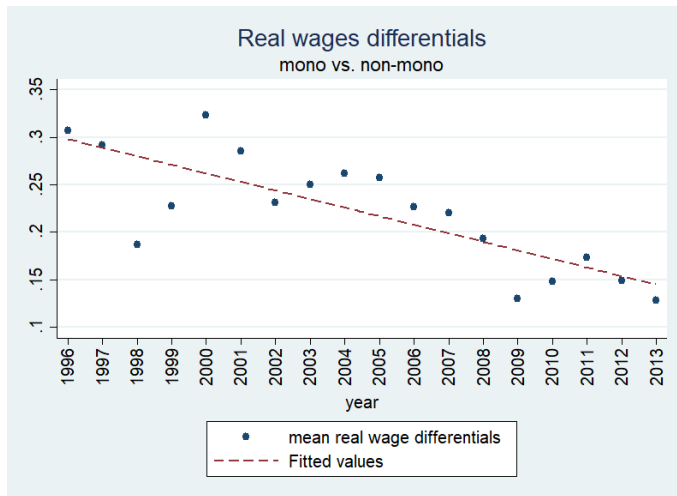
Nominal wages



Real wages (in market baskets)



Real wage differences



319,684 manufacturing plants¹, 2012–2014:

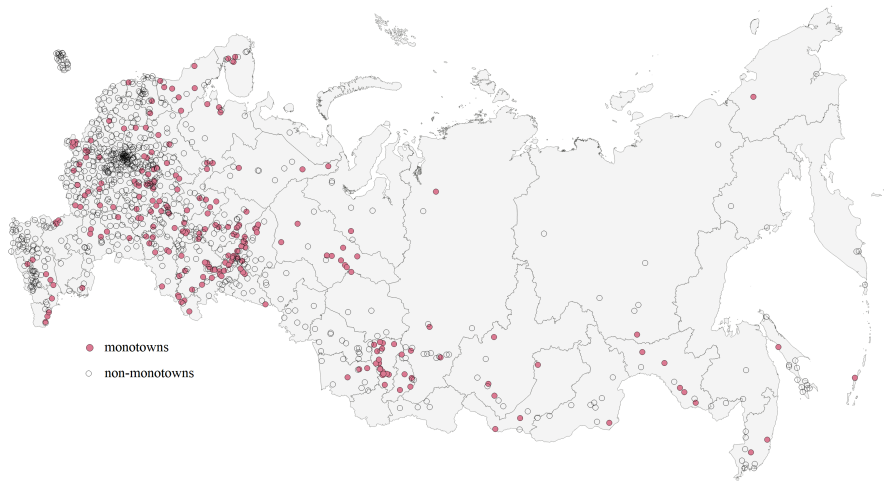
- precisely geocoded,
- primary industry code from the National Industry Classification (OKVED 2007), which is similar to the NACE Rev.2 classification at the 4-digit level.

¹Aleksandrova, E., Behrens, K., & Kuznetsova, M. (2019). Manufacturing (co) agglomeration in a transition country: Evidence from Russia. *Journal of Regional Science*. Forthcoming

Manufacturing plants



Locations of monotowns



Spatial Herfindhal index:

$$H_d = \sum_{k=1}^K \tau_k^2 \quad (1)$$

where

$k = 1, \dots, K$ – 2-digit OKVED classification,

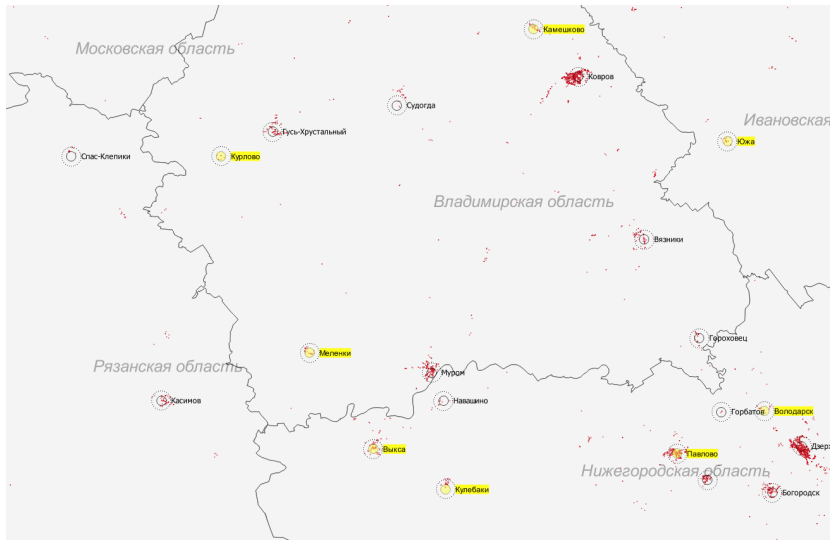
τ_k – share of plants of industry k in the total number of firms in the city within d km from the city center.

Different values of d .

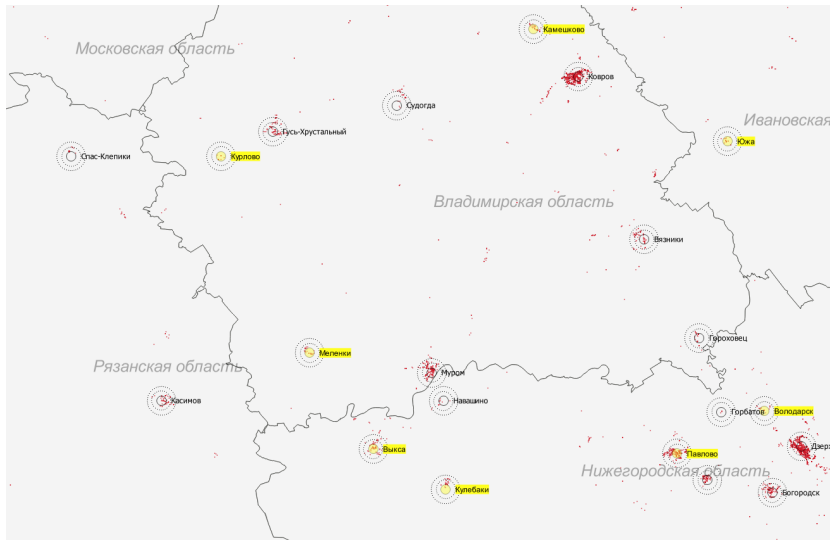
Spatial Herfindhal index H_d , different d



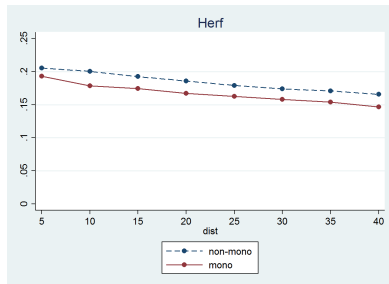
Spatial Herfindhal index H_d , different d



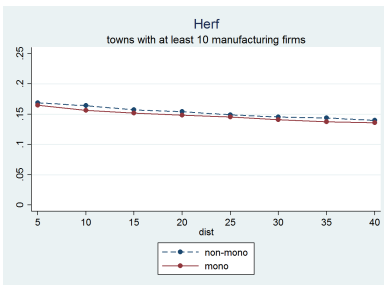
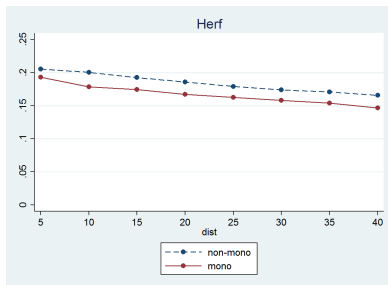
Spatial Herfindhal index H_d , different d



Spatial Herfindhal index in monotowns



Spatial Herfindhal index in monotowns



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Spatial model of real wage growth in cities

The empirical model is based on Tabuchi et al (2005), see details in Ivanova (2018):

$$\ln y_{i,T} - \ln y_{i,0} \approx \alpha + \beta_i \ln y_{i,0} + \sum_{j \neq i} w_{ij} \ln y_{j,0}, \quad (2)$$

where

- $y_{i,0}$ – real wages in city i in year 0,
- $y_{i,T}$ – real wages in city i in year T ,
- w_{ij} – spatial weights depending on distances.

Spatial Durbin model (SDM):

$$\mathbf{y}_T = \alpha \mathbf{1} + (1 + T\beta)\mathbf{y}_0 + \gamma \mathbf{X} + \rho \mathbf{W}\mathbf{y}_T + \mathbf{W}\mathbf{X}\theta + \varepsilon_T, \quad (3)$$

where

- \mathbf{y}_T – real wages in year T ,
- \mathbf{y}_0 – real wages in year 0,
- \mathbf{X} – controls,
- \mathbf{W} – inverse distance matrix.

- **industrial structure:**
Herf, 15 km from the city center
- **public sector:**
Subsid - percentage of non-refundable subsidies from the federal budget in the local regional budget, 2006–2013, average.

Estimation results

Variables	cutoff distance (km)			
	300	900	300	900
ρ	0.693***	0.850***	0.666***	0.784***
Direct effects				
<i>wage</i>	0.652***	0.653***	0.652***	0.652***
<i>Herf</i>	-0.037***	-0.031***	-0.036***	-0.031***
<i>subsid</i>			-0.102**	-0.076**
<i>n</i>	816	880	816	880
<i>R</i> ²	0.789	0.787	0.798	0.805

Notes. * 0.10, ** 0.05, *** 0.01

Bayesian model estimation,

Metropolis within Gibbs sampling procedure

- Real wages in monotowns are higher than in Russia on average (an employed monotown resident \Rightarrow a real wage premium)
- Industrial structure of most monotowns is, in fact, highly diversified.
- There is no positive impact of regional subsidies on real income growth.

Thank you for your attention!