



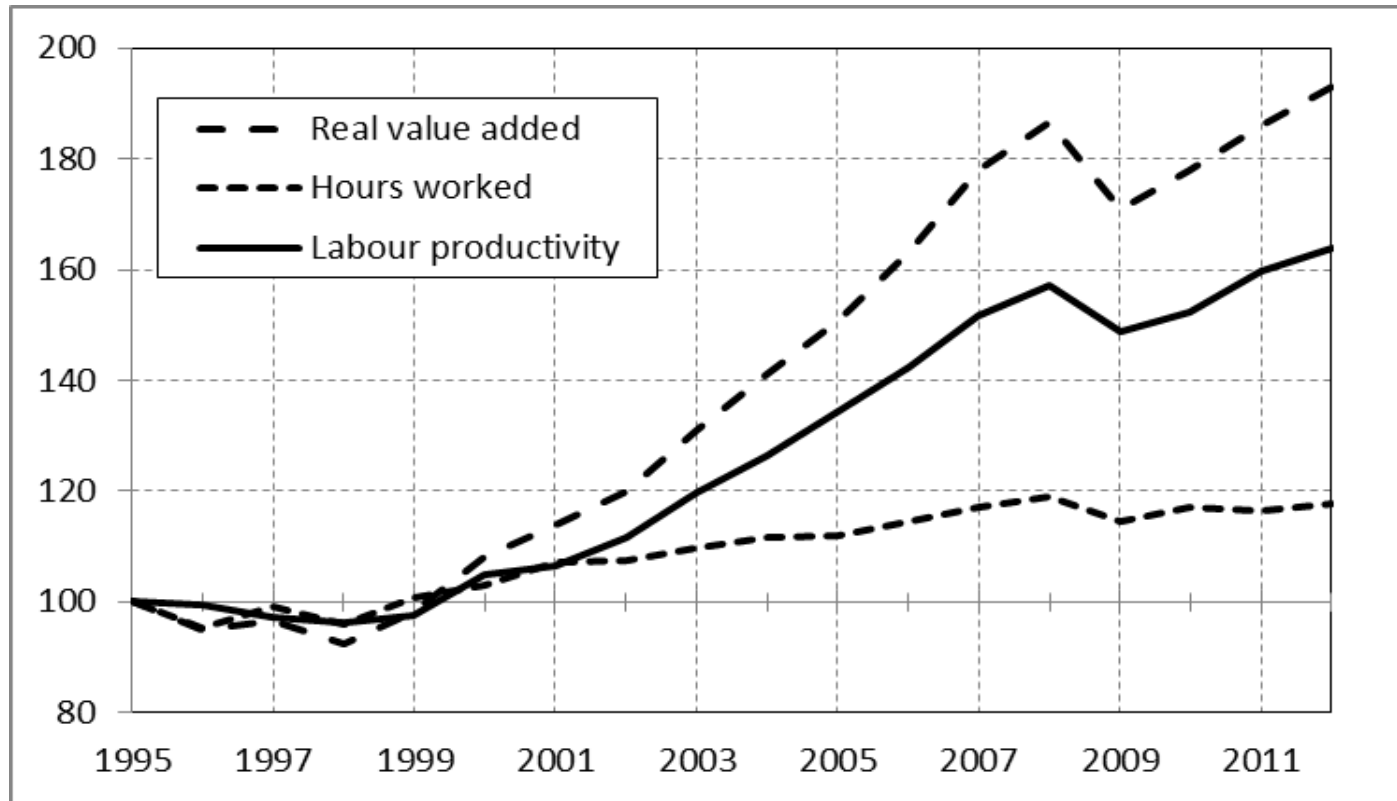
Productivity, Structural Change and Informality: the Case of Russia

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Growth in Value Added, Hours and LP



Purpose of the paper

- To explore how structural change in the Russian economy affects aggregate labour productivity growth, the dominant contributor to strong output growth in Russia after 1999.
- To take into account the role of informal segments in aggregate productivity growth.

Outline of the presentation

- Methodology
- Data
- Trends in output and productivity
- Results on the role of structural change

Decomposition

- The growth in labour productivity can be decomposed into two components: a within component and a between component.
- The within component captures the growth at the industry level from investments and MFP.
- The between component measures the role of structural change.

Decomposition- TRAD

$$(5) \quad \bar{\gamma} = \sum (s_{\bar{\gamma},n}^0 \bar{\gamma}_n) + \sum (s_{\bar{\gamma},n}^0 \sigma_n) + \sum (s_{\bar{\gamma},n}^0 \sigma_n \bar{\gamma}_n)$$

- gamma: labour productivity growth
- s: share of industry in aggregate value added
- delta: growth rates of industry labour shares
- The first term is the within component, and the second and third terms are the between component (static or Denison; dynamic or Baumol)

Limitation of TRAD

- When labour is reallocated towards the industry with a lower level of productivity, it is expected to have a negative effect on aggregate productivity growth.
- But TRAD shows that the contribution of that industry to the reallocation term is positive.

Decomposition - CSLS

$$(7) \quad \bar{\gamma} = \sum (s_{\bar{\gamma},n}^0 \bar{\gamma}_n) + \sum \sigma_n (s_{\bar{\gamma},n}^0 - s_{L,n}^0) + \sum \sigma_n (s_{\bar{\gamma},n}^0 \bar{\gamma}_n - s_{L,n}^0 \bar{\gamma})$$

- CSLS decomposition addressed the limitation.
- The productivity of an industry is compared with that of aggregate industry to evaluate reallocation effect.
- When labour is reallocated towards the industry with a lower level of productivity, CSLS decomposition shows that it has a negative contribution to reallocation effect.

Decomposition –GEAD

- TRAD and CSLS decompositions assume that output in constant dollars are additive.
- GEAD by Tang and Wang relaxed the assumption.

Decomposition – GEAD

- The decomposition is similar to TRAD, but weights are different.
- The weights for aggregating labour productivity across industries are industry labour shares times industry relative prices.
- This has a big implication. The industries that experience increases in their relative prices contribute positively to productivity growth.

Decomposition-Diewert

- The fourth decomposition adopted in the paper is the extension of GEAD by Diewert.
- It suggests an alternative split of the reallocation effect between labour reallocation and changes in industry relative prices.

Data

- Industry-level time series data on nominal value added, real value added, and labour input, from Russia KLEMS for 30 industries of the market sector (Timmer and Voskoboynikov 2014).
- The series are split into formal and informal segments. A worker is classified as an informal one if that worker is *not* engaged in the corporate sector.

Structural changes

Sectors	Value Added 1995	Value added 2005	Value Added 2012	Hours worked		
				1995	2005	2012
Total market economy	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture	8.8	5.8	4.8	34.6	28.6	26.3
Manufacturing	26.0	20.7	18.6	23.3	20.5	19.0
Extended Mining	23.4	31.3	33.2	4.3	5.6	5.7
Construction, Retail and Telecom	22.2	21.8	22.4	24.3	32.1	34.5
Transport	13.6	9.0	7.8	7.1	7.1	7.4
Finance and Business Services	5.9	11.4	13.2	6.4	6.1	7.2

Share of informal segments in hours

	2005	2012
Total market economy	43.84	44.81
Agriculture	79.71	82.68
Manufacturing	12.12	15.41
Extended Mining	38.20	35.35
Construction, Retail and Telecom	44.83	44.77
Transport	21.43	27.17
Finance and Business Services	8.06	9.74

TRAD, no split 1995-2012

	Total	Within	Between
	1 = 2 + 3	2	3
Total market economy	92.5	71.3	21.2
Agriculture	1.6	4.6	-3.0
Manufacturing	9.8	13.6	-3.8
Extended Mining	29.1	19.0	10.1
Construction, Retail and Telecommunications	24.8	13.2	11.6
Transport	5.1	4.7	0.4
Finance and Business Services	22.2	16.2	6.0

TRAD, 2005-2012

$\frac{1}{2}$	$1 = 2+3 = 4+5$	No informal split		Informal split	
		Within 2	Between	Within 4	Between 5
Total market economy	28.01	23.54	4.47	24.40	3.61
Agriculture	0.40	0.96	-0.56	1.34	-0.94
Manufacturing	1.36	2.54	-1.18	3.46	-2.10
Extended Mining	8.28	8.02	0.27	7.09	1.19
Construction, Retail and Telecom	8.91	6.94	1.96	7.01	1.90
Transport	1.26	0.94	0.32	1.53	-0.27
Finance and Business Services	7.80	4.13	3.67	3.97	3.83

CSLS, informal split, 2005-2012

	Total	Within	Between total
	1 = 2 + 3	2	3
Total market economy	28.01	24.40	3.61
Agriculture	2.76	1.34	1.42
Manufacturing	2.87	3.46	-0.59
Extended Mining	8.21	7.09	1.12
Construction, Retail and Telecom	6.45	7.01	-0.56
Transport	1.01	1.53	-0.53
Finance and Business Services	6.71	3.97	2.74

GEAD, informal split, 2005-2012

	Total	Within	Between total
	1 = 2 + 3	2	3
Total market economy	26.10	24.40	1.69
Agriculture	0.18	1.34	-1.16
Manufacturing	2.82	3.46	-0.64
Extended Mining	10.56	7.09	3.47
Construction, Retail and Telecom	6.47	7.01	-0.54
Transport	0.78	1.53	-0.75
Finance and Business Services	5.28	3.97	1.31

A comparison of methods, 2005-2012

	Total Reallocation effect	Denison effect	Baumol effect
	1 = 2 + 3	2	3
TRAD/CSLS, NO informal split	4.47	3.44	1.03
TRAD/CSLS, informal split	3.61	2.85	0.76
GEAD, NO informal split	2.56	4.38	-1.82
GEAD, informal split	1.69	3.66	-1.97

Conclusions

- Labour reallocation was growth enhancing. In 1995-2012 it provided more than one fifth of aggregated labour productivity growth rates.
- For the period 2005-2012, the expansion of the informal employment contributed negatively to aggregate labour productivity.
- The results are robust to alternative decomposition. But the contribution of industries differs.

Comments

- It will be useful to discuss the purposes of those alternative decompositions.
- Do the large and growing importance of informal segments in the Russia economy represent distortions or misallocation in the economy?
- To split the period to 1995 to 2009 and 2009-2012 to evaluate the effect of financial crisis.