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Strategic partnerships: theory and evidence from suburban railway transport in Russia

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The problem

An endogeneity of organizational choice

📖 Saussier et al. (2006, *Rev. Ind. Org*)

- 5000 organizational choices and associated retail prices in French municipalities in 2001
- the choice by local authorities (LA) to engage in a public-private partnerships (PPP) is not random
- conditional on the choice of a PPP, tariffs are significantly higher on average

Estimating strategy – switching regressions model

- a probit model of the decision to use a PPP versus Public Service Obligation (PSO)
- full structural model of the determination of organizational choice is beyond the scope of their paper

Our main idea

When the transformation of organizational forms in the public sector is streamline by the reform plan that

- calls for a **voluntary choice** of the arrangements between local authorities and public service provider
  - to engage in the partnership or not
- provides for an '**exit options**' such that:
  - privatization of the public stake in the partnership
  - termination of services

a strategic partnership between LA and service provider can emerge endogenously as an equilibrium outcome in a bargaining regulatory game

- with greater incentives for LA to establish value creating regulatory regime to secure gains from privatization

Addressing organizational choice in Russia

Switching regressions

$$\frac{TARIFF}{WAGE} = \alpha_0 + \alpha_1 ENTRY^{SPC} + \alpha_2 X + U$$

$$ENTRY^{SPC} = \gamma_0 + \gamma_1 X + \gamma_2 Z + V$$

$$ENTRY^{SPC} = \begin{cases} 1 & if \quad \gamma_0 + \gamma_1 X + \gamma_2 Z \geq V \\ 0 & \quad\quad\; \gamma_0 + \gamma_1 X + \gamma_2 Z < V \end{cases}$$

Dependent Variables

- $\frac{TARIFF}{WAGE}$ - the performance measure subject to regulatory regime
  - railway fare for one zone normalized by the regional wage rate
- $ENTRY^{PPP}$ - the organizational choice variable
  - '1' if partnership with LA is established, and
  - '0' if PSO contract is in place

Addressing organizational choice in Russia

X - a set of exogenous controls

X	Description
SUB	Subsidies/ subventions from the Federal budget, mln ₽
BUDGET	Regional budget surplus, mln ₽
PASSKM	Passenger-km, mln

Z - a set of variables that should affect organizational choice but not price

Z	Description
CIVIL	Number of civil society organizations in a region
TYPE	=1 if governor is elected =0 if governor is appointed
LOYALTY	=0 if <30% votes for EdRo OR if non-EdRo governor is appointed =0.5 if (30%...70%) =1 if >70% OR if EdRo governor is appointed
REG_PARL	=0, if <30% votes for EdRo =0.5, if (30%...70%) =1, if >70%

The data and hypotheses

- 76 regions have suburban railway systems
- 13 years (2000-2012)
- 40 regions signed Compensatory Agreements with regional divisions of RZD
- 29 formed Joint Ventures with RZD – PPPs

Hypotheses

- CIVL, LOYALTY, REG_PARL, SUB, PASSKM positively affect the **decision** of regional authorities to enter PPP
- BUDGET constraint negatively affects the decision
- BUDGET and SUBSIDIES have opposite signs

Pooled logit for ALL regions

Logistic regression

Number of obs	=	834
Wald chi2(7)	=	100.22
Prob > chi2	=	0.0000

Log pseudolikelihood = -187.55965 Pseudo R2 = 0.4703

(Std. Err. adjusted for 75 clusters in id)

entry	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lsub	1.549577	.4378918	3.54	0.000	.6913247	2.407829
budget	- .0000139	7.67e-06	-1.81	0.070	-.000029	1.12e-06
civil	.0000352	.0008909	0.04	0.968	-.001711	.0017815
lpasskm	.8295408	.2273294	3.65	0.000	.3839833	1.275098
loyalty	-1.249351	.4030733	-3.10	0.002	-2.03936	-.4593419
regparl	2.712556	.9772105	2.78	0.006	.7972583	4.627853
TYPE	-1.388952	.7610422	-1.83	0.068	-2.880567	.1026634
_cons	-40.2203	8.422326	-4.78	0.000	-56.72776	-23.71284

Pooled logit for ALL regions (no CIVIL)

Logistic regression

Number of obs	=	900
Wald chi2(5)	=	109.27
Prob > chi2	=	0.0000

Log pseudolikelihood = -192.55964 Pseudo R2 = 0.4717

(Std. Err. adjusted for 75 clusters in id)

entry	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lsub	1.915282	.3530291	5.43	0.000	1.223358	2.607206
budget	-.0000106	7.92e-06	-1.34	0.180	-.0000261	4.89e-06
lpasskm	.7380571	.1782542	4.14	0.000	.3886853	1.087429
loyalty	-.9790303	.4123835	-2.37	0.018	-1.787287	-.1707735
regparl	2.610213	.9578012	2.73	0.006	.7329573	4.487469
_cons	-45.04588	5.965559	-7.55	0.000	-56.73816	-33.35359

Pooled logit for ALL regions (no SUB)

Logistic regression

Number of obs	=	834
Wald chi2(5)	=	31.97
Prob > chi2	=	0.0000

Log pseudolikelihood = -231.00236

Pseudo R2	=	0.3476

(Std. Err. adjusted for 75 clusters in id)

entry	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
budget	-.0000157	7.91e-06	-1.98	0.048	-.0000312	-1.50e-07
civil	.0023945	.0010989	2.18	0.029	.0002408	.0045482
lpasskm	.5249948	.182439	2.88	0.004	.1674208	.8825687
loyalty	.2203593	.475276	0.46	0.643	-.7111645	1.151883
regparl	2.736341	1.005752	2.72	0.007	.7651028	4.707578
_cons	-12.53956	2.954722	-4.24	0.000	-18.33071	-6.748412

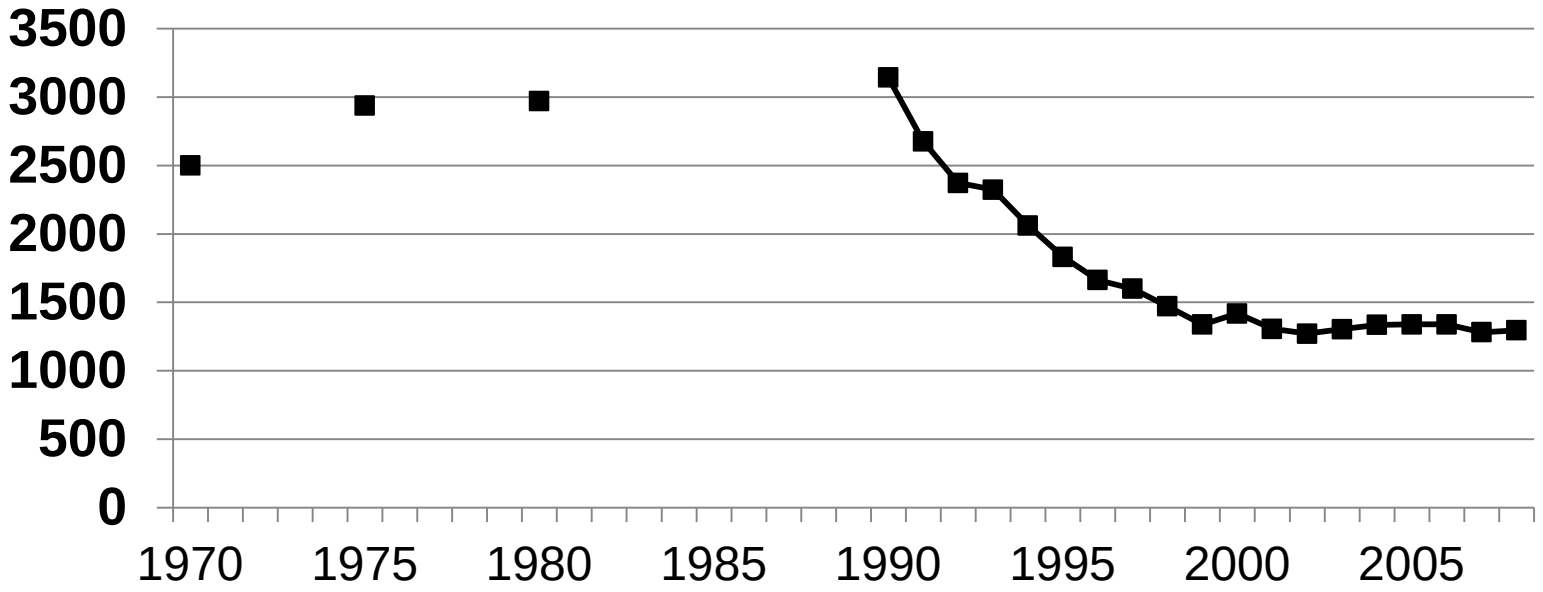
Main idea

Partnerships between the governments and operators with explicit share structure can improve social welfare if they are assigned with regulatory functions

The optimal partnership's corporate structure depends on:

- Fiscal constraints
  - Social cost of public funds
  - Budget limits
- Society's demand for redistribution
  - From taxpayers to users
  - From the corporate sector to taxpayers

Trips by rail in Russia, mln passengers



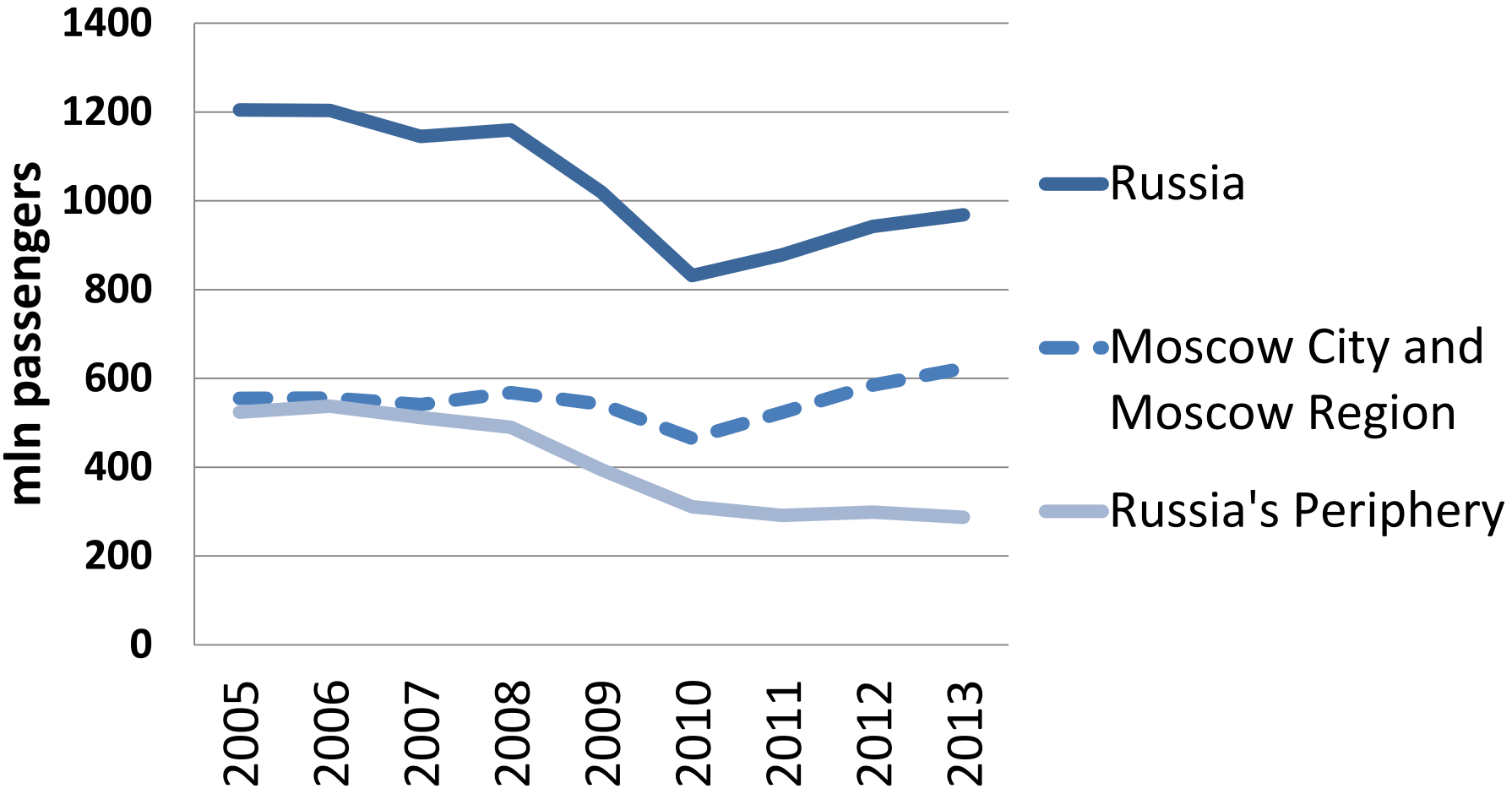
Cost recovery from passenger rail fares in Russia

	2000	2005	2006	2007	2008	2009
Long haul passenger transport	55%	73%	81%	83%	81%	83%
Suburban passenger transport	21%	46%	50%	42%	36%	43%

Source: the Federal State Statistics Service

Suburban rail passenger transport

Moscow region makes it very different



Source: the Federal State Statistics Service

The scope of compensation across regions

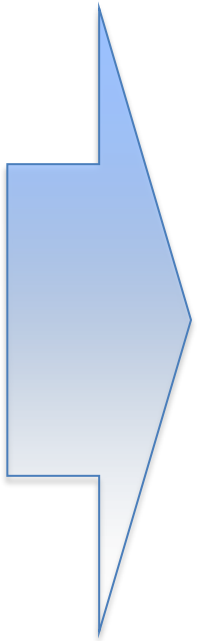
Scope of compensation	Number of Regions = 73		
	2011	2012	2013
No compensation needed	6	5	6
100% compensation given	16	16	6
>50% compensation given	13	14	21
<50% compensation given	34	34	37
No budget for compensation	4	4	3

Source: RZD

Key actors of the reform in Russia

1. Service provider = 'Russian Railways' (RZD)
   - regulated vertically integrated monopoly
2. Regulator ≅ local authorities (LA)

- RZD Incurs operational losses in passenger sector
  - Low tariffs (socially optimal?)
  - Nontransparent cost structure
- RZD receives insufficient subsidy
  - Capped regional budgets
  - Lack of trust



Cross-subsidies of loss-making passenger transport from high-margin cargo transportation fill the gap

Railway reform stages and 'exit' options

Status quo - poorly enforced contracts

Public Service Obligation (PSO)

- underfinancing, 'social' tariffs, cost uncertainty

Reform plan: to share objectives and risks → **Trusting Partnership**

- a JV (SPC) between LA and RZD's regional divisions with 'agreed' shareholding structure $(\omega, 1-\omega)$

Exit options: budget caps → **Strategic Partnership**

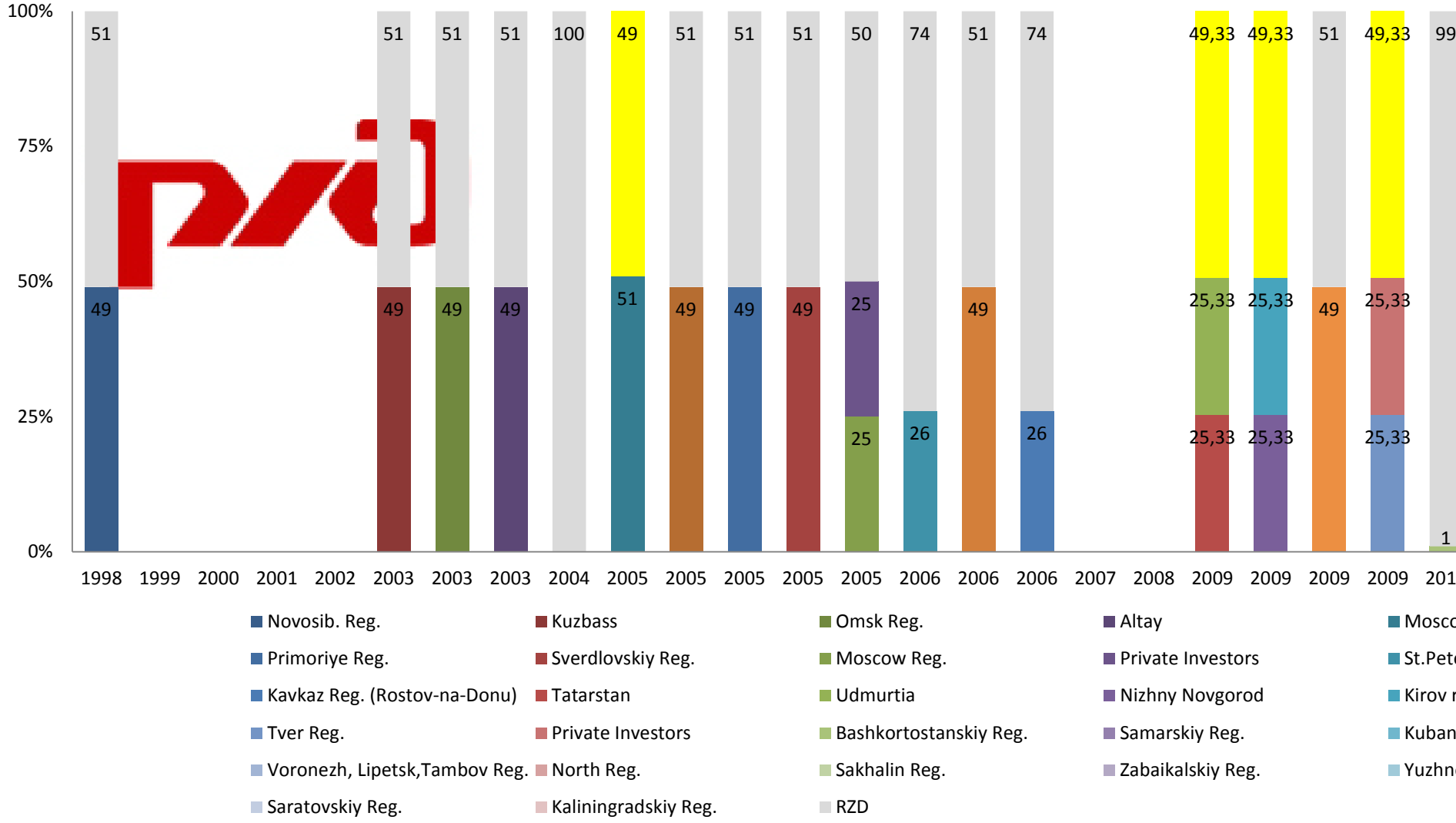
Privatization

- LA sells its stake in JV to a third party

No service

- RZD or LA close loss-making lines

Diversity of SPCs corporate structure



Regulatory regime initiated by authorities

Federal level

- Formulates the reform agenda
- Imposes budget constraint at the regional level
- Nullifies infrastructure charges for SPCs (=PPP)

Regional level (LA)

- Sets tariffs P and subsidy T at the 'socially optimal' level maximizing social welfare
- Decides on its share in the partnership $\omega \in [0,1]$

Operator level (RZD)

- Delivers services, incurs costs
- Collects revenues and receives (or not) compensation
- Considers exit strategy

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Comments are welcome!