NATIONAL RESEARCH UNIVERSITY

Organizational transformation in the public sector

Andrei Dementiev

Higher School of Economics, Moscow

September 24, 2015

Main idea

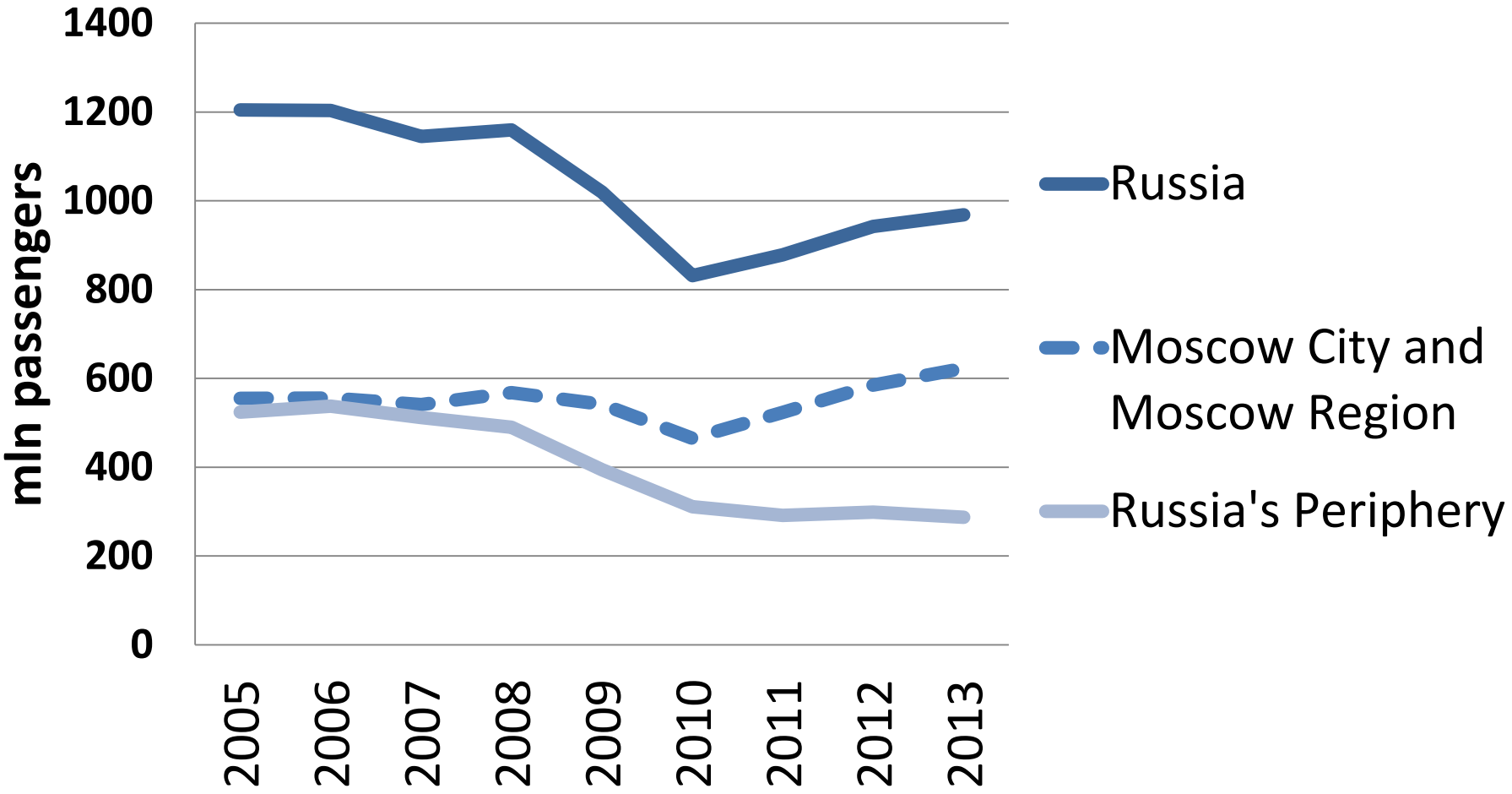
Partnerships between governments and private operators organized as joint ventures with explicit corporate share structure **can improve social welfare** in regulated sector of public service provision

The **optimal share 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

Motivation 1: subsidized services

Moscow region makes it very different



Source: the Federal State Statistics Service

Motivation 2: no guarantees

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

Railway reform as organizational choice

Status quo - poorly enforced contracts

Public Service Obligation (PSO)

- underfinancing, 'social' tariffs, cost uncertainty

Reform plan: to share objectives and risks →

Ordinary Partnership

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

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

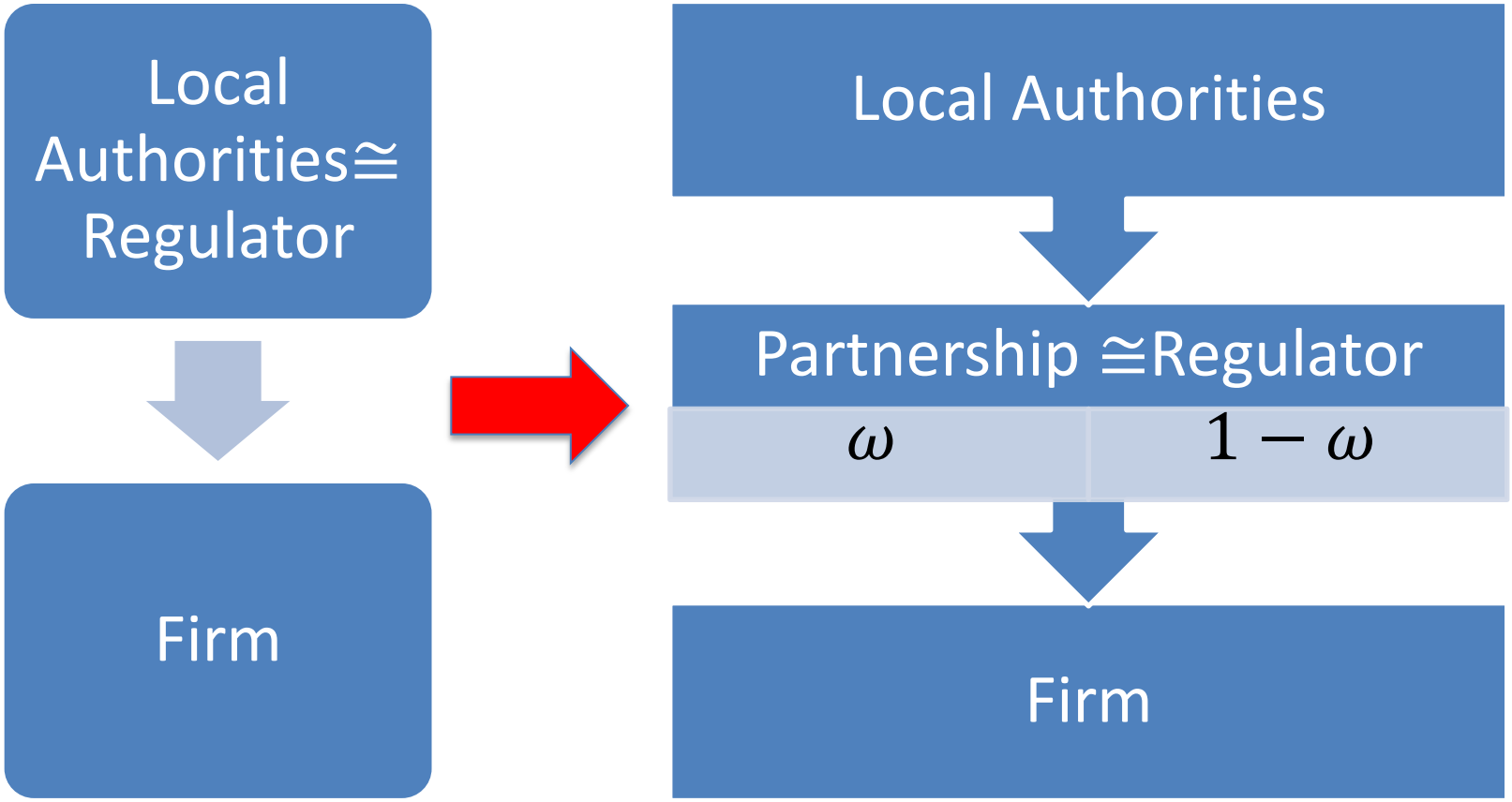
Privatization

- LA sells its stake in JV to a third party

No service

- RZD or LA close loss-making lines

Organizational transformation



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

Standard regulatory framework

Standard approach to regulator's problem

- Fiscal constraints: public funds are costly
  - shadow price of public funds $\lambda>0$ due to distortionary taxation
- Demand for redistribution: Regulator puts lower weight ($\alpha<1$) on the producers' surplus

Local Authorities' objective – social welfare:

$$W = CS - (1+\lambda)T + \alpha\pi$$

Firm's objective – profit

$$\pi = (P - C)Q - F + T$$

where c – marginal cost (unknown), T – lump-sum transfer, $Q=1-P$ – linear demand function, fixed cost $F>0$

Delegating regulation to the partnership

Ordinary partnership:

$$\max_{T,P} U^{OP} = \max_{T,P}\{\omega W + (1-\omega)\pi\}$$

- where ω - relative weight of social welfare (= the local authorities' objective function)

$$\max_{T,P} \omega(CS - (1+\lambda)T + \boldsymbol{\psi}\pi)$$

- where $\boldsymbol{\psi = 1/\omega - (1-\alpha)}$ is the effective relative weight of profit in the OP's objective function

Strategic partnership:

$$\max_{T,P} U^{SP} = \max_{T,P}\{\omega(CS - (1+\lambda)(T - \boldsymbol{\omega\pi}) + \alpha\pi) + (1-\omega)\pi\}$$

$$\max_{T,P}\{\omega(CS - (1+\lambda)T + \gamma\pi)\}$$

- where $\boldsymbol{\gamma = \frac{1}{\omega} - (1-\alpha) + (1+\lambda)\omega}$

Results

Proposition 1: *The government may **always** attain the socially optimal price P_0 that guarantees social welfare maximum W_0 by delegating regulatory decisions to an **ordinary partnership** with the share*

$$\omega_{\psi}^{0} = \frac{1}{2 + \lambda - \alpha}$$

belonging to the public agent and

$$\left(1 - \omega_{\psi}^{0}\right)$$

to the regulated service provider

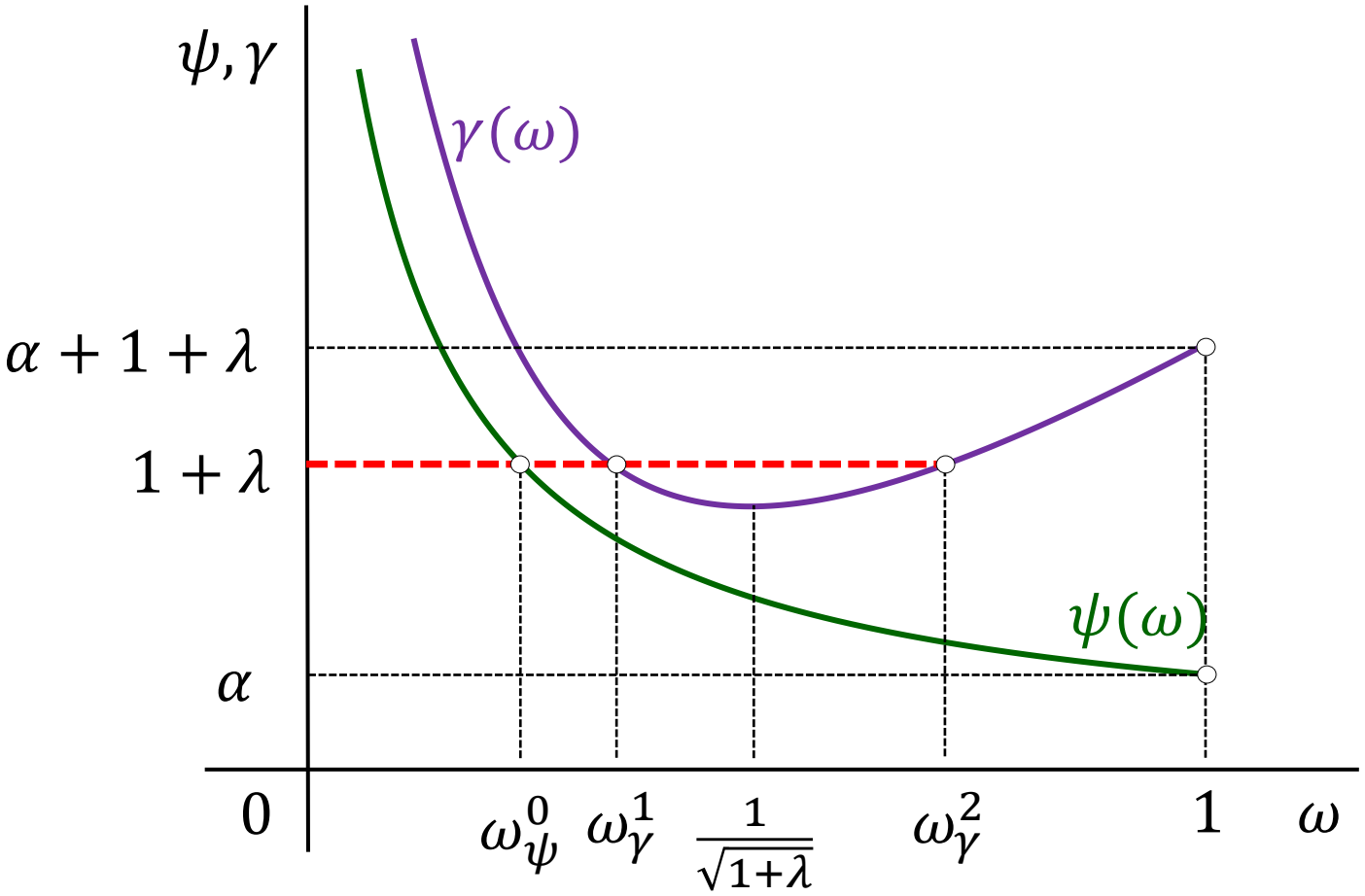
Results

Proposition 2: *The government may attain the optimal price P_0 that guarantees social welfare maximum W_0 by delegating regulatory decisions to a* ***strategic partnership*** *only* ***when the social cost of public funds is relatively high****, so* $\lambda \geq \sqrt{5 - \alpha^2} + 1$.

For the strict inequality the two alternative corporate structures with $\omega_\gamma^{1,2}$ *belonging to the public agent equally serve this goal, when* $\omega_\gamma^{1,2} =$

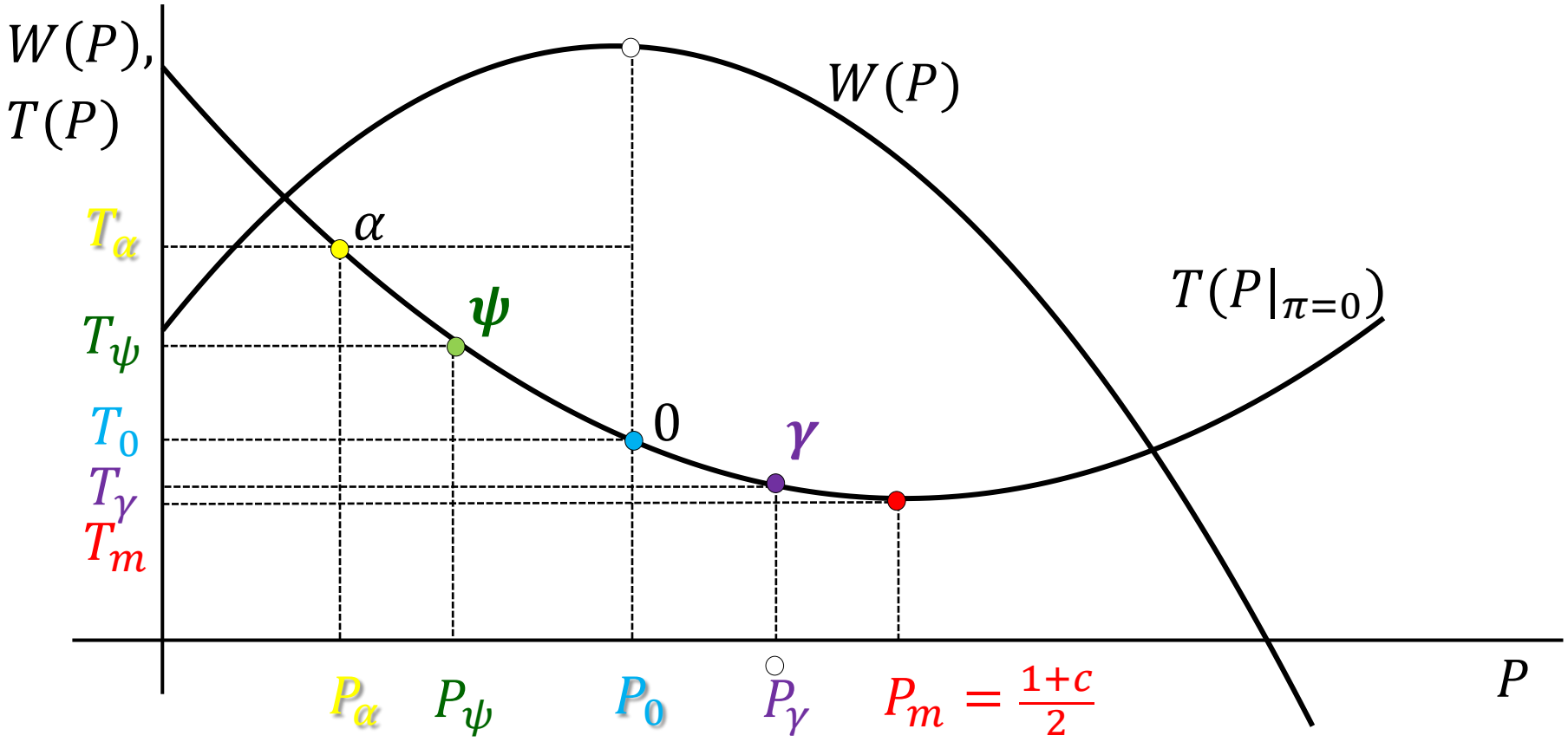
$$\left[(2 + \lambda - \alpha) \pm \sqrt{(2 + \lambda - \alpha)^2 - 4(1 + \lambda)}\right] / 2(1 + \lambda).$$

Optimal corporate structures



Relative weights of profits in the objective functions of permanent partnership (ψ) and strategic partnership (γ)

Social welfare and subsidies



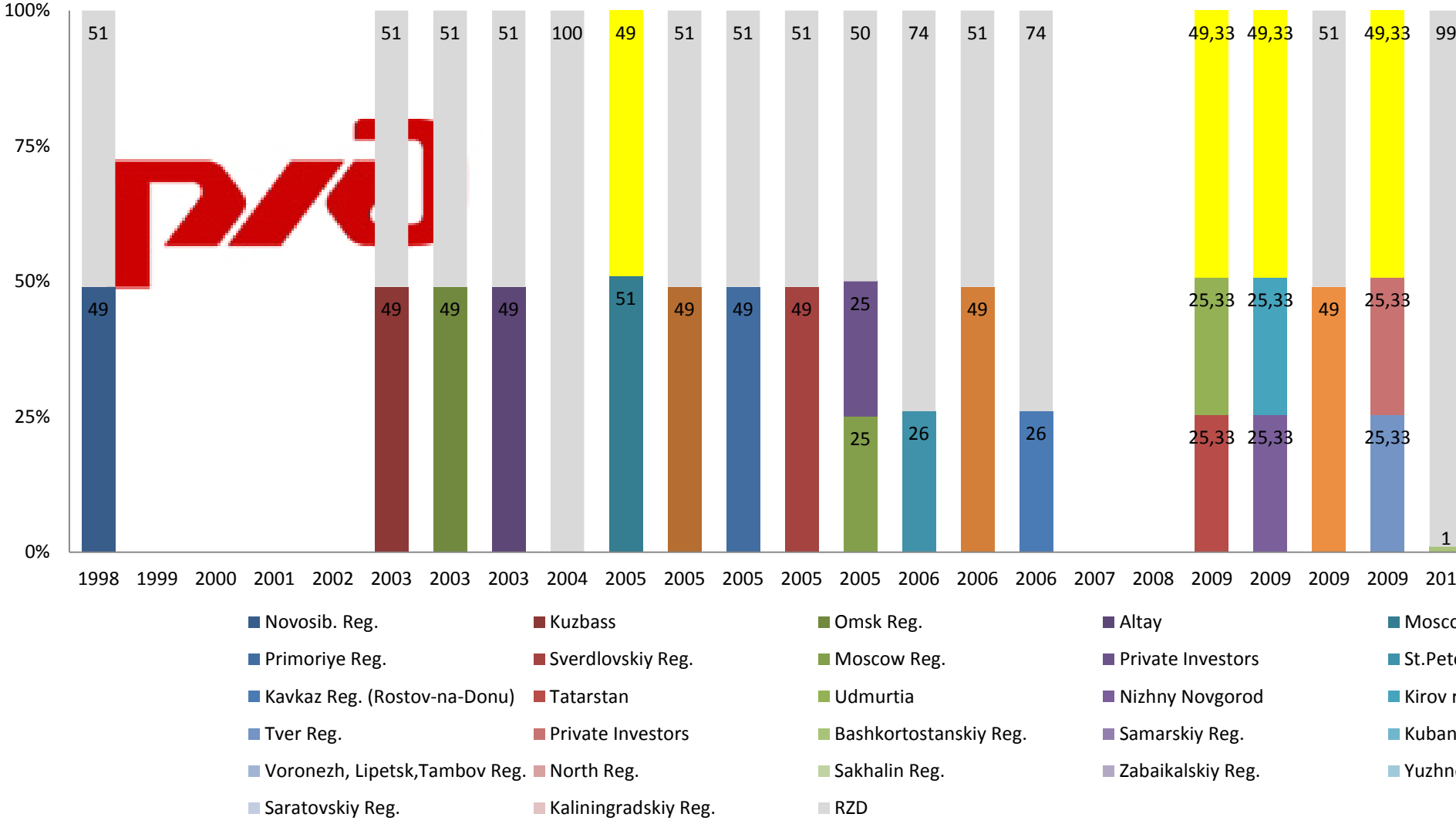
Social welfare W and budget transfer T for the alternative organizational forms

Financial results of Central PPK

		2009	2010	2011	2012	2013	2014
Passengers before	Mln	314	316	445			
after network extention				506	568	586	596
Net Profit	bln RUR	0.38	-0.04	4.65	3.74	3.30	2.18
Subsidies	bln RUR	4.74	4.30	6.80	6.98	7.17	7.72
Infrastructure Subsidy	bln RUR	0.00	0.72	0.21	0.45	0.30	0.23
Infrastructure Charge	bln RUR	4.75	5.00	0.10	0.11	0.12	0.13
Privatization revenue							
From 25% stake	bln RUR			0.02	0.78		

Conclusion

By taking into account social cost of public funds (λ) and immanent redistribution preferences of the society (α) the public authority may initiate an optimal partnership structure that replicates the welfare maximizing price and transfer

- Ordinary partnership may always serve this goal: the government should decrease its share when λ is relatively high and α is relatively low
- Strategic partnership is a viable option when public λ is very high providing for the diversity of corporate structures

Diversity of SPCs corporate structure