How do changes in property rights affect economic outcomes?
Case of the Stolypin reform

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Research question

How land titling for peasants affected urban industrial development in Late Imperial Russia?

Selected literature

| Property rights affect internal migration (including to cities)	Aragón et al., 2020; Field, 2007 – protecting farmers and reducing risks, Cai, 2020 – easing the liquidity constraint
Property rights discourage internal migration	Hong et al., 2020 – incentives to invest, Kahneman et al., 1991 – endowmnet effect
Migration to cities (urbanization) leads to increased productivity of cities (and economic growth)	Da Mata et al., 2005; Shen et al., 2019 – productivity growth, positive agglomeration effects
Urbanization is not a determinant of urban growth and productivity	Turok and McGranahan, 2013 – migration promotes growth in steady state, Bertinelli and Black, 2004; Lee, 2015 – population concentration and technological spillover effects between regions

Historical context
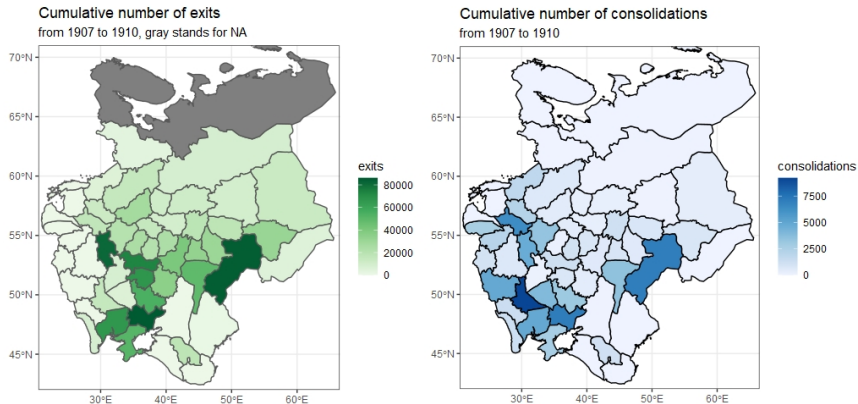
Figure: Reform progress measures, European Russia (excluding Poland and Finland)
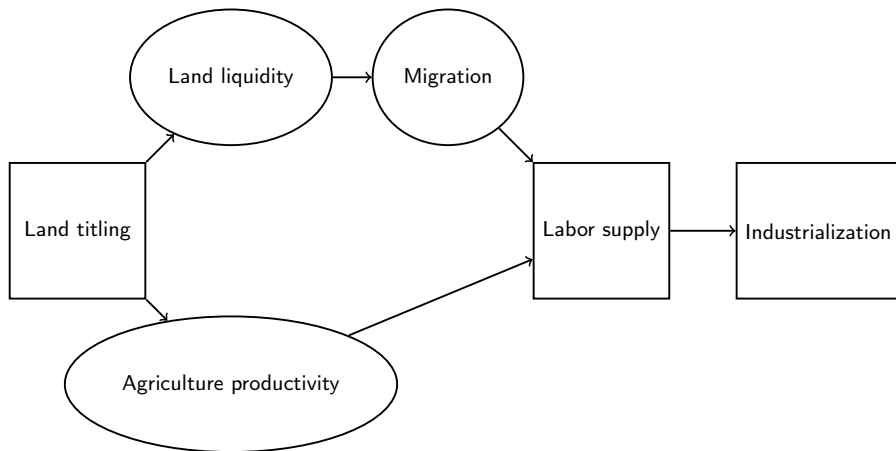
Theoretical mechanism

Figure: Expected theoretical mechanism

Empirical hypotheses

H1: Both land consolidations and exits are associated with lower levels of industrial development within provinces' cities
H2: Exits are associated with higher levels of industrial development in cities located outside provinces but within interlinked regions of the Russian Empire

Data

Table: The Stolypin reform, migration and provincial economic performance, city industrialization

Variable Name	Source	Period
Industrial development indicators: industrialization as such, productivity, factory size	Central Statistical Commitee, 1906, 1914	1904, 1910
Reform progress: cumulutive number of exits and consolidations	Castañeda Dower and Markevich, 2019	1907- 1910
City-level controls	Central Statistical Commitee, 1906, 1914	1904, 1910
Uezd-level controls	Troinitskii et al., 1905	1897
Province-level controls	Chernina et al., 2014	1907-1910

Empirical strategy

$$\Delta y_{i,j,1910-1904} = \alpha + \beta \sum_{t=1907}^{1910} X_{j,t} + \mu \times y_{i,j,1904} + \gamma \times u_{i,j} \qquad (1)$$

- $\Delta y_{i,j,1910-1904} = log(y_{i,j,1910} + 1) - log(y_{i,j,1904} + 1)$ stands for the difference in one of industrial development indicators between 1910 and 1904
- $X_{j,t}$ – the measure of the Stolypin reform progress
- $y_{i,j,1904}$ is the starting point
- $u_{i,j}$ is the vector of controls on all levels

Results

Table: Results of the empirical analysis

	Industrialization			Productivity	Factory size	
	Δ workers	Δ factories	Δ production	Δ production pw	Δ workers pf	Δ production pf
Reform progress:						
consolidations	−	−	=	=	=	+
exits	−	−	−	=	+	=
Robustness:						
consolidations	−	−	=	=	=	=
exits	=	−	−	=	+	=
Spillovers:						
consolidations in region	=	=	=	=	=	=
exits in region	+	+	=	=	=	=
Repartition commune:						
consolidations	−	−	−	=	=	=
repartition commune	−	−	−	=	=	=
consolidations × commune	+	+	+	=	=	+
Consolidations:						
village-wide consolidations	−	−	=	=	=	+
singular consolidations	=	=	=	=	=	=

"+" stands for significant positive effect, "−" for significant negative and "=" for insignificant at $p < 0.1$ significance level

Stay safe and thanks for your attention!

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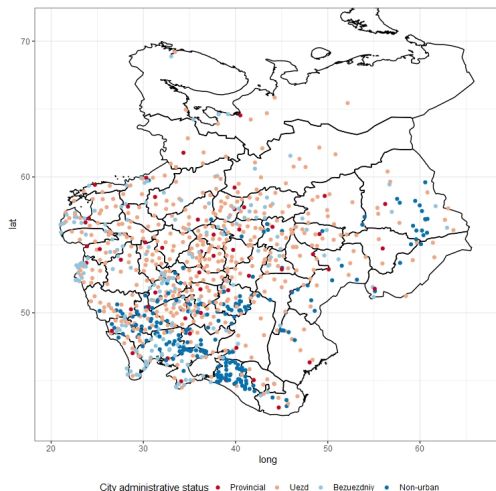
Annex: data

Figure: Sample of cities by administrative status in European Russia (excluding Poland and Finland)

For each province we calculate the average reform progress measure within the region, excluding province of interest $\frac{\sum_{k \neq j}^{N-1} \sum_{t=1907}^{1910} X_{k,t}}{N-1}$ and use it as the main predictor:

$$\Delta y_{i,j,1910-1904} = \alpha + \omega \times \frac{\sum_{k \neq j}^{N-1} \sum_{t=1907}^{1910} X_{k,t}}{N-1} + \mu \times y_{i,j,1904} + \gamma \times u_{i,j} \quad (2)$$

Annex: spillovers
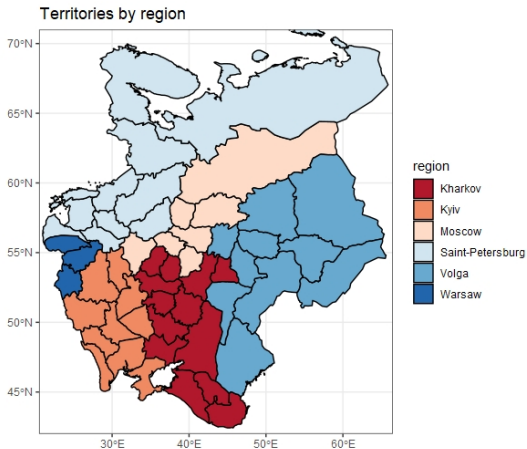
Figure: Regions of European Russia (excluding Poland and Finland)

Annex: repartition commune

$$\Delta y_{i,j,1910-1904} = \alpha + \beta \sum_{t=1907}^{1910} X_{j,t} + \sigma \times C_j + \theta \times C_j \times \sum_{t=1907}^{1910} X_{j,t} + \qquad (3)$$
$$+ \mu \times y_{i,j,1904} + \gamma \times u_{i,j}$$
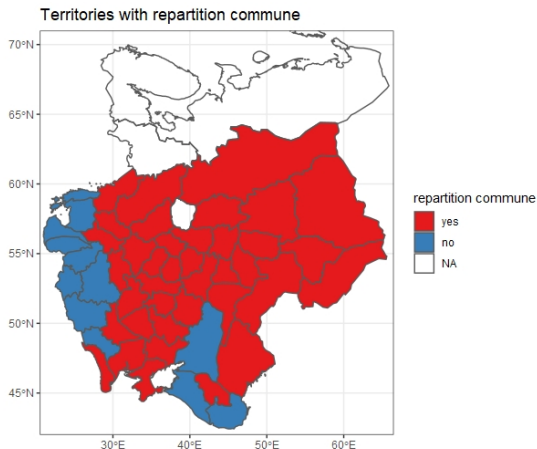
Annex: repartition commune

Figure: Provinces where repartition commune existed pre-reform, European Russia (excluding Poland and Finland)
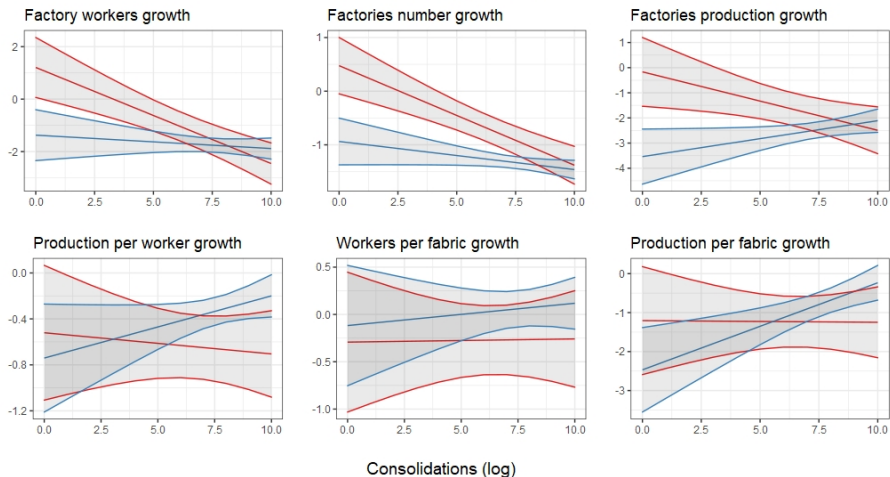
Annex: repartition commune

Figure: Margin effects of land consolidations, conditional on repartition commune

Annex: consolidations decomposed
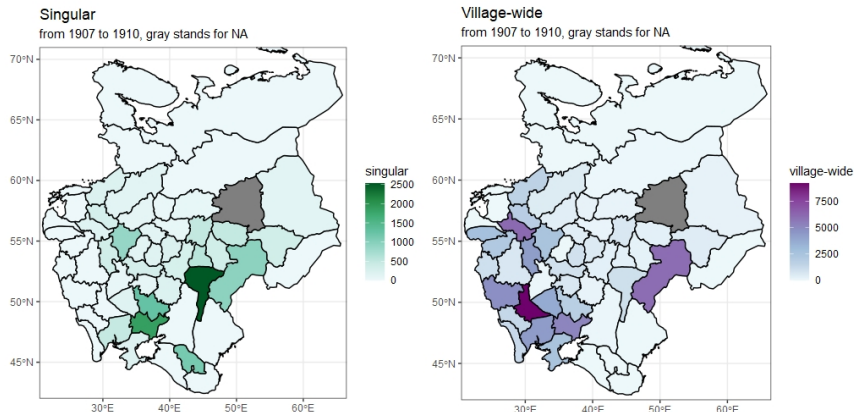
Cumulative number of consolidations

Figure: Progress of consolidations by type, European Russia (excluding Poland and Finland)