

# IGU Moscow Conference



**RANEPA**  
THE RUSSIAN PRESIDENTIAL ACADEMY  
OF NATIONAL ECONOMY  
AND PUBLIC ADMINISTRATION

Centre for Entrepreneurship Research, RANEPA  
Innovation Economics Department, Gaidar Institute

NEW TECHNOLOGIES, POTENTIAL  
UNEMPLOYMENT AND NESCIENCE  
ECONOMY IN THE RUSSIAN REGIONS

**Speaker:**

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**Moscow**  
**06.06.2018**



- Geography of innovation – how and why new technologies transform social and economic spaces
- Change of techno-economic paradigm to 2030
- **Digitalization** - the emergence of robot-robot systems (smart homes, Internet of things, autopilot transport, etc.)
- One industrial robot (per 1000 employed) in the US led to 0.18-0.4% decline in share of employed and 0.25-0.5% decrease in wages (Acemoglu, Restrepo, 2017)
- In Russia: Tolyatti and "AvtoVAZ" (reduction from 110 to 35 thousand employees), the example of Sberbank ( $\approx$ 3000 lawyers)
- Geographical differences in automation (Berger, Frey 2015; Berger, Frey 2016)

**The goal** is to assess the potential number of people exposed to automation

**The experiment:** what will happen if automation happens at the same time? This is not a forecast!

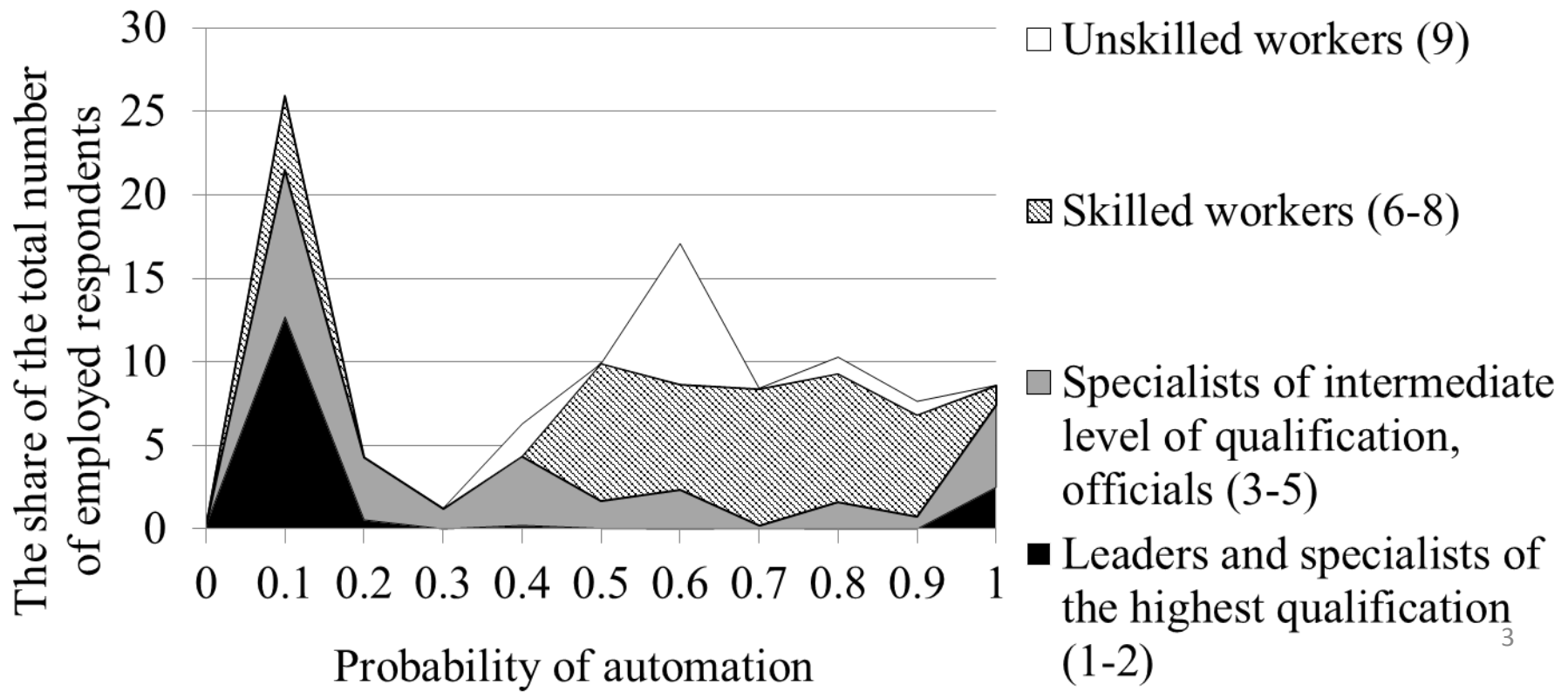


## Frey, Osborne, 2013:

- Perception and manipulation
- Creative Intelligence
- Social intelligence

## Zemtsov, 2017: RLMS HSE data.

≈26.5% of employed in Russia (high probability of automation)





<b>The most popular professions in Russia</b>	<b>Number of employees, million people</b>	<b>Probability of automation, % (Frey, Osborne, 2013)</b>
Drivers	7	≈98
Sellers	6,8	≈98
Accountants, economists	3,6	≈43-94
Teachers	2,8	≈20-94
Loaders	2,3	≈72
Cleaners	2,1	≈66-83
Junior medical staff	1,9	≈0,9-51
Guards	1,8	≈84



Manyika et al., 2017: share of routine work in industries

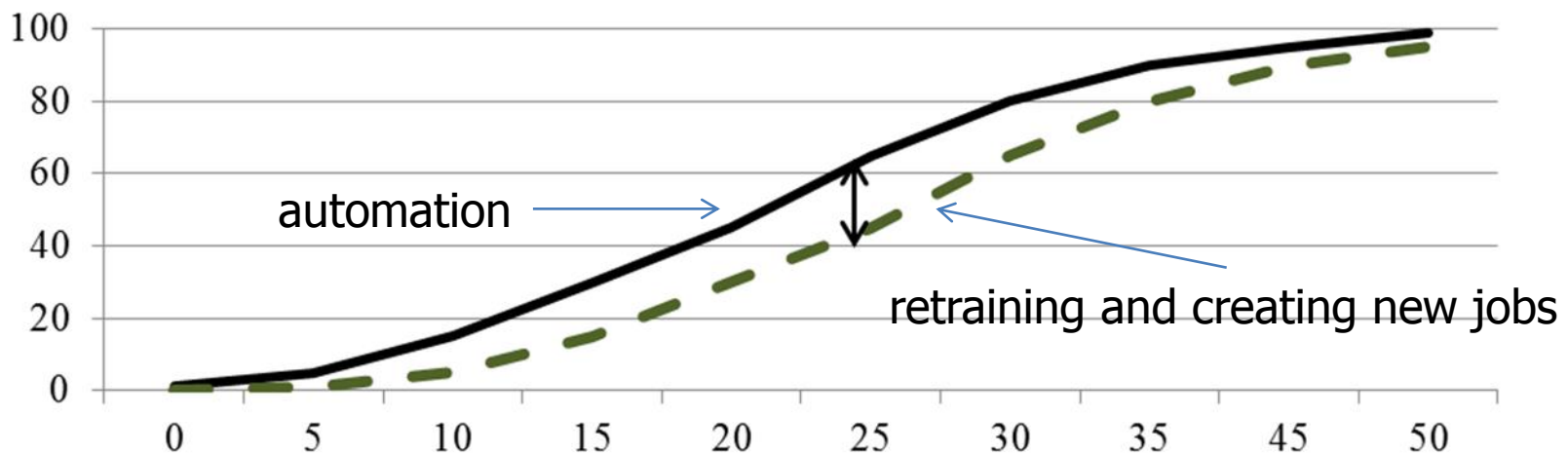
Industries in Russia	Potential automation, %
N. Hotels and restaurants	73
D. Manufacturing Processes	60
A. Agriculture and forestry	58
Retail	53
C. Extraction of minerals	51
F. Construction	47
I. Transport and communications	45.8
E. Electricity, gas and water	44
O. Provision of other services	44
J. Financial activities	43
L. State management; security	39
N. Health care and social services	36
M. Education	27



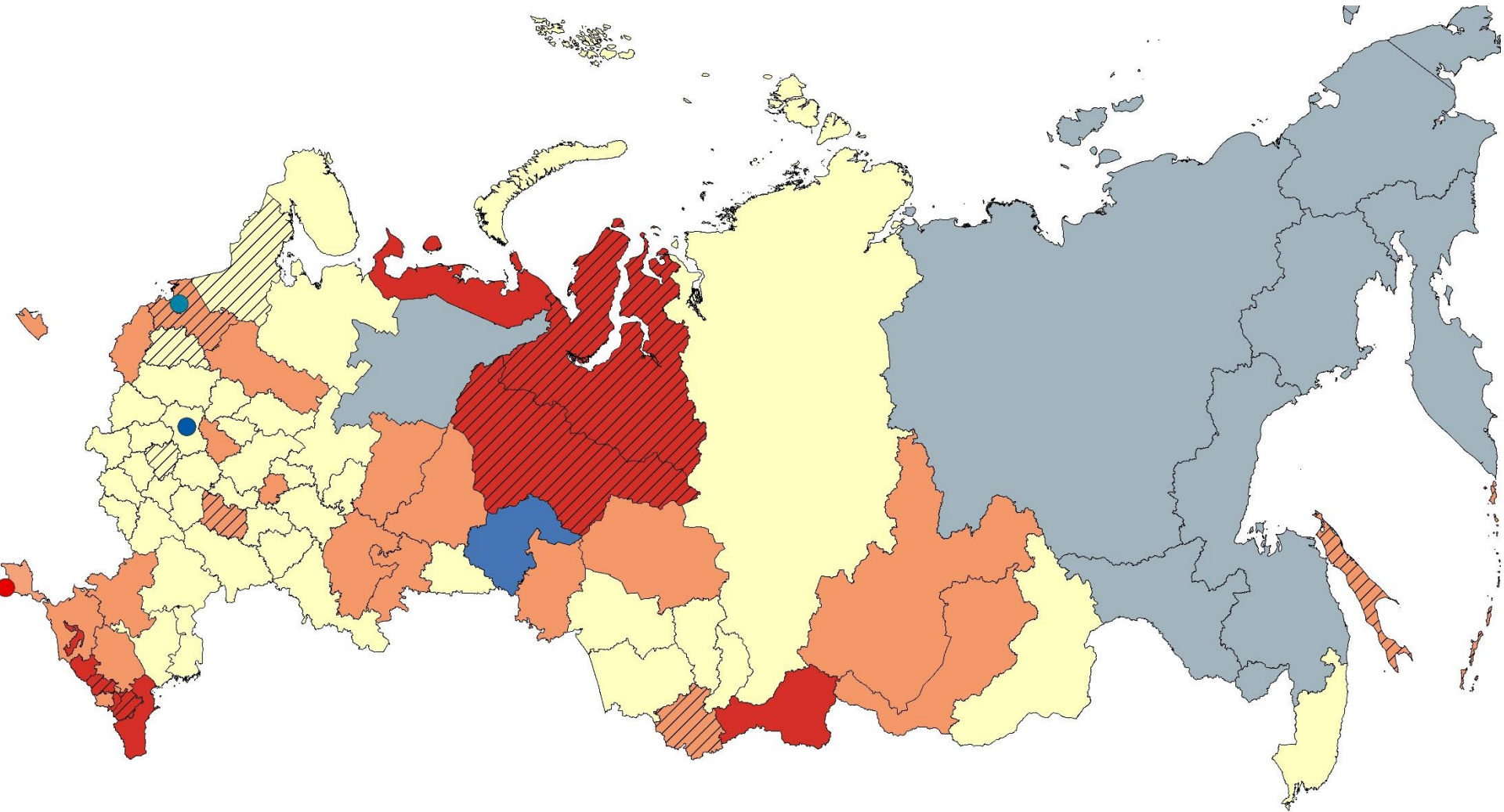


<b>Country</b>	<b>Frey, Osborne, 2013</b>	<b>Arntz et al., 2016</b>	<b>McKinsey (Manyika et al., 2017)</b>
United Kingdom	35	10	43
Germany	59	12	48
Italy	56,2	10	50
Canada	45	9	47
Poland	56,3	7	49
USA	47	9	46
France	49,5	9	43
Sweden	46,7	7	46
South Korea	-	6	52
Japan	49	7	56
India	68,9	-	52
China	77,1	-	51
<b>Russia</b>	<b>26,5</b>	<b>2</b>	<b>44,8</b>

- The employment in the informal sector is not taken into account
- **The gap** between the exponential growth of automation and the lagging processes of retraining and creating new jobs is possible
- **"The nescience economy "** - part of the population, not ready to participate in the processes of creating and introducing new technologies and products, not ready to compete with robots, to constant training







## Share of nescience economy





## Dependent variable: automation risk. FE. 2009-2015 гг.

Constant	3,9*** (0,1)	5,34*** (0,4)	5,04*** (0,42)	5,06*** (0,41)	5,07*** (0,39)	4,8*** (0,32)	4,8*** (0,34)
<b>Employees with higher education, %</b>	-0,01* (0,004)	-0,002*** (0,0008)	-0,002*** (0,0005)	-0,002*** (0,0006)	-0,001** (0,0006)	-0,002** (0,0008)	-0,001* (0,0006)
<b>Urbanization, %</b>		-0,28*** (0,1)	-0,28*** (0,1)	-0,27*** (0,1)	-0,27*** (0,1)	-0,19** (0,07)	-0,17** (0,08)
Entrepreneurial activity	-0,01*** (0,004)						
Income		-0,02*** (0,009)					
Institutions (Crime rate)			-0,02*** (0,009)				
Firms with websites, %				-0,006** (0,003)			
Manufacturing in GRP, %					0,0005** (0,0002)		
Patent activity						-0,001** (0,0004)	
Students, %						- 0,009*** (0,002)	- 0,001*** (0,003)
<b>Trade per capita</b>						-0,013** (0,002)	- 0,013*** (0,002)
Gini income index							0,048* (0,03)



- **49.3% of the working-age population** of Russia, or 42.13 million people are exposed to automation risks
- **Automation in the regions is late** (cheap labor, restrictions on dismissals, etc.) - the risk of forming old-age and "old-service" regions with a set of social problems, a high share of the "nescience economy"

How to improve **regional resilience to automation**:

- ✓ creative industries (research, art, entrepreneurship, etc.)
- ✓ STEM (science, technology, engineering and mathematics)
- ✓ social interaction (social workers, teachers, psychologists, etc.)
- ✓ changing conditions (emergency workers)
- ✓ responsibility and management
- ✓ mentoring (mentors, clergymen, coaches, etc.)



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[https://www.researchgate.net/profile/Stepan\\_Zemtsov](https://www.researchgate.net/profile/Stepan_Zemtsov)

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