



ВЫСШАЯ ШКОЛА ЭКОНОМИКИ  
НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ

Илья Воскобойников

Долгосрочные источники роста  
российской экономики до и после  
кризиса 2008 г.

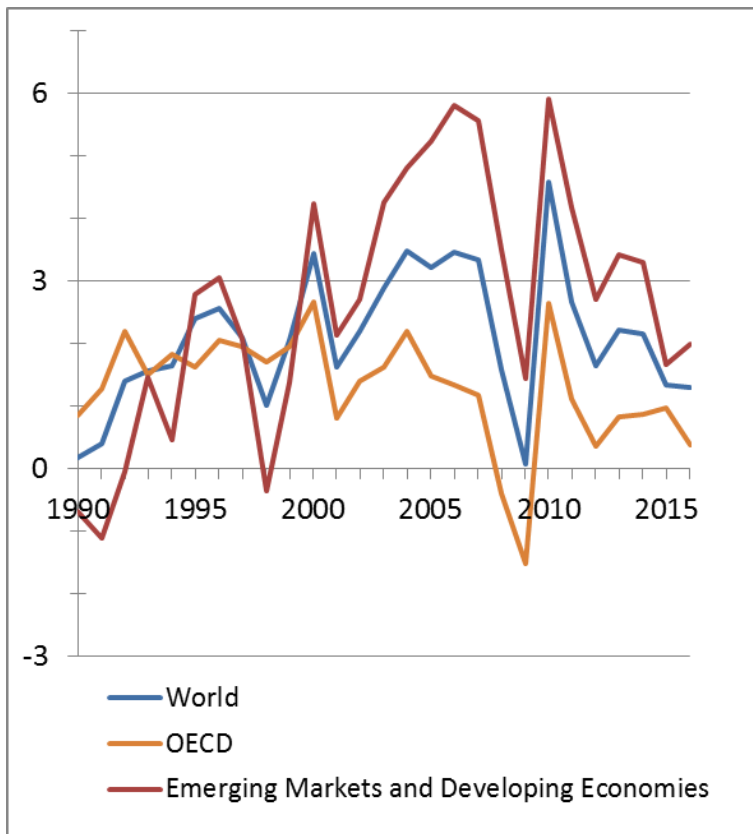
Совместный семинар Лаборатории исследований рынка труда (ЛИРТ)  
и Центра трудовых исследований (ЦеТИ)

24 октября 2017 г.

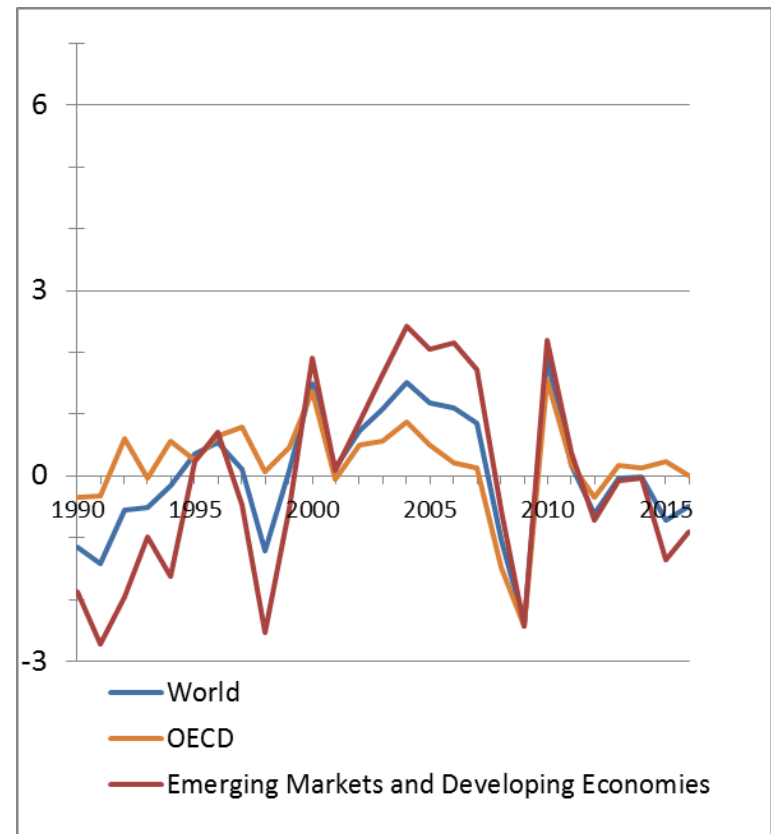
# Global Productivity Growth since 1990

(annual growth rates)

## a. Labor productivity



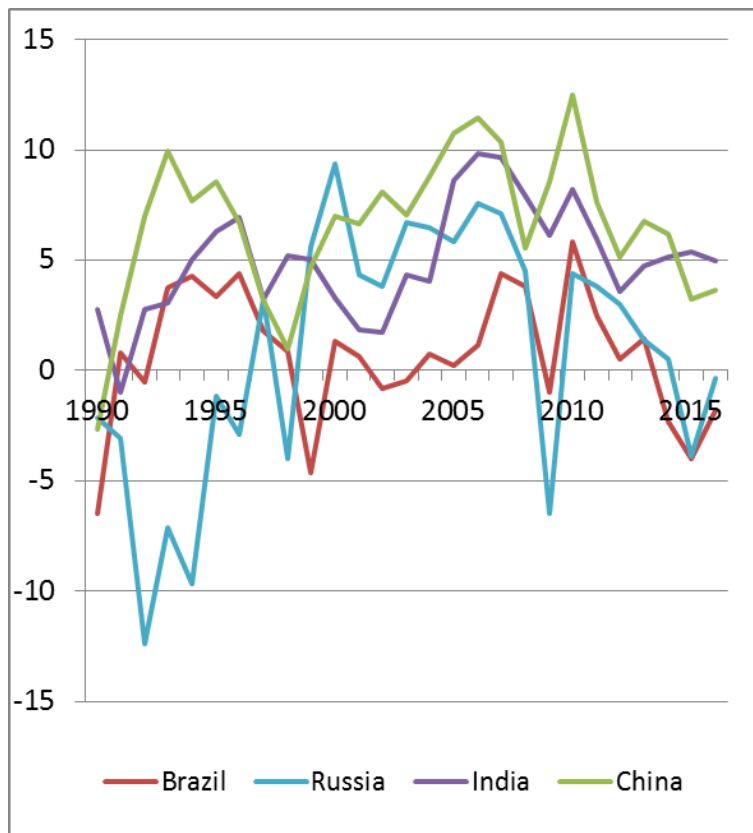
## b. Total Factor Productivity



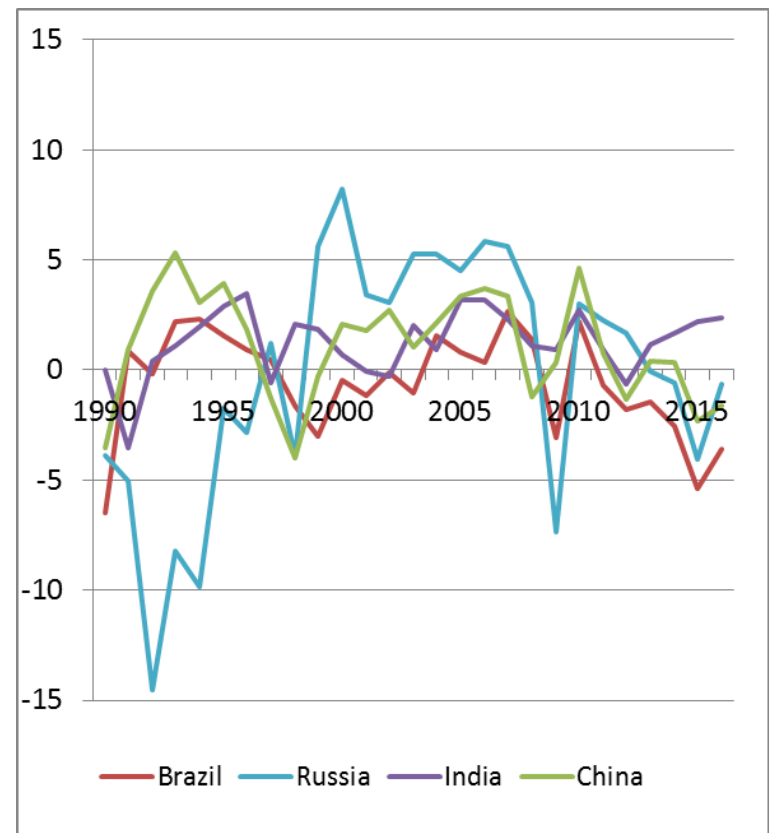
Source: TED database (adjusted version), May 2017

# Productivity Growth since 1990 in BRIC (annual growth rates)

## a. Labor productivity

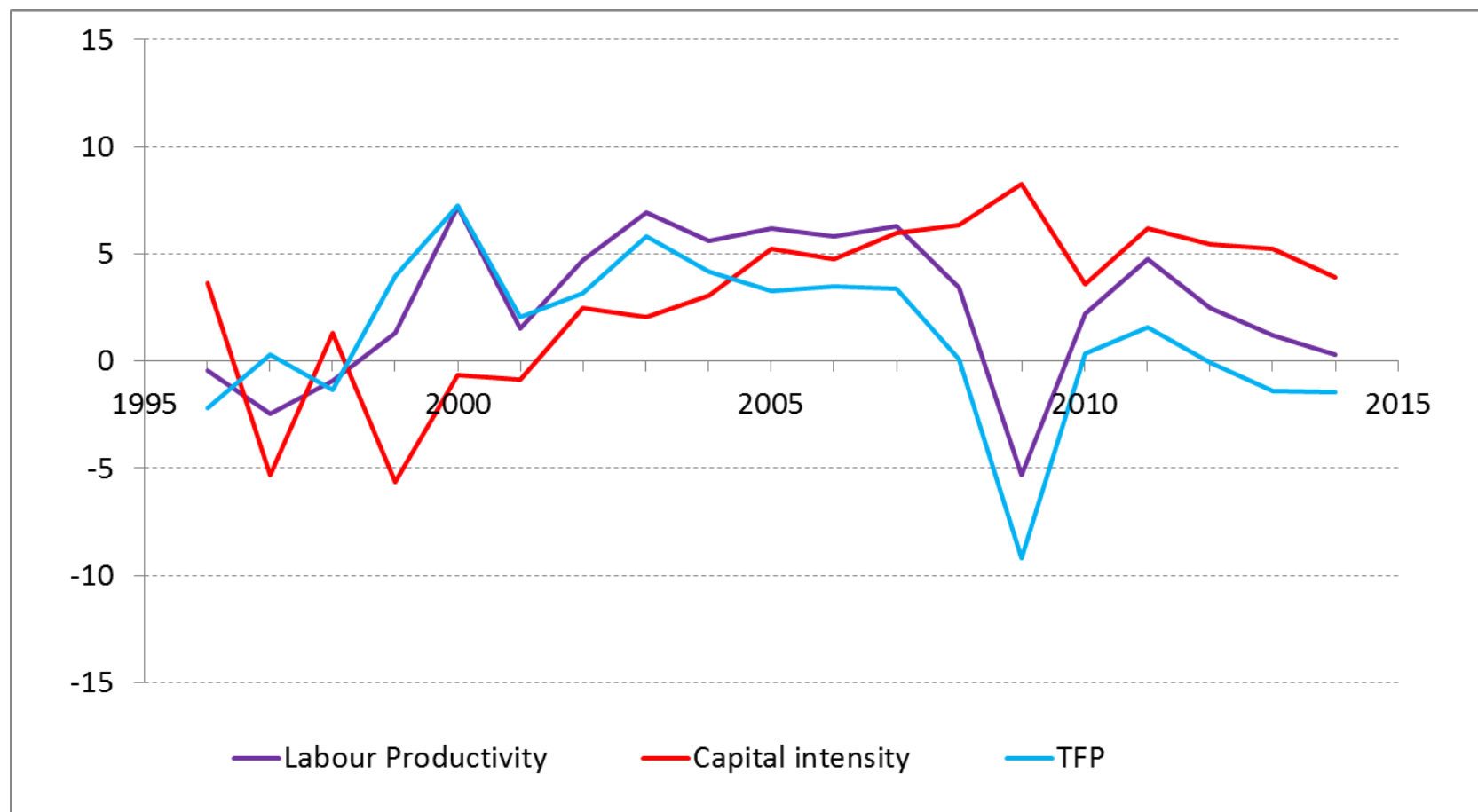


## b. Total Factor Productivity



Source: TED database (adjusted version), May 2017

# Productivity Growth since 1990 in Russia (annual growth rates)



Source: Russia KLEMS, March 2017; Market economy

# What happens with productivity growth in Russia after 2008?

- Stagnation of 2008-2014 is
  - *more* the outcome of
    - efficiency (aggregate TFP) slowdown
    - TFP slowdown could start before 2008, following the global economy pattern
  - *less* – lack of capital
    - Partially this could be the measurement issue, but in 1995-1998 my approach could catch capital intensity slowdown

# Literature: what has been changed in sources of growth after the crisis of 2008?

- TFP decline; Russia KLEMS: (Voskoboynikov, Kapelyushnikov 2014; Voskoboynikov, Solanko 2015; Timmer, Voskoboynikov 2016).
- Growth sources before 2008 – see review in Timmer, Voskoboynikov (2014)
- Structural changes, labour productivity growth and the impact of informality expansion – Voskoboynikov,, Gimpelson (2017)
- Change in the contribution of capital input – Kaitila (2016)

# Literature

- Global productivity slowdown
  - Global economy: (Ark et al 2015)
  - OECD: (Demmou et al. 2015)
  - US (Byrne et al. 2016; Fernald et.al. 2017)
- Growth sources before 2008 – see review in Timmer, Voskoboynikov (2014)
- TFP as main source of Russian growth: (Entov, Lugovoy 2013; Jorgenson, Vu 2013)
- TFP decline; Russia KLEMS: (Voskoboynikov, Kapelyushnikov 2014; Voskoboynikov, Solanko 2015; Timmer, Voskoboynikov 2016; World Bank 2017).
- Structural changes, labour productivity growth and the impact of informality expansion – Voskoboynikov, Gimpelson (2017)

# The Niche and Research Question

- Rich literature on growth accounting for Russia,
- Little is known in terms of comparisons of proximate sources of Russian growth before and after the crisis of 2008
- What has changed in proximate sources of labour productivity growth after the global crisis of 2008?
- ANSWER:
  - There are changes, but mostly *not* because of the crisis



# Approach

(Jorgenson, Ho, Stiroh 2005; Stiroh 2002):

$$(1) \quad \Delta \ln Z_j = \bar{v}_{K,j}^Z \Delta \ln K_j + \bar{v}_{L,j}^Z \Delta \ln L_j + \Delta \ln A_j$$

$$(2) \quad \Delta \ln Z \equiv \sum_j \bar{v}_{Z,j}^{GDP} \cdot \Delta \ln Z_j =$$

$$= \sum_j \bar{v}_{Z,j}^{GDP} \cdot \bar{v}_{K,j}^Z \cdot \Delta \ln K_j + \sum_j \bar{v}_{Z,j}^{GDP} \cdot \bar{v}_{L,j}^Z \cdot \Delta \ln L_j + \sum_j \bar{v}_{Z,j}^{GDP} \cdot \Delta \ln A_j,$$

$$(3) \quad \begin{aligned} \Delta \ln z &= \sum_j \bar{v}_{Z,j}^{GDP} \cdot \Delta \ln z_j + \left( \sum_j \bar{v}_{Z,j}^{GDP} \cdot \Delta \ln H_j - \Delta \ln H \right) = \\ &= \sum_j \bar{v}_{Z,j}^{GDP} \cdot \Delta \ln z_j + R = \\ &= \sum_j \bar{v}_{Z,j}^{GDP} \cdot \bar{v}_{K,j}^Z \Delta \ln k_j + \sum_j \bar{v}_{Z,j}^{GDP} \cdot \Delta \ln A_j + R, \end{aligned}$$

## Data: Russia KLEMS (March 2017)

### – Nominal value added

- 2003-2014 – official
- 1995-2003 – official in the old industrial classification (OKONKh); official bridges btw OKONKh & NACE 1.0 for GO; VA/GO ratios for similar industries for both classifications

### – Real value added

- 2003-2014 – official
- 1995-2003 – official backcast estimations of gross output (Bessonov et al 2008)

## Data: Russia KLEMS (March 2017)

### – Labour services

- 2005-2014 – official balance of labour inputs; hours worked
- 1995-2005 – growth rates of the yearly average number of workers from the Balance of Labour Force (BLF); breaking down with data of organizations
- Imputations of hours worked in non-market households in agriculture in 1995-2005

### – Inputs shares in value added

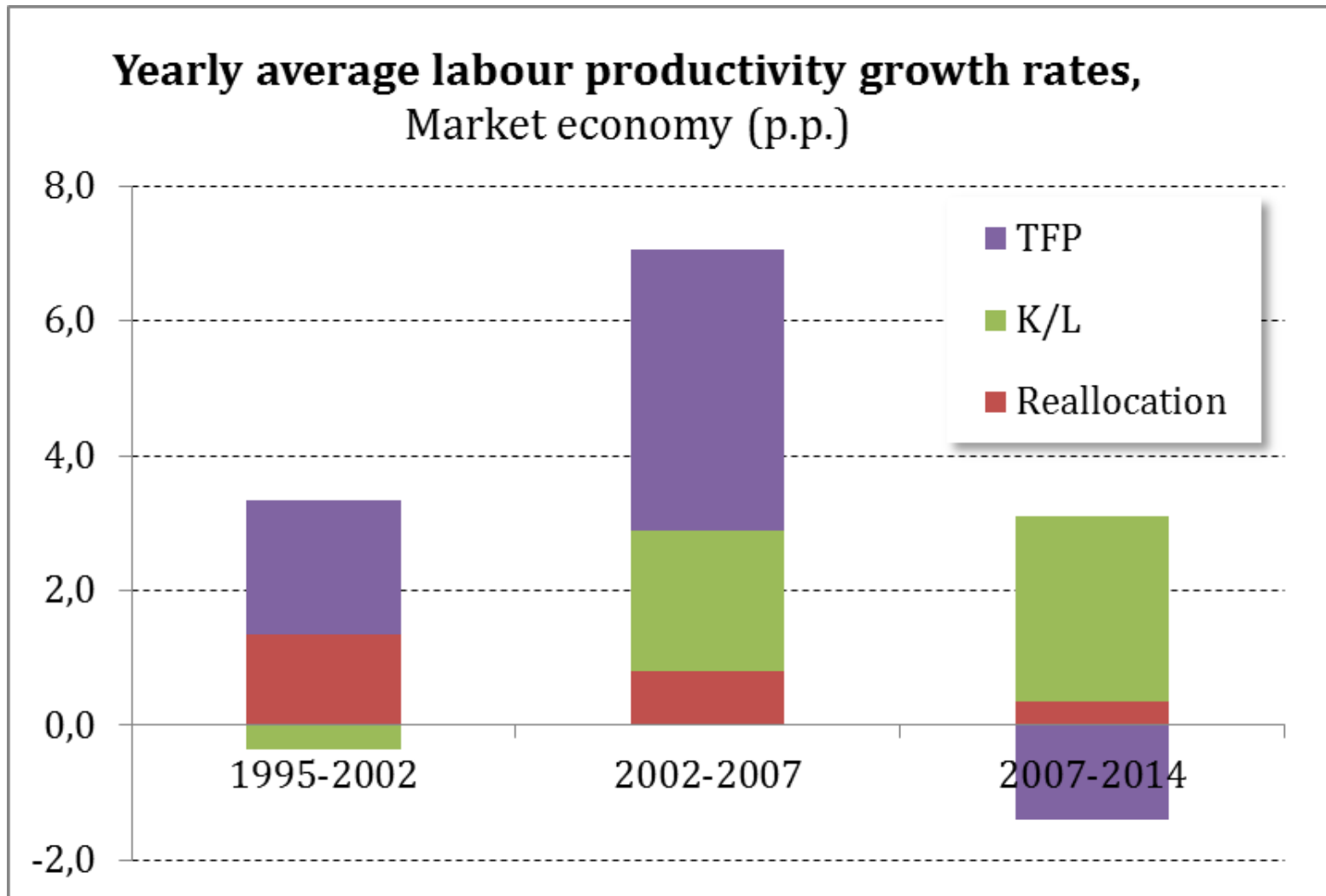
- SNA + imputations on self-employed

# Data: Russia KLEMS (March 2017)

## – Capital services

- Initial capital stock by types of assets
  - Balance of Fixed Assets, net stocks by 1 January 1995 after the revaluation
  - Breaking down by 8 types of assets with the data of SurveyF11
  - Bridging btw NACE 1 and OKONKh: official bridge for investments in 2003 года (78 industries in OKONKh – 35 industries of NACE 1)
- Investment deflators
  - Production price indices in construction
    - » Installation and construction work
    - » Machinery and equipment
    - » Miscellaneous

# Is Russian growth sustainable?



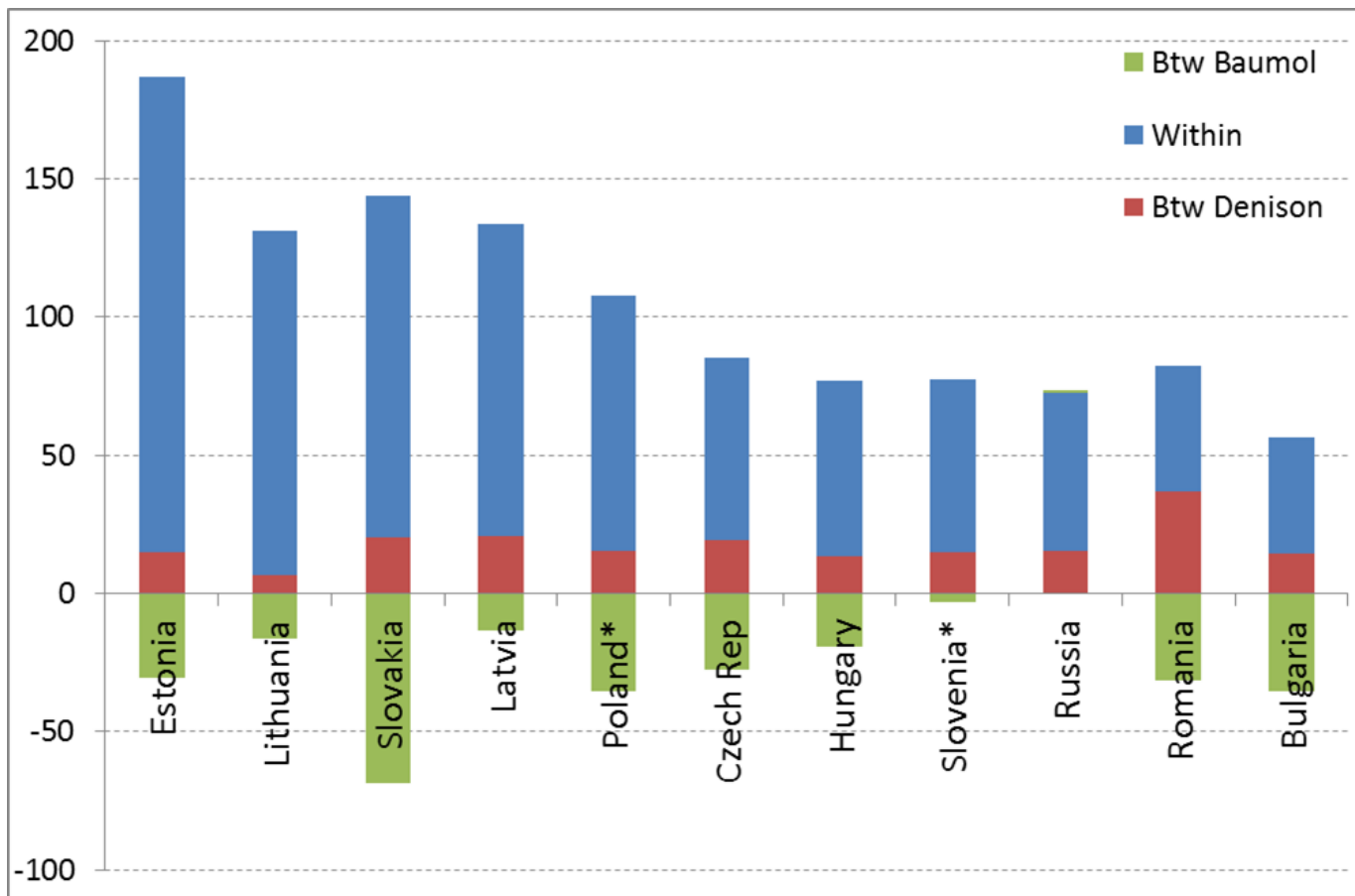
Source: Russia KLEMS, March 2017

# Structural change in aggregated sectors

	VA share (%)		Growth rates (%)	Contributions (pp)
	1995	2014	1995-2014	1995-2014
<b>Total economy</b>	100,0	100,0	3,47	3,47
<b>Market economy</b>	86,1	80,9	3,60	3,00
<b>Agriculture</b>	7,6	4,2	1,39	0,08
<b>Extended Oil and Gas sector</b>	20,1	24,2	3,59	0,80
<b>Manufacturing</b>	22,4	14,9	2,15	0,40
<b>Retail, construction, telecom, hotels &amp; restaurants (RCT)</b>	19,2	18,6	4,07	0,77
<b>Finance &amp; Business Services</b>	5,1	12,0	8,41	0,72
<b>Transport</b>	11,7	6,9	2,55	0,24
<b>Nonmarket services</b>	13,9	19,1	2,79	0,46

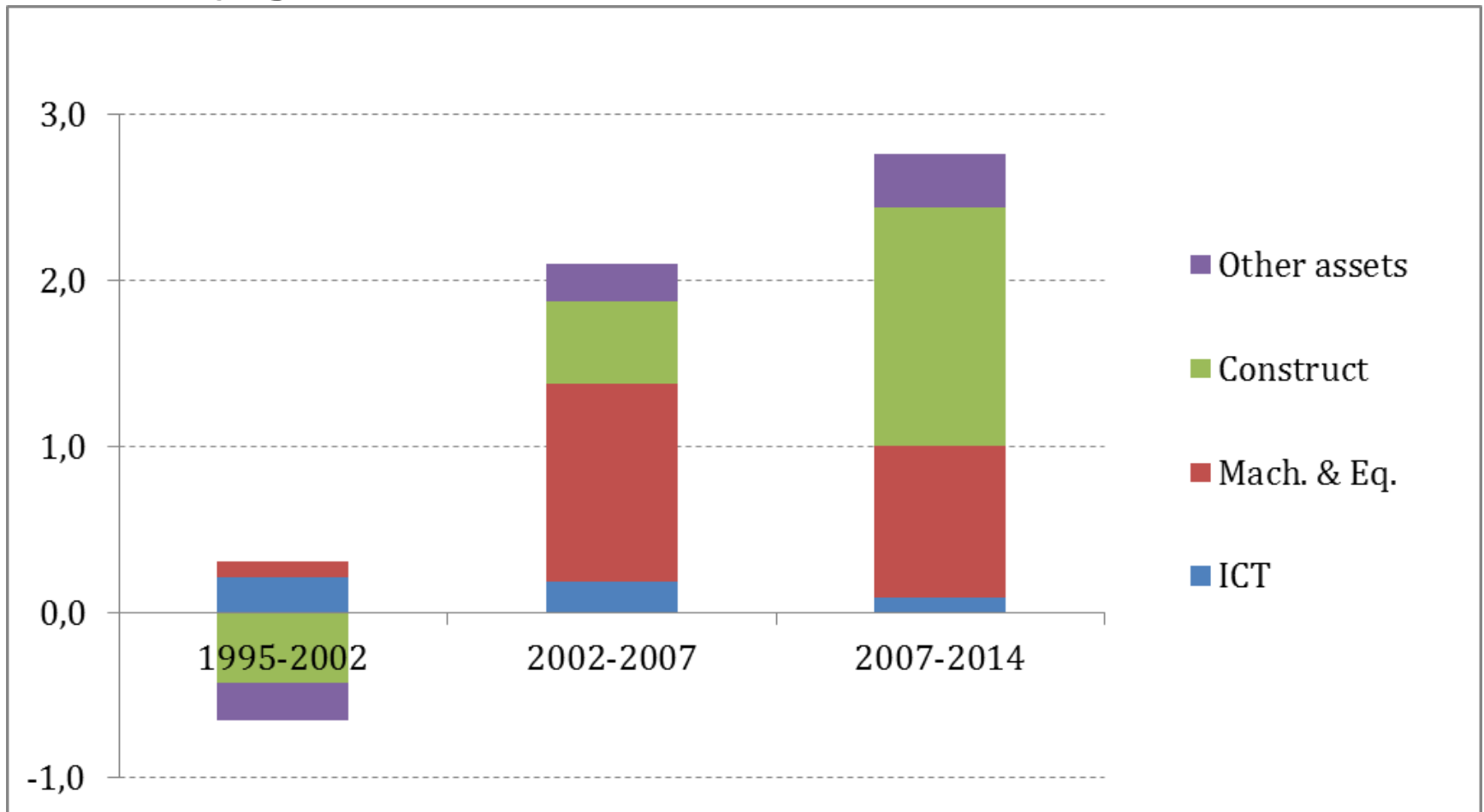
Source: Russia KLEMS, March 2017

# Intra-industry labour productivity growth rates and reallocation in the comparative perspective (1995-2007)



Source: EU KLEMS; Russia KLEMS, July 2013; approach: (Tang, Wang 2004)

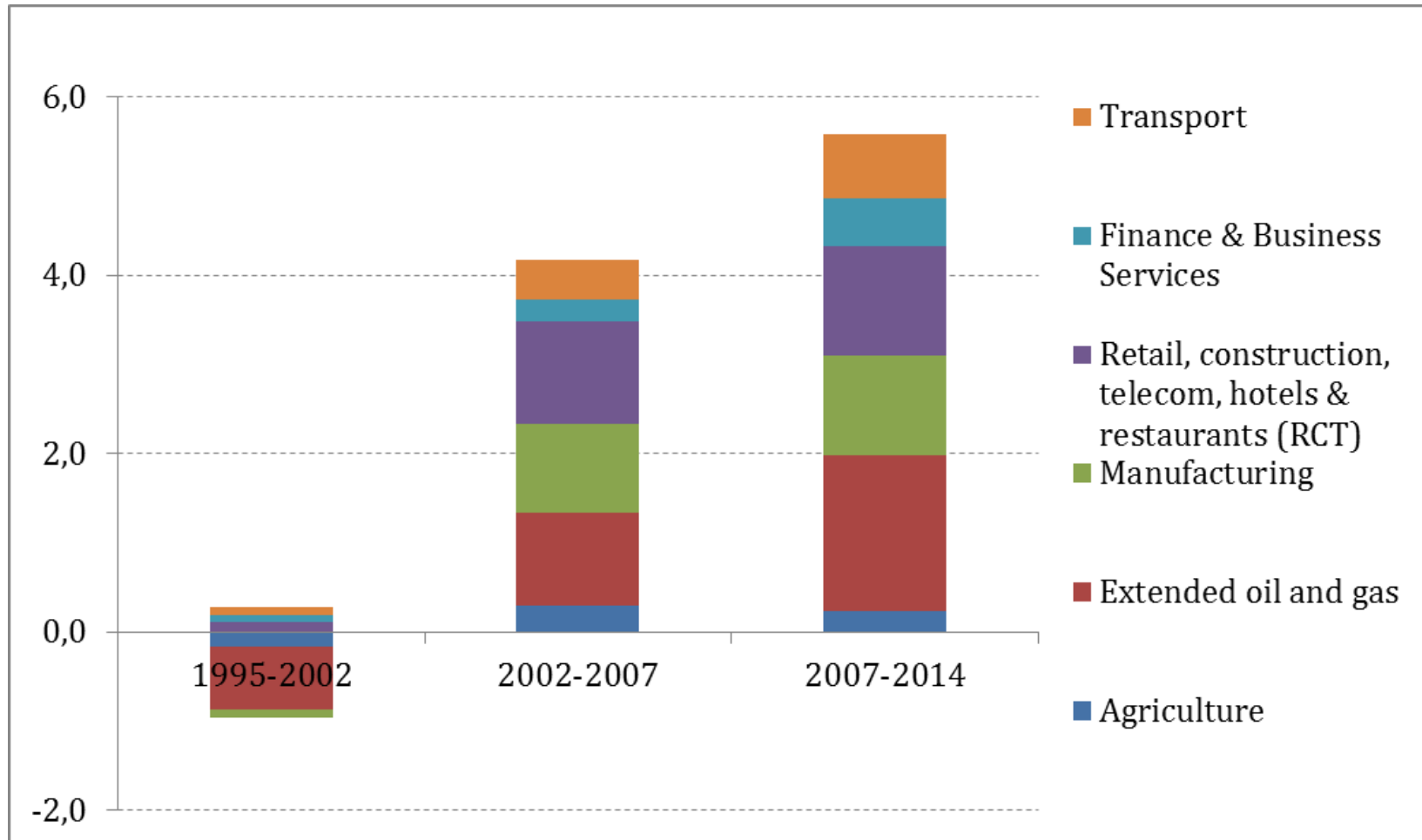
# Contributions of types of assets to aggregate capital intensity growth



Source: Russia KLEMS, March 2017

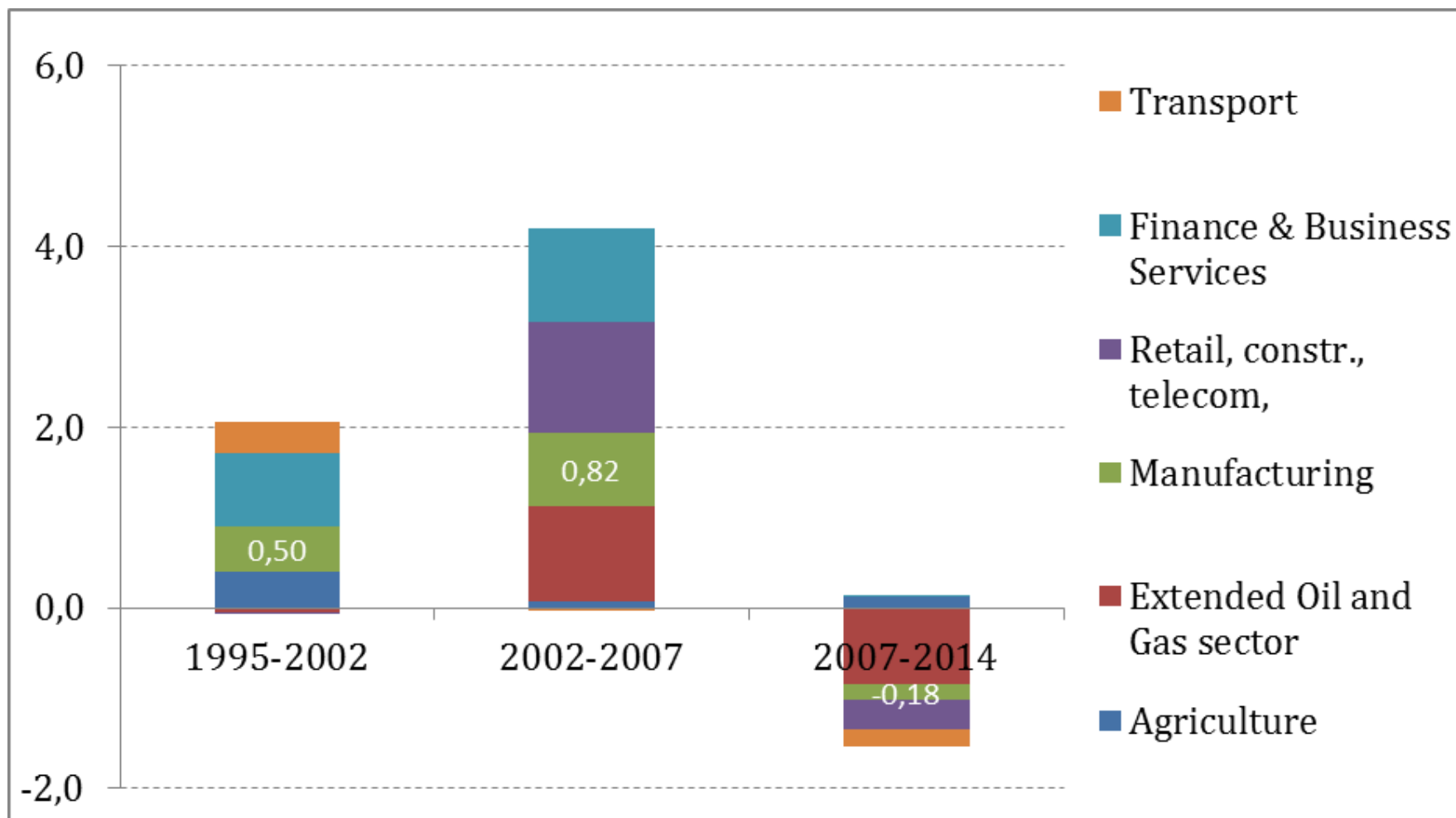


# Sectoral structure of aggregate capital intensity growth



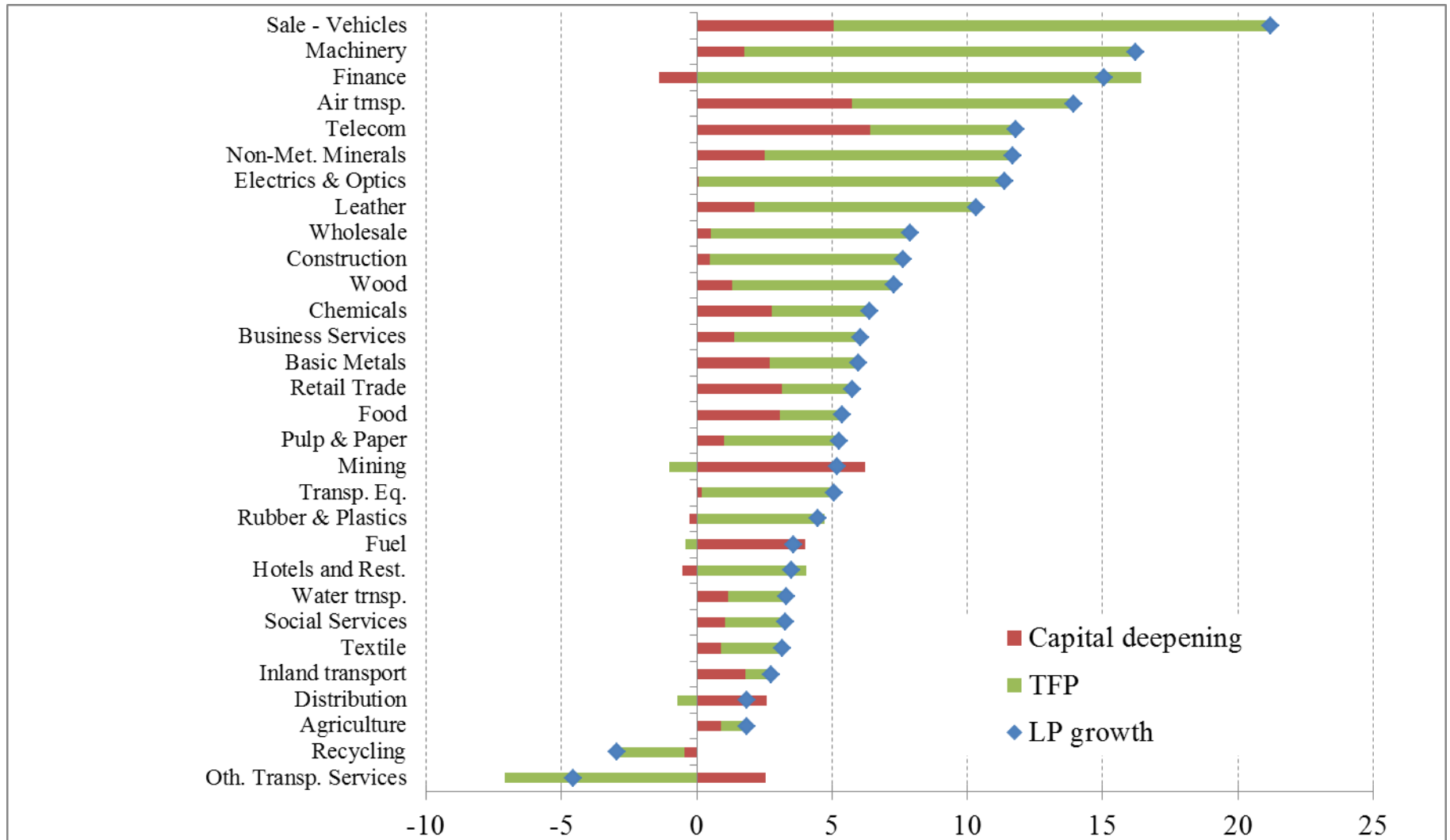
Source: Russia KLEMS, March 2017

# Sectoral structure of aggregate TFP growth



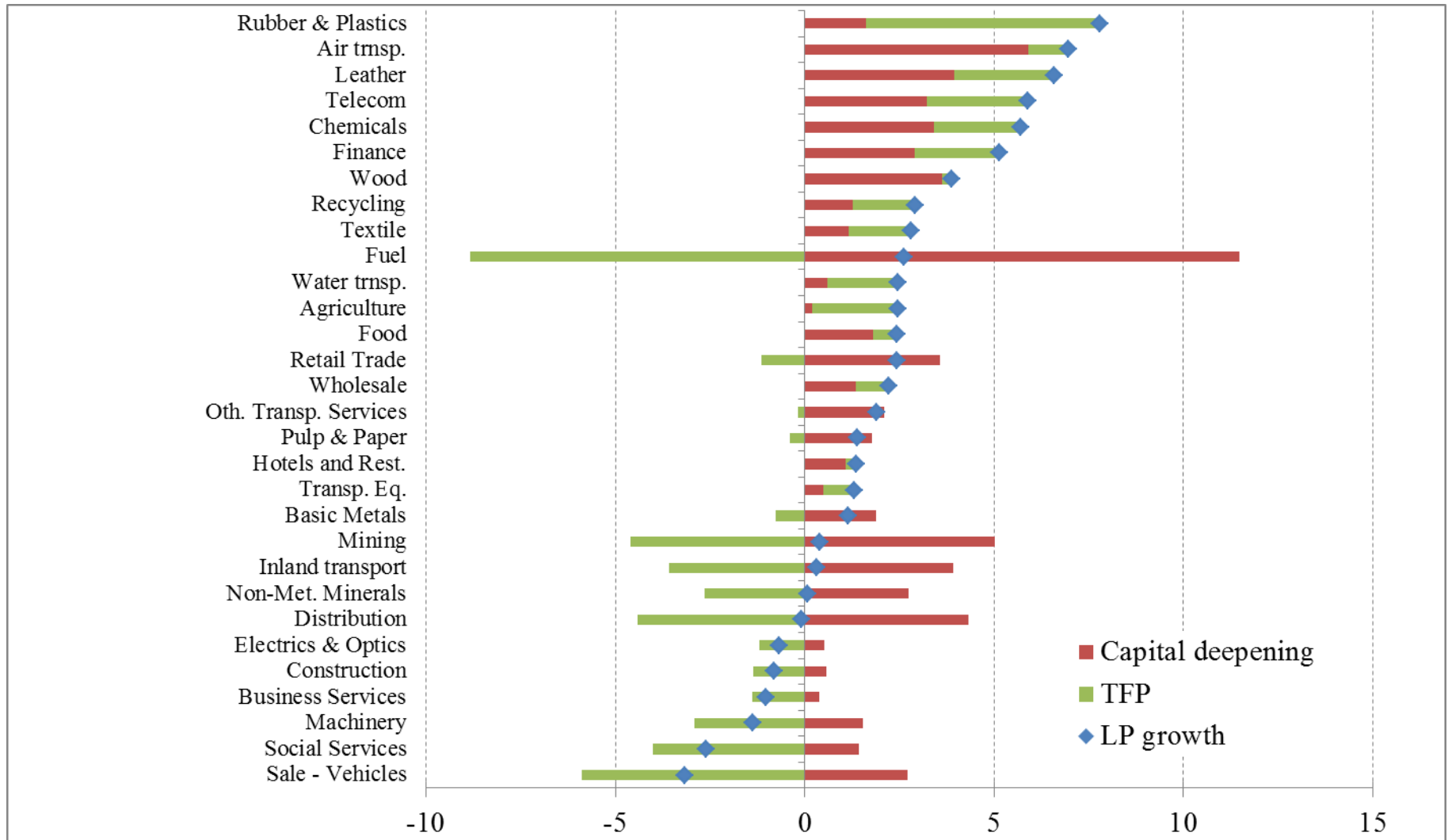
Source: Russia KLEMS, March 2017

# Labour productivity growth decomposition (p.p.) 2002-2007



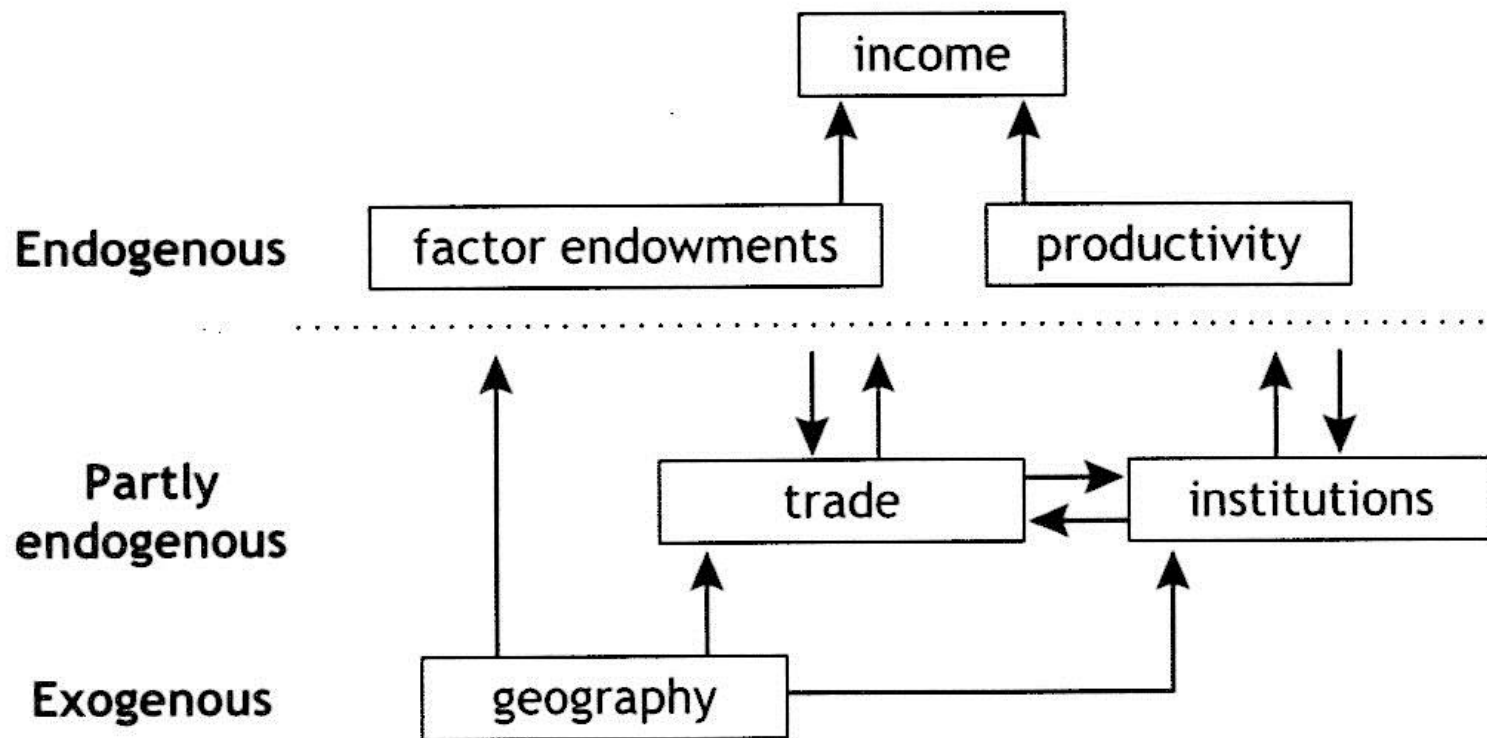
Source: Russia KLEMS, March 2017

# Labour productivity growth decomposition (p.p.) 2007-2014



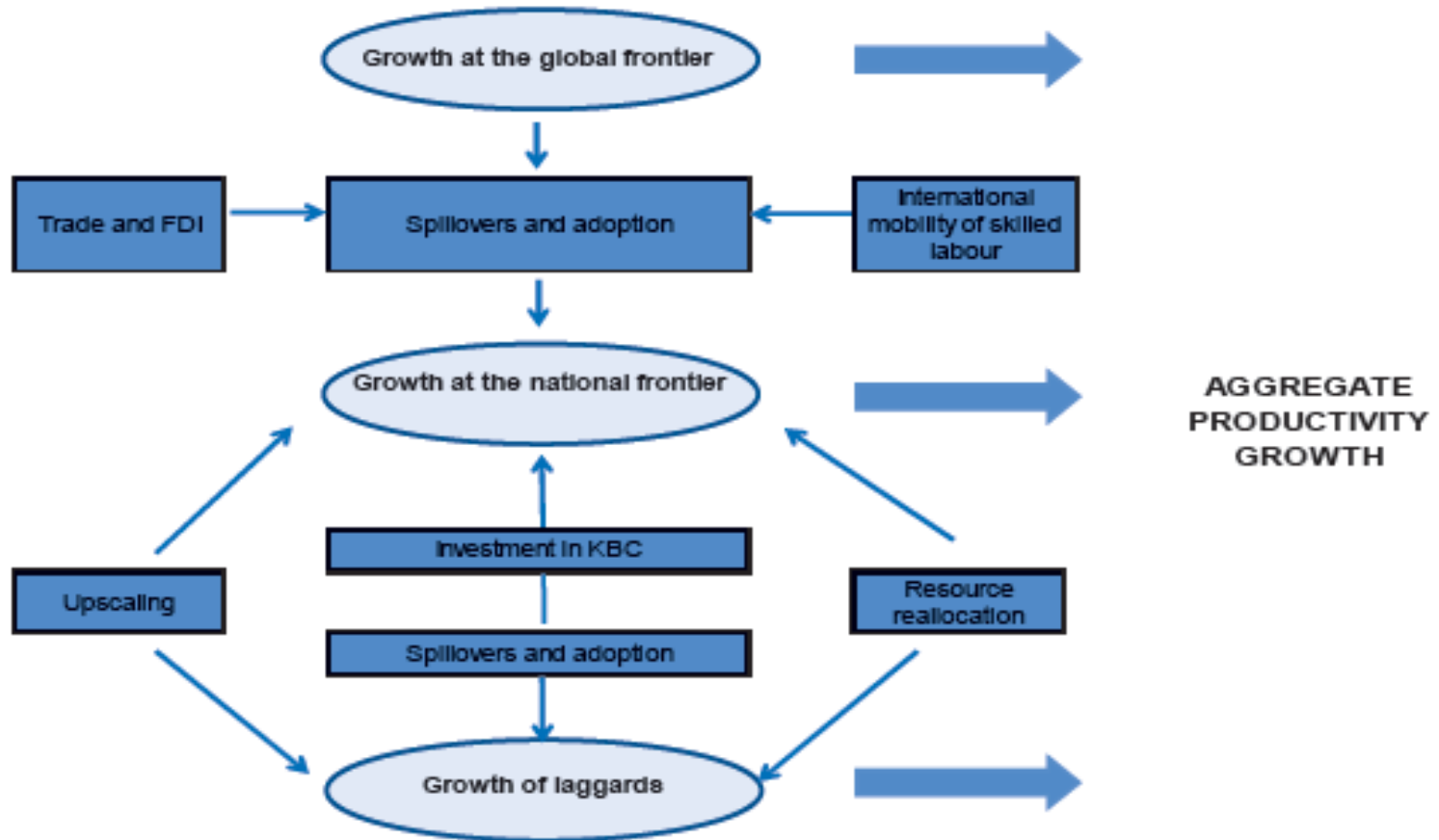
Source: Russia KLEMS, March 2017

# Limitations: productivity is the proximate source of growth



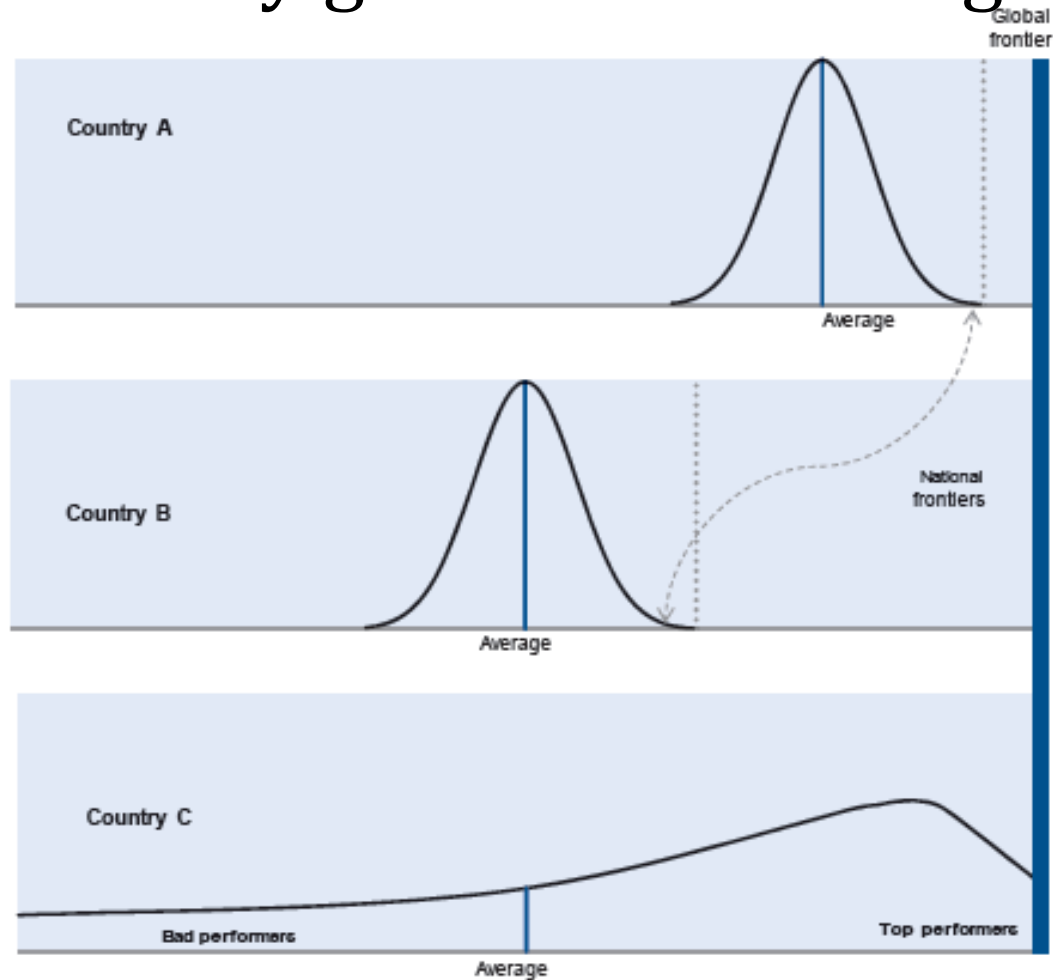
Source: Rodrik, D. (2003) (ed.) *In Search of Prosperity*. Princeton Univ. Press

# Limitations: what we do not observe with industry growth accounting?



Source: OECD 2015. "The Future of Productivity"

# Limitations: what we do not observe with industry growth accounting?



*Source:* OECD 2015. "The Future of Productivity"

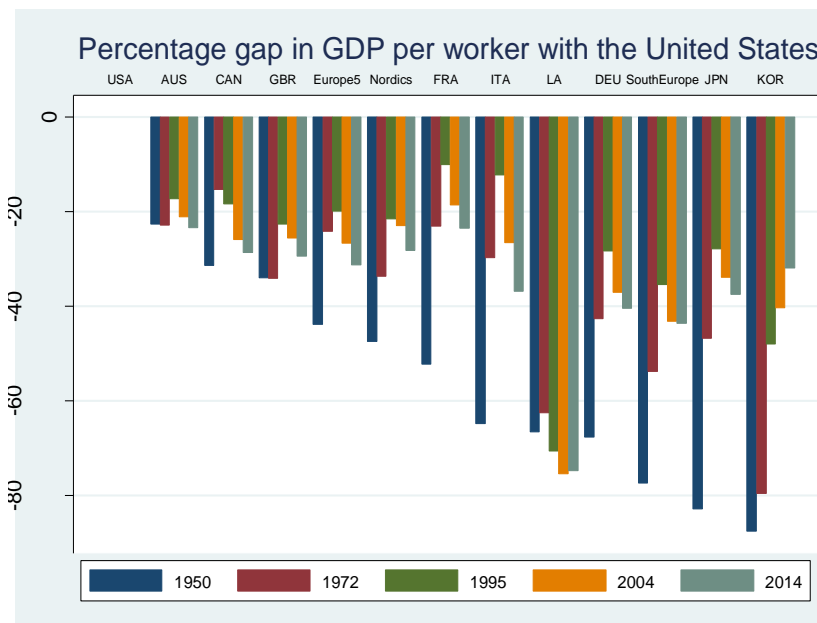
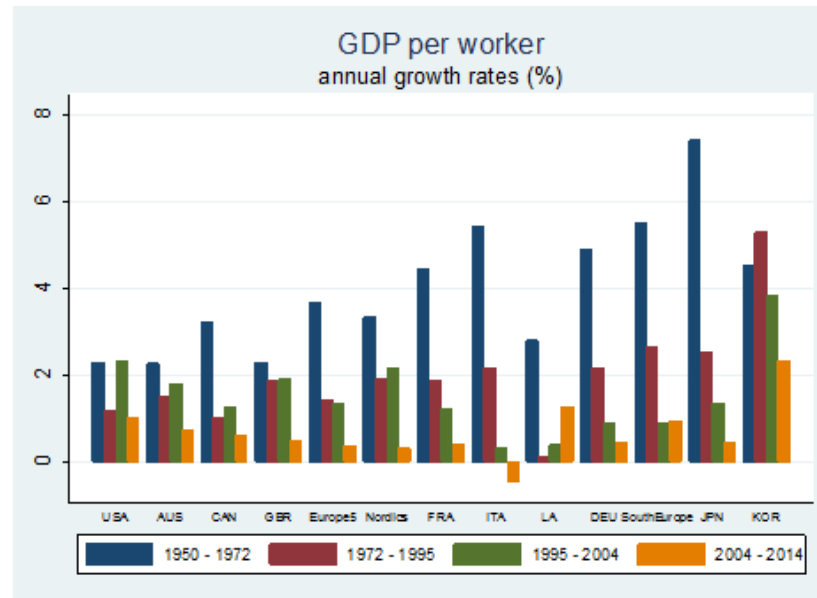
# What happens with productivity growth in Russia after 2008?

- Stagnation after 2008 is
  - More - the outcome of
    - efficiency (TFP) slowdown *in industries*
    - worsening inputs' allocation
  - less – lack of investments (1995-2002 vs 2008-2014)
    - The impact of capital services was determined by
      - machinery and equipment – before 2008
      - infrastructure – after 2008



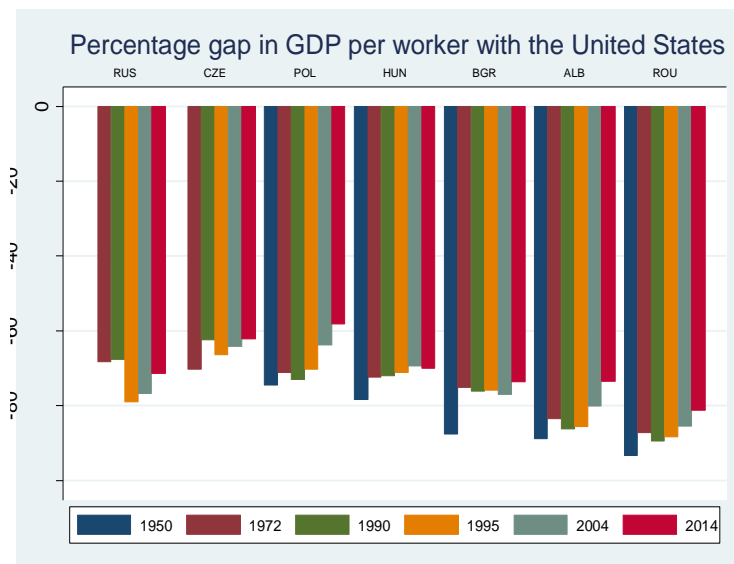
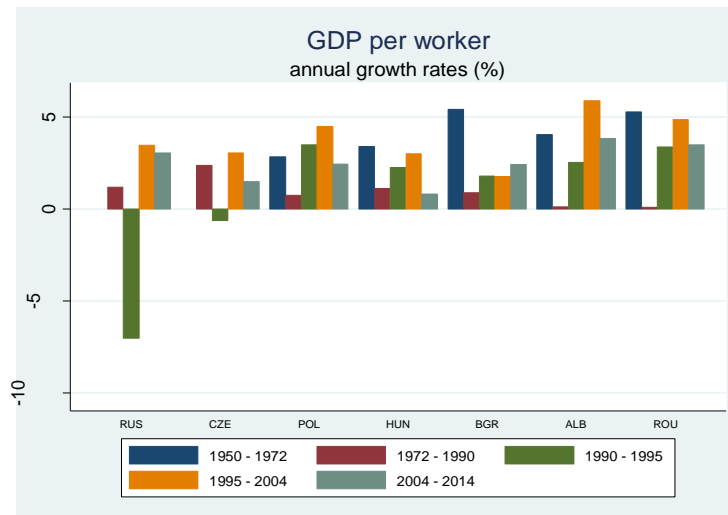
Спасибо за внимание!

# Долгосрочные тенденции производительности



Источник: TED  
database, release 06-  
2015

# Долгосрочные тенденции роста производительности



Источник: TED  
database, release 06-  
2015