59th ERSA Congress

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THE RUSSIAN PRESIDENTIAL ACADEMY OF NATIONAL ECONOMY AND PUBLIC ADMINISTRATION

Centre for Entrepreneurship Research, RANEPA
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INNOVATION AND ENTREPRENEURSHIP AS FACTORS OF REGIONAL DEVELOPMENT IN RUSSIA

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Lyon
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PURPOSE

- ✓ GRP per capita grew rapidly in 1998-2014 mostly because of oil and gas prices growth
- ✓ Regions are highly differentiated in terms of the level and dynamics of GRP per capita

The goal is to identify factors of regional development in Russia in 1998—2014

Main questions:

- ✓ Is it only oil and gas that determine regional development???
- ✓ Was Russia able to create an efficient system of redistributing benefits or economic growth from rich to poor regions?
- ✓ Was there any role of innovation and entrepreneurship in regional development?

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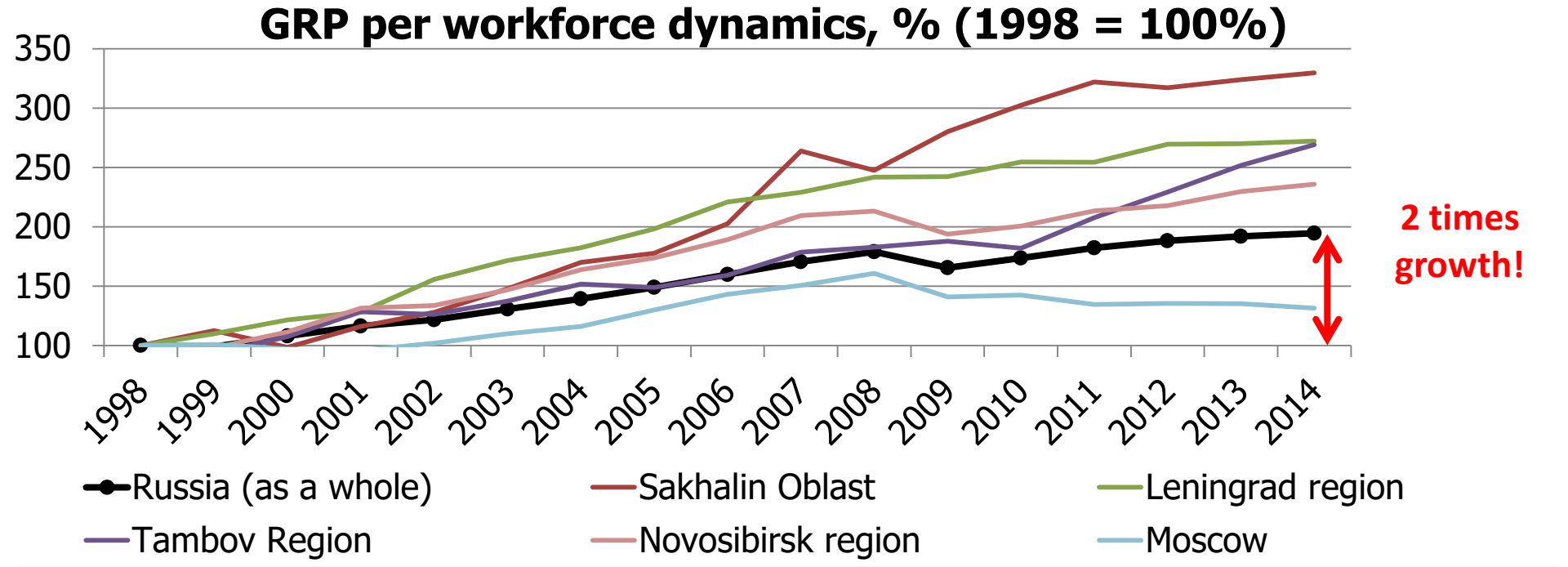
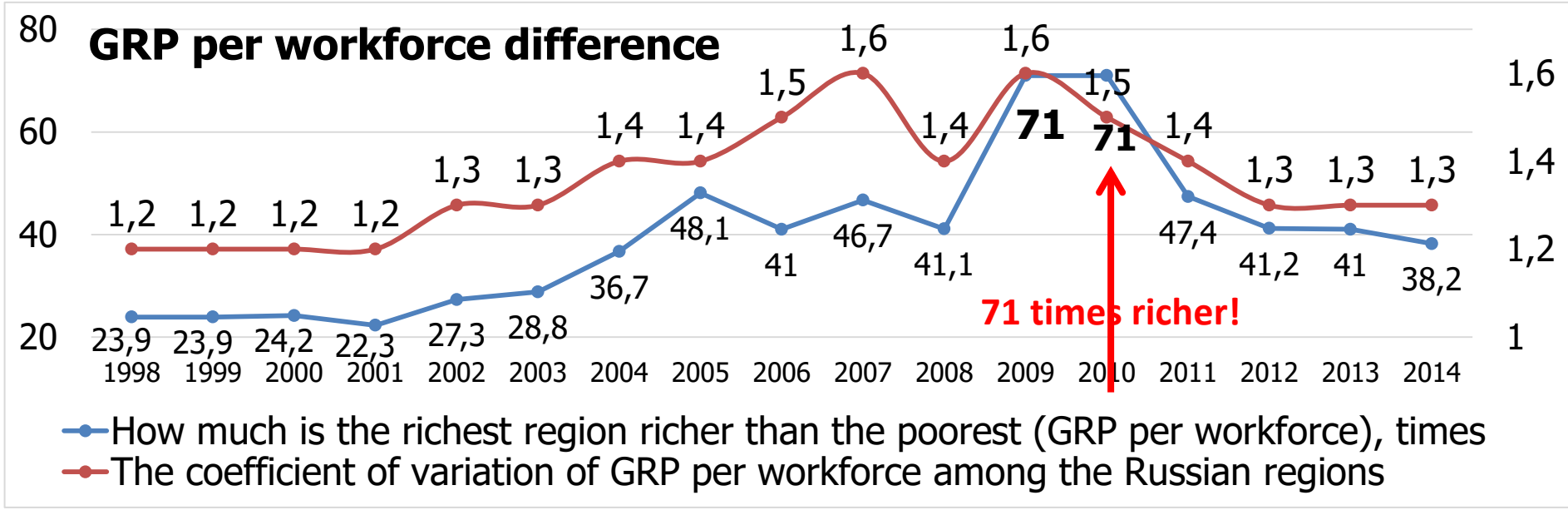
REGIONAL DEVELOPMENT IN RUSSIA





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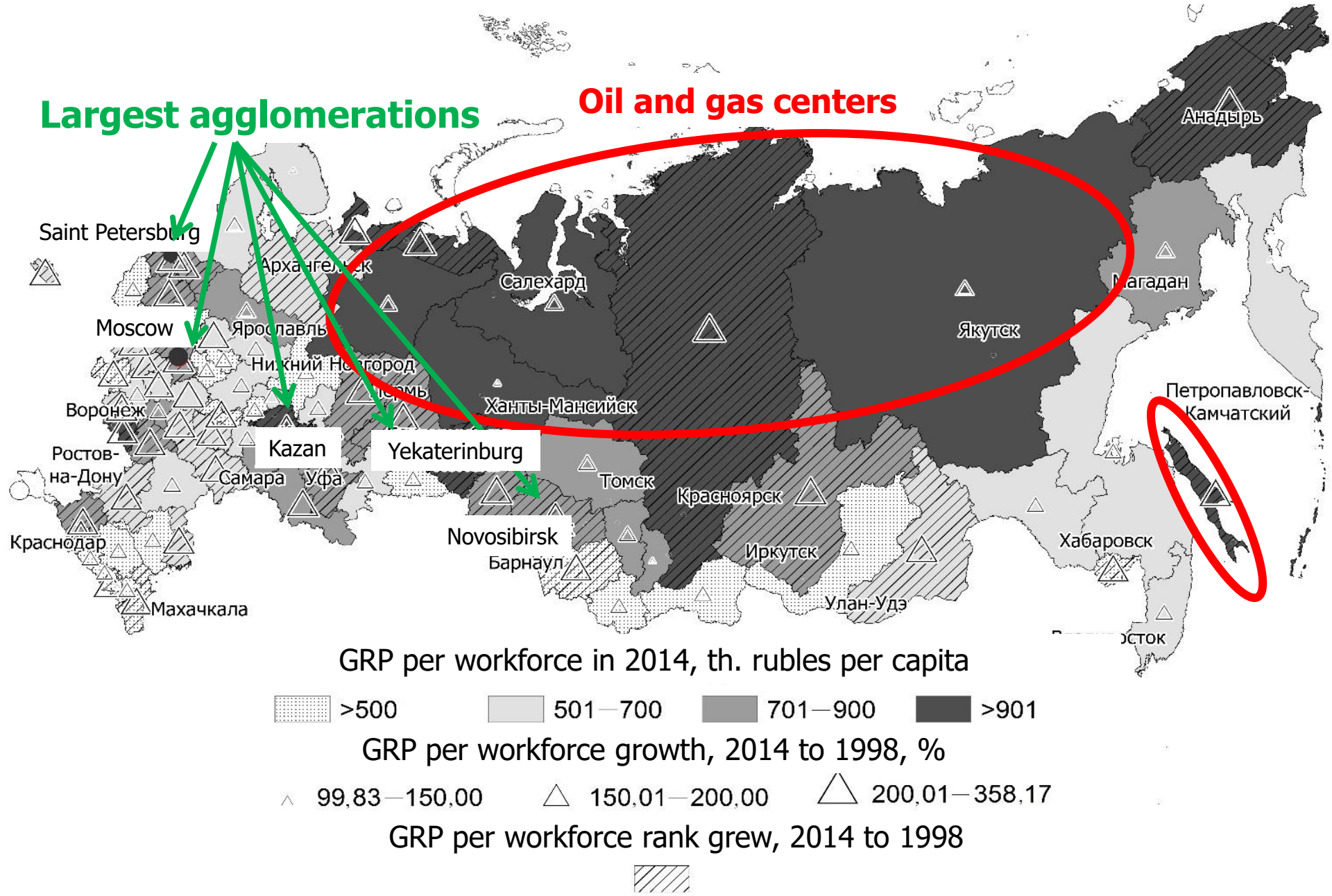

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REGIONAL DEVELOPMENT IN RUSSIA

Leading growing regions	GRP per workforce rank in 2014	Rank growth 2014/1998
Tambov Region	38	23
Leningrad region.	21	22
Kaliningrad region	45	22
Belgorod region	14	17
Sverdlovsk region.	22	12
Novosibirsk region	32	10
Kaluga region	40	9
Perm region	20	7
Bashkortostan	25	7
Omsk region	33	7
Chukotka	8	6
Irkutsk region	16	6
Novgorod region	23	6
Tatarstan	12	5
St. Petersburg	13	4
Voronezh region	24	3
Krasnodar region	29	3
Astrakhan region	36	3
Tyumen region	7	2
Krasnoyarsk region	10	2

Agro industry

Large market access

Agro industry

Largest agglomerations

Diversified industrial centres

Raw material

Better regional institutions for SMEs and investors

Raw material

MODEL AND HYPOTHESIS

Estimations based on [Mankiw et al., 1990] with additional factors

$$ln\frac{Y_{i,t}}{L_{i,t}} = const + \alpha lnSk_{i,t} + \beta lnSh_{i,t} - \gamma \ln(n + 0{,}05) + \theta lnEGP_{i,t} + \vartheta lnINST_{i,t} + \mu lnINNOV_{i,t}$$

$\frac{Y_{i,t}}{L_{i,t}}$	GRP per workforce
$Sk_{i,t}$	Capital saving rate
$Sh_{i,t}$	Human capital saving rate
n	Workforce growth

4 main hypothesis:

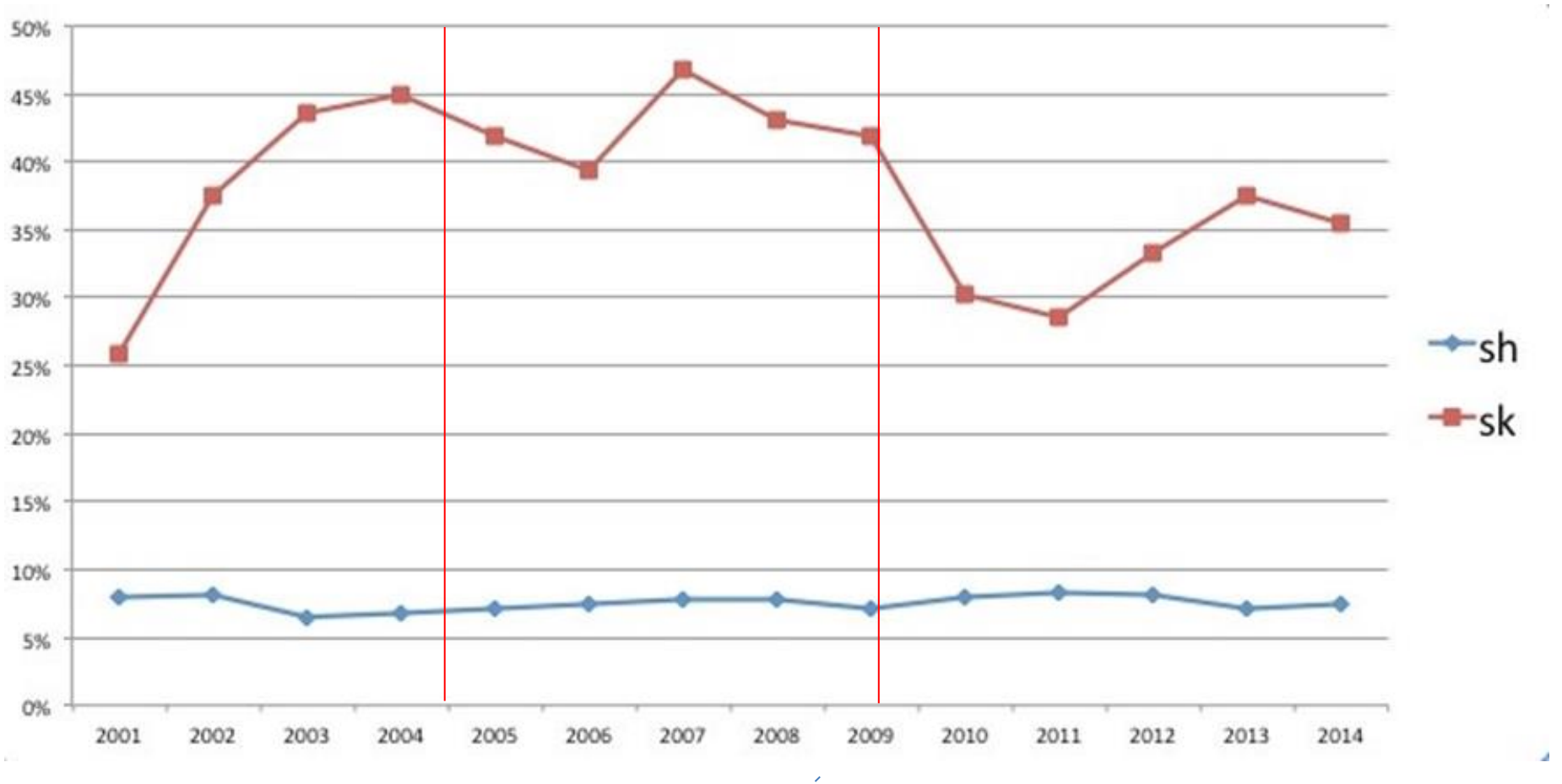
- **Human capital** [Mankiw et al., 1990]
- **Market access** [Hanson, 2005; Niebuhr, 2006]
- **Institutions** [Rodríguez-Pose, 2013; Audretsch, Keilbach, 2004]
- **Innovation** [Brenner, 2014; Rodríguez-Pose, Crescenzi, 2008]

$EGP_{i,t}$	Favorable economic-geographical position (close to markets)
$INST_{i,t}$	Better regional institutions for SMEs and investors
$INNOV_{i,t}$	Innovative potential (ability to create, implement technologies)

VARIABLES AND INDICATORS

Factor	Symbol	Indicators	+/−
Capital	sk1	The ratio of investment last year to current GRP,%	+
Human capital	sh2	The share of employed urban citizens with higher education, %	+
Market access	*egp*1	Proximity to regional markets [Zemtsov, Baburin, 2016]	+
	*egp*2	Proximity to world markets [Zemtsov, Baburin, 2016]	
	*egp*3	GRP per workforce in neighboring regions	
Institutions for SMEs and investors	*inst*1	RAEX investment risks	−
	*inst*2	Crime rate per capita	
	*inst*3	Small firms per workforce	+
Innovative potential	*innov*1	Patents per urban citizens with high education [Zemtsov et al., 2016]	+
	*innov*2	Machinery import per GRP, %	

VARIABLES AND INDICATORS



- The role of physical capital grew until 2005, then it is unstable, and has been declining since 2009
- Human capital is positively significant, significance grew in 2003-2008, but its role did not exceed 10%

RESULTS

Переменная	(1)	(2)	(3)	(6)	(7)	(8)	(4)	(5)
const	−3,770*** (0,467)	−2,777*** (0,507)	1,388*** (0,337)	4,686*** (0,087)	5,165*** (0,337)	4,519*** (0,090)	4,086*** (0,117)	4,355*** (0,097)
Ln(*sk*1)	0,076*** (0,027)	0,077*** (0,027)	0,070** (0,031)	0,197*** (0,029)	0,210*** (0,031)	0,145*** (0,027)	0,200*** (0,035)	0,208*** (0,033)
Ln(*sh*2)	0,023 (0,031)	0,005 (0,032)	0,056 (0,041)	0,418*** (0,046)	0,519*** (0,052)	0,379*** (0,044)	0,582*** (0,053)	0,537*** (0,054)
Ln($n + g + \delta$)	−0,023*** (0,004)	−0,015*** (0,004)	−0,021*** (0,004)	−0,025*** (0,005)	−0,026*** (0,006)	−0,019*** (0,005)	−0,024*** (0,006)	−0,029*** (0,006)
Ln(*egp*1)	0,761*** (0,040)							
Ln(*egp*2)		0,542*** (0,035)						
Ln(*egp*3)			0,797*** (0,079)					
Ln(*inst*1)				−0,104*** (0,010)				
Ln(*inst*2)					−0,092** (0,041)			
Ln(inst3)						0,168*** (0,021)		
Ln(*innov*1)							0,060*** (0,015)	
Ln(*innov*2)								0,034** (0,016)
Оценки качества моделей								
LSDV-R2	0,979	0,976	0,978	0,963	0,959	0,963	0,948	0,941
Within-R2	0,785	0,752	0,774	0,614	0,572	0,619	0,602	0,589
Schwartz criterion	−1522	−1328	−1451	−711	−569	−731	−643	−567

RESULTS IN PERIODS

	1998 — 2014	**1998 — 2004**	**2005 — 2008**	**2009 — 2014**	**1998 — 2014**	**1998 — 2004**	**2005 — 2008**	**2009 — 2014**
const	1,630*** (0,377)	2,396*** (0,660)	1,871*** (0,565)	3,209*** (0,541)	4,648*** (0,577)	4,991*** (0,263)	4,833*** (0,411)	4,679*** (0,604)
Ln(*sk*1)	0,056*** (0,019)	0,048*** (0,018)	0,010 (0,028)	−0,025 (0,017)	0,016 (0,018)	0,025* (0,015)	−0,014 (0,023)	−0,047*** (0,017)
Ln(*sh*2)	0,149*** (0,046)	0,110** (0,048)	0,108*** (0,033)	0,060 (0,045)	−0,009 (0,035)	−0,032 (0,035)	0,028 (0,027)	0,025 (0,047)
Ln(*n*+*g*+δ)	−0,011*** (0,004)	−0,015*** (0,004)	−0,019*** (0,005)	−0,020*** (0,007)	−0,013*** (0,005)	−0,011*** (0,004)	−0,024*** (0,005)	−0,019*** (0,006)
Ln(*egp*3) GRP per workforce of neighbors	0,553*** (0,082)	0,478*** (0,119)	0,569*** (0,096)	0,402*** (0,088)	0,140 (0,097)	0,105*** (0,037)	0,184*** (0,064)	0,214** (0,089)
Ln(*inst*3) SMEs per workforce	0,063*** (0,023)	0,005 (0,025)	0,072** (0,029)	0,096*** (0,024)	0,006 (0,032)	−0,005 (0,024)	−0,015 (0,026)	0,044* (0,025)
Ln(*inst*1) Investment risks	−0,044*** (0,010)	0,097 (0,080)	−0,089* (0,053)	−0,050*** (0,010)	−0,176*** (0,046)	−0,054 (0,062)	−0,103* (0,053)	0,004 (0,030)
Ln(*inov*1) Patents per urban citizens with he	0,050*** (0,015)	0,025 (0,017)	0,027** (0,012)	−0,000 (0,007)	0,029** (0,012)	0,004 (0,015)	0,004 (0,007)	0,008 (0,007)
Ln(*innov*2) Machinery import	0,018* (0,009)	0,002 (0,010)	0,016 (0,013)	0,000 (0,009)	0,007 (0,007)	−0,011 (0,008)	0,004 (0,006)	0,002 (0,009)
Time effects	Нет	Нет	Нет	Нет	Да	Да	Да	Да
LSDV-R2	0,969	0,979	0,993	0,993	0,977	0,987	0,995	0,994
Within-R2	0,807	0,574	0,710	0,705	0,858	0,736	0,802	0,739
Schwartz criterion	−1515	−579	−546	−976	−1798	−792	−646	−1003

Leaders and development factors

- **1998-2005:** most developed regions actively attracted investments, using **fixed assets, markets and concentrated human capital:** Moscow, St. Petersburg, Rostov, Novosibirsk, Sakhalin, Tyumen regions
- **2005-2008:** in addition to oil and gas production centers, a number of rapidly growing regions take advantage of proximity to large markets, as well as accumulated **human capital and new technologies** (Moscow, St. Petersburg, Tatarstan, Sverdlovsk, Samara regions). New high-tech services are distributed for Russia: financial, information and communication, consulting, etc. Fast growth rates are typical for regions with low risks and proximity to large markets: Kaliningrad, Kaluga, Belgorod and Rostov regions.
- **2009—2014:** the advantage is given to regions with **low investment risks and high entrepreneurial activity**: Tambov, Kaluga, Belgorod, Voronezh, Saratov regions, as well as large manufacturers of defense industry: Irkutsk, Sverdlovsk, Arkhangelsk regions and Perm Territory

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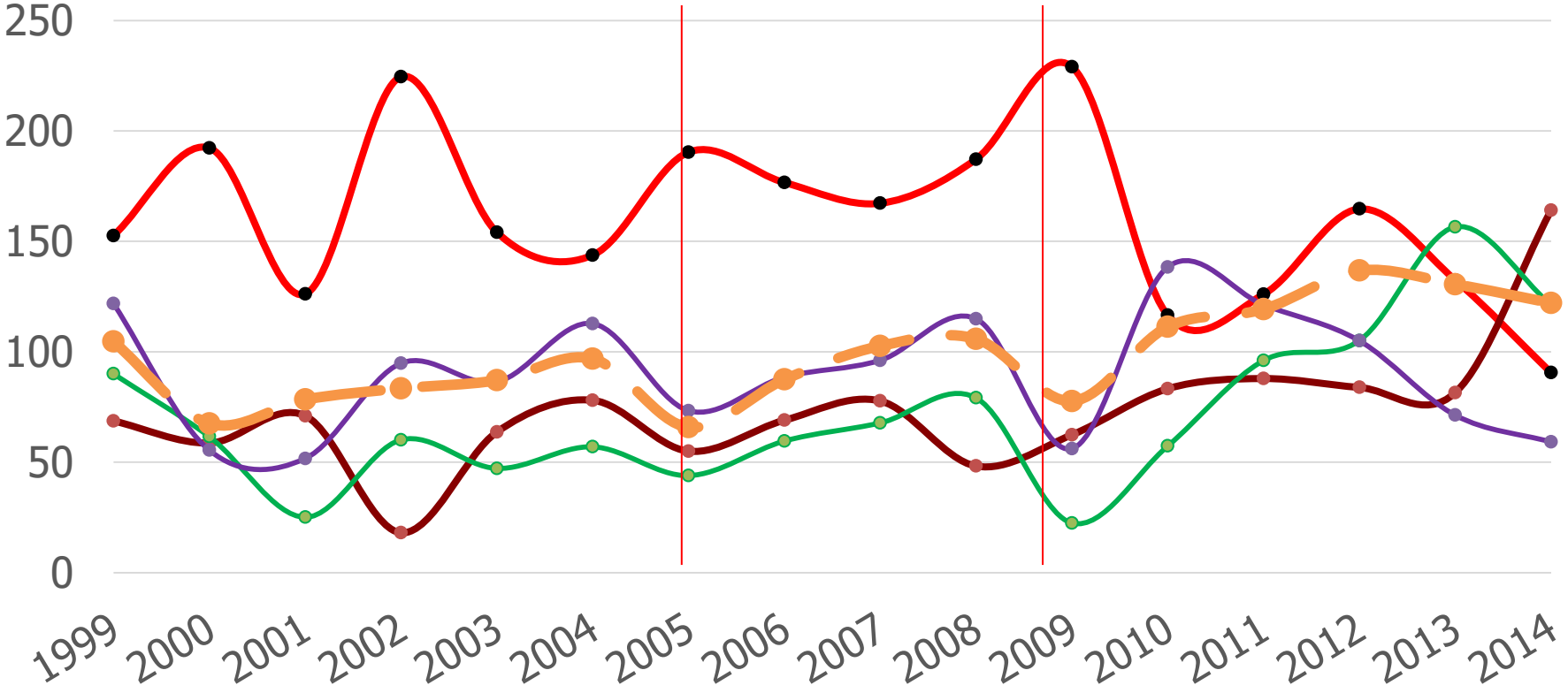
REGIONAL DEVELOPMENT IN RUSSIA

GRP growth per workforce in comparison with average in Russia, %



- The largest agglomerations (markets, human capital, technology)
- Developed industrial (investments, technology imports, defense industry)
- Agricultural and industrial (investments, agribusiness, export)
- Regions near largest markets (proximity to markets, ports)
- Regions with low investment risks and developed small business

CONCLUSIONS AND RECOMENDATIONS

- Not only oil and gas but **human capital** and **markets** in large agglomerations
- Russian tax and budget system helps to redistribute benefits or economic growth, especially to cities
- **Innovation and entrepreneurship** matters in regional development and their importance is growing

How to improve **regional development**:

- **'Improving' geography**: creating infrastructure that reduces the economic distance to large markets (agglomerations) and ports
- **Creating comfortable urban conditions** for attraction of human capital, especially creative class, university campus development, etc.
- **Agglomerations development:** high-tech and knowledge-intensive attraction, public involvement in problems solving, smart cities strategy, etc
- **Reducing investment and entrepreneurs risks:** simplifying registration procedures, creating specialized development institutions, etc.
- **Commercialization of new technologies:** special centers of commercialization, innovative infrastructure, support for joint projects between business, universities and research organizations

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THANK YOU FOR YOUR ATTENTION

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