UNIVERSITÄT POTSDAM

WIRTSCHAFTS- UND SOZIALWISSENSCHAFTLICHE FAKULTÄT

VOLKSWIRTSCHAFTLICHE DISKUSSIONSBEITRÄGE

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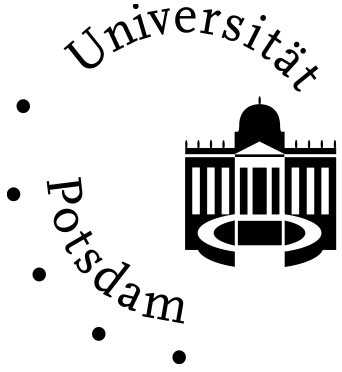
Structural Change during Transition: Is Russia Becoming a Service Economy?



Diskussionsbeitrag Nr. 80

Potsdam 2005

Structural Change during Transition: Is Russia Becoming a Service Economy?

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September 26, 2005

Abstract:

This paper analyses the structural change in Russia during the transition from the planned to a market economy. With regard to the famous three sector hypothesis, broad economic sectors were formed as required by this theory. The computation of their shares at GNP at market prices using Input-Output tables, and the adjustment of results from distortions, generated as side effects of tax avoidance practices, shows results that clearly reject claims that Russia would be on the road to a post-industrial service economy. Instead, at least until 2001, a tendency of "primarisation" could be observed, that presents Russia closer to less-developed countries.

1. Introduction

Nearly 20 years ago the Soviet Union incurred first commitments to conversion. The hopes that the scientific-technical potential of the Soviet military-industrial complex (MIC) could raise the quality of civilian goods to reach competitiveness approved shortly to be overstated. Instead, the general fall of production was stopped by extended exploitation and exports of mineral resources and slightly refined products. Since 1999 the Russian economy has been showing stable growth (see fig. 1 p. 2).

The structural change that accompanies this development is frequently discussed on the background of the traditional three sector hypothesis[1]. Some authors use a reference structure extracted from data from (more or less) developed market economies to show the distortions of planned economy (oversized heavy industrial sector, absence of market services) and to predict the time required for their overcoming.[2] Other papers

1. See Fisher (1939), Clark (1940), Fourastié (1949), and Wolfe (1955). For an overview of theoretical models of structural change see Kauffmann (2005b).
2. For example, Raiser et al. (2003), Lukyanova (2003), and World Bank (2004a) ch. C II examine the structure of employment; papers from Döhrn and Heilemann analyse the structure of output of several Eastern European transition countries, see e.g. Döhrn/Heilemann (1991), Döhrn/Heilemann (1996).

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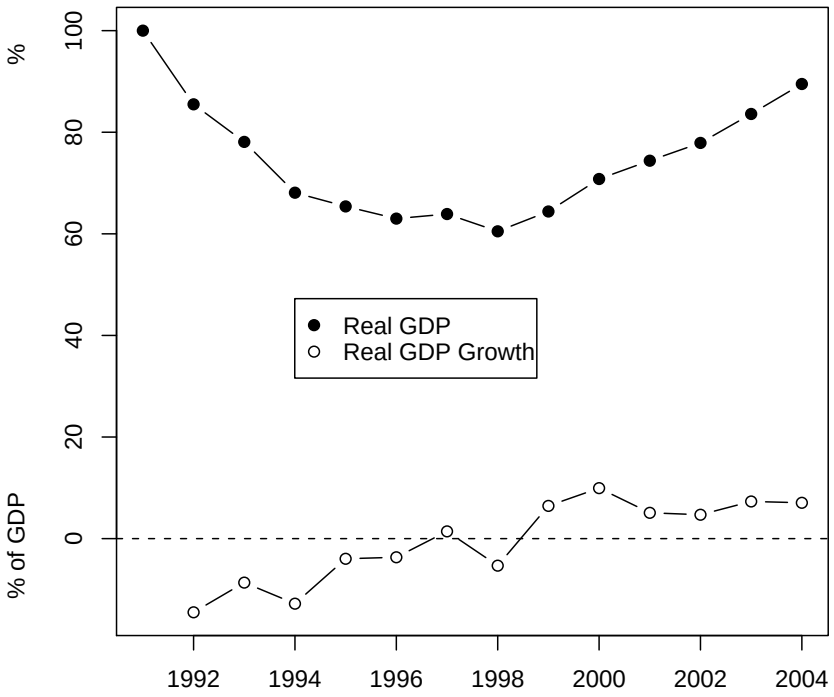


Source: Goskomstat 2005; own computations

Fig. 1: Russian Federation: Real GDP and Real GDP Annual Growth

focus more on the descriptive analysis of structural change or on qualitative aspects of statistical data.[3]

The present paper follows intentionally and methodically the last strand, furthermore it scrutinises the implicit application of three sector theory to construct economic sectors. It shows that already the use of sectoral GDP data at market prices and the inclusion of mining into the primary sector leads up to distinct different patterns of structural change compared with results based on the easily available (and most frequently employed) data at basic prices. Considering additionally the endeavour of Russian oil and gas companies (and other producers of raw materials) to shift profits from mining industry to trade – i.e., the service sector – we'll see that the sectoral structure of the Russian economy assumes features similar to those of less-developed countries (LDC). This clearly contradicts the view of some authors seeing Russia on the road to a post-industrial service economy.[4]

But, other than LDCs, the general level of education, skills and employability is high in Russia. In many enterprises and research institutes – most of them belonging

3. See, amongst others, World Bank/Goskomstat (1995), Tabata (1996), Schroeder (1998), and Kuboniwa (1999).
4. See e.g. Hishow (2003) p. 33, Lukyanova (2003) p. 36 et seq.

to the MIC – technologically advanced production methods were developed and applied. With the end of their secrecy, they should be at the whole economy's disposal. According to some approaches of New Growth Theory,[5] this could promote economic growth, exploiting possibly existing"advantages of backwardness".[6] To trace such developments, some indexes of economic output of branches or goods, respectively, were analysed, in addition to the investigation of nominal GNP structure so far. The outcome of this part of analysis hardly reveals any recovery of technologically advanced production.

The paper is organised as follows: Section 2 deals with problems of quality and comparability of data from diverse sources. Section 3 focuses on presentation of structural change of Russian BIP. Section 4 investigates output indices of industrial branches and of selected goods. Section 5 tries to find some explanations of the results so far looking at the relations between conversion and structural change. Section 6 concludes.

2. Data sources

The process of transition of the economy has to be understood as one part of the transition of many fields and institutions of the Russian society, that partially are very tight and interdependently connected. This clearly holds for the relationship of policy, official statistics and economy: Official economic statistics collects and summarises information about activities of economic entities; it provides statistical parameters, indices etc. that are one foundation of decision making by the designers of transformation in policy and economy; and it is committed to its government contract formulated by institutions that are themselves subject of the transformation process. Therefore, choice, methods of organisation, and publication of data are subjected to permanent change that must be attended for any interpretation.[7]

In the first instance this concerns the usage of Russian price indices.[8] Goskomstat provides price indices both for the aggregated economy, and for economic sectors or industries as well, but their shortcomings – unpublished weights of frequently changing baskets, amongst others – make them inappropriate for the analysis of structural change.[9] Besides sectoral data in current prices, industrial production indices can provide some information in place of values in real terms.[10] The way to get a comprehensive impression of the structural change that happened is to extract information out of several kind of data. I'll use GNP data in current prices, GNP deflators, production indices and index numbers of individual goods in an incremental disaggregated manner. This analysis is restricted to the examination of output data. Input data have their own peculiarities, that would go beyond the scope of this paper.

An important question is the demarcation of broad economic aggregates. Particularly the classification of mining has a strong impact on the resulting pattern of economic

5. See, e.g., Romer (1987).
6. See Gerschenkron (1962), and Gries/Jungblut (1997).
7. See Kuboniwa/Gavrilenkov (1997) p. 23 et sqq.
8. See, e.g., Faber/Strohe (2000a) and Strohe/Faber (2000b).
9. See e.g. Bessonov (1998) and Bessonov (2002) p. 11–20.
10. See Bessonov (2002).

structure just of a resource abundant country like Russia. In the past researchers dealt with this question in different ways. While KUZNETS and FUCHS assign mining activities to the industrial (secondary) sector,[11] CLARK, CHENERY and other authors[12] vote for its assignment to the primary sector. I would argue, that the role of land and of manual labour for mining, the exceeding occurrence of scale effects and of diversification in manufacturing industries, and the ability of manufacturing to generate and to realise technical progress, should give reasons for the inclusion of mining into the primary sector. Furthermore, it is a precondition for catching up to the group of countries with higher per capita income, that a certain, not too small part of its production factors is employed in manufacturing. Their income can boost the demand for services if factor productivity is growing.

World Bank Development Indicators (WDI) provide data of sectoral value added (VA) at basic prices (i.e. plus subsidies less value added taxes). If these data are regarded as parts of gross national product (GNP) their shares don't add to one, and are hardly comparable through nations and over time. If their sum is seen as a whole, this artificial entity has no reasonable economic interpretation in case of different taxation or subsidisation of the sectors. Moreover, three sector theory is based on the assumption of economic exchange activities between individuals faced with market prices. Usage of sectoral data at basic prices can cause distortions that can be avoided. KUBONIWA (1999) provides methods to compute market prices from input-output (I-O) tables, they'll be applied in the next section.

Some limitation of comparability with data from market economies can arise from differences of classification systems. While national accounts of market economies apply ISIC[13] classification recommended by United Nations, Goskomstat uses the modified Soviet (now Russian) OKONKh[14] classification system. In principle one can aggregate OKONKh data to broad economic sectors accordingly to the three sector hypothesis, but there are, of course, some differences to sectoral data based on ISIC:[15]

- the ferrous and non-ferrous metallurgy sectors contain both mining and processing of ores. The former belongs to the primary, the latter to the secondary sector.

- Some utilities (e.g. supply of steam, hot water, and potable water) that ISIC counts to the secondary sector in OKONKh are assigned to the branch of communal services.

- Some services (e.g. repair of motor vehicles and other personal and household goods, cleaning of textiles, architectural services) are put into industry in the OKONKh.

- Some activities (e.g. computer-based data-processing, real estate activities, general market-supporting activities) collected under "Other industries" (OKONKh code 013) are services from ISIC.

11. See KUZNETS (1957) p. 5, KUZNETS (1971) p. 309, and FUCHS (1968) p. 16.
12. See CLARK (1940) p. 490 et sqq., WOLFE (1955), CHENERY/TAYLOR (1968) p. 392, and COOK/HALEY (1995).
13. International Standard of Industrial Classification of All Economic Activities
14. Obshcherossiyskiy Klassifikator Otrasley Narodnogo Khosyaistva, see e.g. GOSKOMSTAT (2002b).
15. For a more comprehensive list of differences see LUKYANOVA (2003).

Altogether, apart from the first point these deviations should not compromise the main trends and findings of examination, because their weight in the broad aggregates is rather light.

There are further peculiarities of Russian national accounts data, that are not caused by deficiencies of statistics but rather by practices of tax evasion and capital flight. Because mining activities are bearing the brunt of taxes, excises, duties, deductions, royalties, and fees, mining companies use several methods to shift as much as possible profits to their trade subsidiaries. As one consequence of this behaviour, the accounted share of service sector inflates, at the expense of the share of mining. Some proposals to deal with that are also discussed in the following section.

3. Evolution of sectoral structure, 1991–2004

On the highest level of aggregation (two sectors) some contours are clearly identifiable (see table 1 p. 6):

- The share of production of goods at BIP declines, the corresponding share of services increases
- The strongest movement in this vein took place in 1992
- The extremely vigorous slump of goods production 1992 was slightly corrected in the following year (not shown in Goskomstat (2005) and World Bank (2004c)).

The strong adjustments of 1992 are caused by different changes both of quantities and of prices of sectoral outputs (see tables 2 and 3). First, we find not any increase of value added in real terms in one of the sectors 1991–1994. The decline of real production value of services was far less pronounced compared to that one of goods. The average rise in prices of goods was far behind the tempestuous race of prices of services. 1993 the price increase of services flattened, while prices of goods increased unchanged. The outcome of this is the temporary rise of the share of goods at GNP in 1993.

With the data from tables 2 and 3 p. 7 we can conclude that the deviations of different data sources of table 1 are caused largely by differences of price indices.[16] Possible reasons for the deviation of sectoral value added data from World Bank (2004c) could be the non-consideration of F*inancial* I*ntermediation* S*ervices* I*ndirectly* M*easured* (FISIM), or differences between the classificatory systems. Kuboniwa (1999) has computed the shares of the 22 sectors of Russian I-O table at GNP at market prices for 1991–95. There the FISIM was distributed among sectors in proportion to sectoral intermediate input shares within the total intermediate input. The figures of the last two columns of the lower part of table 1 are aggregated shares of these 22 sectors, the shares for 1996–2000 are computed from I-O data as described

16. The deflator for services derived from Goskomstat (2005) in table 2 is computed from output indices in real and nominal terms as an arithmetic mean of values for market and non-market services. The use of the geometrical mean yields a still lower price increase in 1992.

Table 1: Structure of Value Added of the RF (Goods and Services), in Percent of GNP

	Goskomstat (2005) and own computations				World Bank (2004c) and own computations	
	Production of goods[a]	Production of services[a]	Financial intermediary services	VA taxes less subsidies	Production of goods[a]	Production of services[a]
1989					62.2	30.6
1990					60.5	32.6
1991	57.1	42.9	0	0	59.6	36.7
1992	49.5	52.6	-4.2	1.6	49.5	48.7
1993	48.0	46.3	-3.4	9.1	47.9	42.7
1994	46.7	49.3	-3.9	7.8	47.4	44.8
1995	41.8	51.7	0	6.5	41.2	52.2
1996	42.6	48.7	0	8.7	41.9	49.4
1997	41.2	49.9	0	8.8	40.6	50.9
1998	39.8	51.0	0	9.1	39.0	51.7
1999	40.6	49.3	0	10.0	40.2	50.0
2000	40.2	49.2	0	10.6	39.7	49.7
2001	38.4	50.8	0	10.8	37.7	51.7
2002	36.7	53.4	0	9.9	35.7	54.6
2003	36.1	53.5	0	10.5		
2004	36.6	52.5	0	11.0		

	Tabata (1996)				Kuboniwa (1999), Goskomstat (2001), Goskomstat (2002b), Goskomstat (2003) and own computations	
	Production of goods[a]	Production of services[a]	Financial intermediary services	VA taxes less subsidies	Production of goods[b]	Production of services[b]
1989	63.0	30.2	-0.4	7.2		
1990	60.9	32.6	-0.5	6.9		
1991	61.8	36.7	-2.2	3.7	60.7	39.4
1992	49.5	52.7	-4.0	1.8	40.6	59.4
1993	54.2	44.4	-5.6	7.1	48.5	51.5
1994	46.3	52.5	-7.4	8.5	NA	NA
1995					48.7	51.3
1996					51.6	48.4
1997					49.4	50.6
1998					48.5	51.5
1999					51.4	48.6
2000					51.8	48.2

a. at basic prices
b. at market prices, incl. financial intermediary services

in Kuboniwa (1999). The differences to the first three data sources of table 1 are, at least for 1995–2000, most likely caused by shifting of taxes, subsidies and FISIM to the sectors.

Table 2: Implicite Sectoral BIP Deflators of Goods and Services (in Percent of Prices of the Preceding Year)

	Goskomstat (2005) and own comp.		Tabata (1996)		World Bank/ Goskomstat (1995)	
	Goods	Services	Goods	Services	Goods	Services
1991	NA	NA	234.6	249.1	135.0	149.0
1992	1448.8	1822.8	1330.9	2091.9	1242.0	2017.0
1993	995.9	823.7	1123.0	786.7	1014.0	678.0
1994	425.7	401.1	372.7	434.0	260.0	404.0

Table 3: Sectoral Value Added of Goods and Services in Real Terms (in Percent of Production of the Preceding Year)

	Goskomstat (2005) and own comp.			World Bank/ Goskomstat (1995)	
	Goods	Market services[a]	Nonmarket services[b]	Goods	Services
1991	NA	NA	NA	93.9	98.1
1992	81.1	93.4	87.5	81.8	93.3
1993	87.9	96.8	95.5	87.9	96.6
1994	81.5	95.9	91.6	81.8	97.2

a. These are trade and restaurant, transport, communication, data processing, real estate, finance, credit, insurance, general market-supporting activities, service enterprises for population, residential trade and industry, privat health care, and privat education. Its share of all services in 1991 was about 2/3.
b. These include science, education, public health system, defence, and administration.

The division into three sectors requires a decision how to assign the mining industries[17] either to the primary or secondary (processing) sector. For comparability purposes we'll apply two aggregated schemes. The first one, called "A-I-S", leaves solely agriculture in the primary sector and assigns mining branches to industry, while the "P-S-T" scheme contains an aggregated P-(primary) sector embracing agriculture and mining branches, as well.

The difference between sectoral structure as shares of GNP at basic or market prices explicitly appears in the figures for the three sectors A-I-S (see table 4 p. 8). The break in the time series of agricultural value added at basic prices is caused by the

17. We only apply this to the industry sectors "Oil and Gas", "Coal", and "Other Fuels". The share of mining in ferrous and non-ferrous metallurgy sectors is not ascertainable from I-O tables; due to this lack of data they'll remain in the secondary sector.

Table 4: Structure of Value Added of the RF (Three Sectors: A-I-S), Shares in Percent of GNP

	Tabata (1996) and own comp.				World Bank (2004c) and own computations				Kuboniwa (1999), Goskomstat (2001), Goskomstat (2002b) and own computations			Kuboniwa (1999), Goskomstat (2001), Goskomstat (2002b), Goskomstat (2003) and own computations		
	Agricultural production[a]	Industrial production[a]	Services[a]	Subsidies for agriculture	Agricultural production[a]	Industrial production[a]	Services[a]		Agricultural production[a]	Industrial production[a]	Services[a]	Agricultural production[b]	Industrial production[b]	Services[b]
1989	15.5	47.5	30.2	9.6	15.6	46.6	30.3							
1990	15.4	45.5	32.6	9.3	15.5	45.0	32.6							
1991	13.7	48.1	36.7	5.6	13.8	45.9	36.7					7.3	53.4	39.4
1992	7.2	42.3	52.7	—	7.3	42.3	48.7					1.1	39.5	59.4
1993	8.1	46.1	44.4	—	7.5	40.4	42.7					6.1	42.4	51.5
1994	7.0	39.3	52.5	—	6.1	41.2	44.8					NA	NA	NA
1995					6.7	34.5	52.2		6.7	34.9	51.6	6.6	42.1	51.3
1996					6.6	35.3	49.4		6.7	34.6	50.4	6.7	44.9	48.4
1997					5.9	34.7	50.9		5.9	33.4	52.4	6.0	43.4	50.6
1998					5.1	34.0	51.7		5.3	32.7	53.2	5.4	43.0	51.5
1999					6.6	33.6	50.0		6.8	33.6	49.6	7.0	44.3	48.6
2000					5.7	33.9	49.7		6.0	34.2	49.2	6.1	45.7	48.2
2001					5.8	31.9	51.7							
2002					5.2	30.5	54.6							

a. At basic prices.
b. At market prices, incl. FISIM.

discontinuation of subsidies in 1992.[18] The higher share of industrial value added (and lower share of services respectively) at market prices points at differences in taxation of these broad sectors.

Table 5: Shares of Value Added (A-I-S) of the RF (at Basic Prices), in Percent of Sum of Shares over Sectors

	Production of goods	Agricultural production	Industrial production	Production of services
1989	67.0	16.8	50.2	33.0
1990	65.0	16.6	48.4	35.0
1991	61.9	14.3	47.6	38.1
1992	50.4	7.4	43.0	49.6
1993	52.9	8.3	44.6	47.1
1994	51.4	6.6	44.7	48.6
1995	44.1	7.2	37.0	55.9
1996	45.9	7.2	38.7	54.1
1997	44.5	6.4	38.1	55.5
1998	43.0	5.6	37.4	57.0
1999	44.5	7.3	37.2	55.5
2000	44.4	6.4	37.9	55.6
2001	42.1	6.5	35.6	57.9
2002	39.5	5.8	33.8	60.5

Source: World Bank (2004c).

Table 5 shows the shares of three sectors A-I-S as percent of the sum over these shares. In contradiction to the figures so far discussed, the time series of shares of value added of industry and services show a straight decline (or increase, respectively). Particularly these frequently cited figures have a strong disposition to be misinterpreted. One reason for that is the choice of denominator as the sum of sectoral value added at basic prices, that has no meaningful interpretation and straddles the range of sectoral shares over sectors. This creates a tendency of tertiarisation since 1993, while data at market prices don't provide any evidence for this one until 2000. Additionally, such an increase of the share of services would be contrary to the three sector hypothesis, that predicts growing demand for services since income increases. But this did not happen before 1999.[19]

Indeed, the figures at market prices show rather a slight increase of industry's share and a constant – if not declining – share of services. Could it be, that the weight of industry in the economy has grown continuously after the shock of 1992? Here the question arises, wether the definition of broad economic sectors, that we have applied so far, is the appropriate one in terms of three sector theory? In fact the manufacturing

18. The exceedingly low value of agricultural share at GNP in market prices in 1992 is a statistical artefact caused by changes of coverage of household production. See Kuboniwa (1999) p. 15.
19. Compare fig. 1 p. 2.

Table 6: Shares of 22 Sectors in GNP of RF at Market Prices

OKONKh Code	Description	1991	1992	1993	1995	1996	1997	1998	1999	2000
001	Electricity and heat energy	1.8	2.9	4.0	3.6	4.1	4.3	4.2	2.7	2.6
002	Oil and gas	3.7	10.1	6.7	7.4	9.1	8.5	7.8	10.0	12.4
003	Coal	0.3	0.8	0.2	0.8	0.8	0.7	0.7	0.5	0.5
004	Oil shale and peat	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.02
005	Ferrous metallurgy	1.8	3.6	2.7	2.1	1.6	1.5	1.5	2.0	2.2
006	Non-ferrous metallurgy	2.0	3.1	2.5	2.6	1.8	1.6	2.3	3.7	3.2
007	Chemical and oil-chemical industry	2.9	1.8	2.1	2.0	1.8	1.8	1.8	2.2	2.1
008	Machine-building and metal-working	11.8	4.8	7.1	5.6	5.9	5.6	5.8	5.8	5.5
009	Wood, wood processing, cellulose and paper	2.8	2.0	1.8	1.6	1.3	1.2	1.2	1.6	1.7
010	Construction materials (incl. glass, porcelain, and earthenware)	2.0	1.4	2.2	1.7	1.4	1.3	1.1	0.9	0.9
011	Light industry	6.0	0.4	1.6	0.7	0.9	1.1	1.1	0.9	0.8
012	Food industry	6.5	0.1	2.6	4.3	6.0	6.0	7.0	6.7	5.8
013	Other industry	1.8	0.6	1.0	0.7	0.9	1.0	0.8	0.9	0.8
014	"Industry", total (sum of lines 001–013)	43.6	31.7	34.5	33.1	35.7	34.7	35.4	37.8	38.6
015	Construction	9.8	7.8	7.9	9.0	9.2	8.7	7.7	6.6	7.1
016	Agriculture and forestry	7.3	1.1	6.1	6.6	6.7	6.0	5.4	7.0	6.1
017	Transport and communications	6.8	9.1	8.6	11.3	11.2	11.1	10.1	8.7	8.2
018	Trade and restaurant	16.1	34.6	26.1	22.5	19.3	19.7	22.6	26.9	27.4
019	Other material production	1.4	1.7	0.7	0.8	1.0	0.9	0.8	0.5	0.6
020	Housing and public utilities, population services	1.6	1.2	1.7	2.8	3.2	3.2	2.3	1.4	1.2
021	Education, health, culture and arts	6.6	4.5	5.6	6.2	6.9	7.5	6.9	4.7	4.2
022	Sciences, geology, geodesy and hydrometeorology	2.2	1.4	1.3	1.0	1.2	1.3	1.2	1.1	1.2
023	Finance, credit, insurance, and administration	4.7	6.9	7.5	6.7	5.6	6.9	7.7	5.3	5.4

Source: Kuboniwa (1999) Tabelle 5, Goskomstat (2001), Goskomstat (2002b), Goskomstat (2003), and own computations.

industries suffered a strong slump after this date, while the meaning of extraction and export of raw materials, particularly fuels, strongly increased. While the first feature is well reflected by table 6 p. 10, the figures from tables 7 and 8 confirm the latter one. Moreover, value added both of industry and of services are correlated – at opposite signs – with that of mineral fuels (see fig. 2 p. 12).

Table 7: Shares of Fuel Industries at Gross Value Added in Percent of Russia's GNP

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
At basic prices					6.3	6.3	6.1	5.6	6.9	8.3
At market prices	4.0	10.9	6.9	NA	8.2	9.9	9.3	8.4	10.4	12.9

Source: Kuboniwa (1999), Goskomstat (2001), Goskomstat (2002b), Goskomstat (2003), and own computations.

Table 8: Shares of Export Value (fob) of Mineral Fuels in Total Exports and in GNP of RF

		1995	1996	1997	1998	1999	2000	2001	2002
Export value, total	Bill. USD	81.1	88.6	88.3	74.9	75.7	106.0	103.0	107.0
Export value, total	% of GNP	20.5	22.6	21.8	27.6	38.6	40.8	33.2	30.8
Exp. value of fuels	Bill. USD	30.4[a]	38.2	40.4	28.6	31.6	54.4	55.5	59.4
Exp. value of fuels	% of total exp. value	36.6[a]	43.1	45.8	38.2	41.8	51.3	53.9	55.5
Exp. value of fuels	% of GNP	7.5[b]	9.7	10.0	10.6	16.1	20.9	17.9	17.1

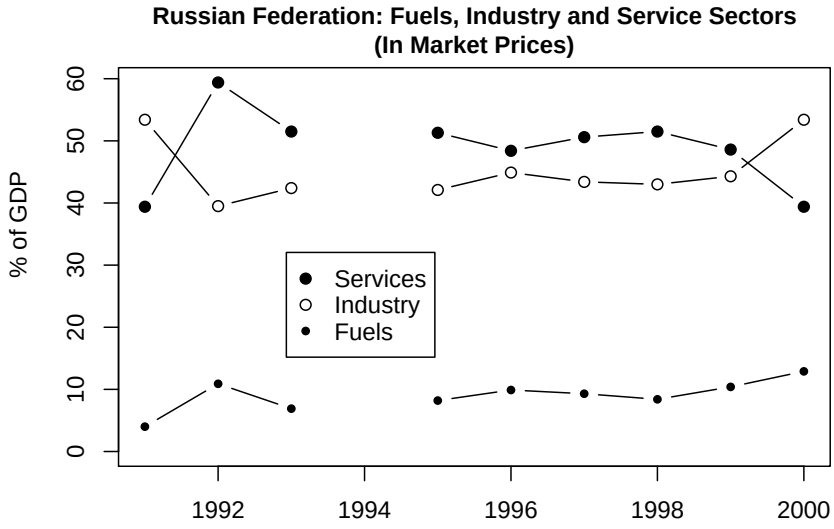
Source: World Bank (2004c).

a. Source: Tabata (2002)
b. Source: World Bank (2004c), Tabata (2002), and own computations.

To capture this distinguishing feature of structural change of the Russian economy we should shift the fuel extraction from the secondary to the primary sector according to the P-S-T scheme explained above. Table 9 p. 12 contains the shares of primary, secondary, and tertiary sectors in Russia's GNP computed in this manner. As we can see for value added both at basic and at market prices, the share of the primary sector grows perpetually, with the exception of 1997 and 1998 (when the oil price slumped).

After shifting mineral fuels to the primary sector the latter one gains weight, of cause. But, according to three sector theory, the primary sector should slim over time, while the service sector or, firstly, the industry sector should increase. The development of sectoral structure of other resource abundant countries supports this hypothesis (see fig. 3 p. 13).[20] Until 2000 this kind of pattern of structural change didn't appear in Russia. Considering the fact that in our figures of P-S-T sectors metallurgy completely belongs to manufacturing we can hardly reject the suspicion of a *primarisation* of the Russian economy during transition.

20. Only Norway shows a rise of primary sector's share, according to its strong increasing extraction of crude oil; but at one of the highest per capita income worldwide.



Source: Kuboniwa (1999); Goskomstat IO−Tables; own computations.

Fig. 2: Shares of Mineral Fuels, Industry (incl. Mineral Fuels) and Services as Percent of Russian GNP

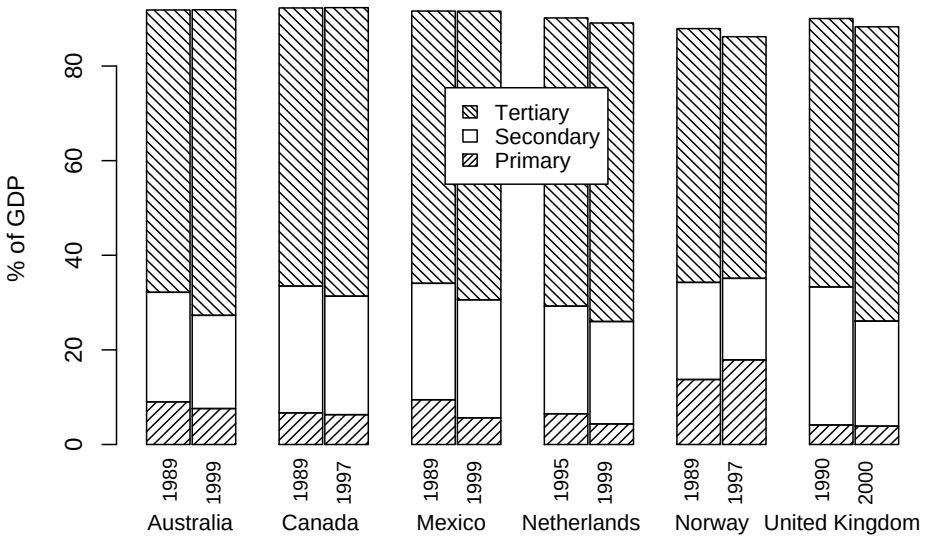
Table 9: Structure of Value Added of the RF (Three Sectors: P-S-T), Shares in Percent of GNP

	At basic prices			At market prices		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1991	NA	NA	NA	11.3	49.2	39.4
1992	NA	NA	NA	12.0	28.5	59.4
1993	NA	NA	NA	13.0	35.5	51.5
1995	13.0	28.7	51.6	14.8	33.9	51.3
1996	13.0	28.3	50.4	16.6	34.9	48.4
1997	12.0	27.3	52.4	15.3	34.1	50.6
1998	10.9	27.1	53.2	13.8	34.6	51.5
1999	13.8	26.6	49.6	17.5	33.9	48.6
2000	14.3	25.9	49.2	19.0	32.8	48.2

Source: Kuboniwa (1999), Goskomstat (2001), Goskomstat (2002b), Goskomstat (2003), and own computations.

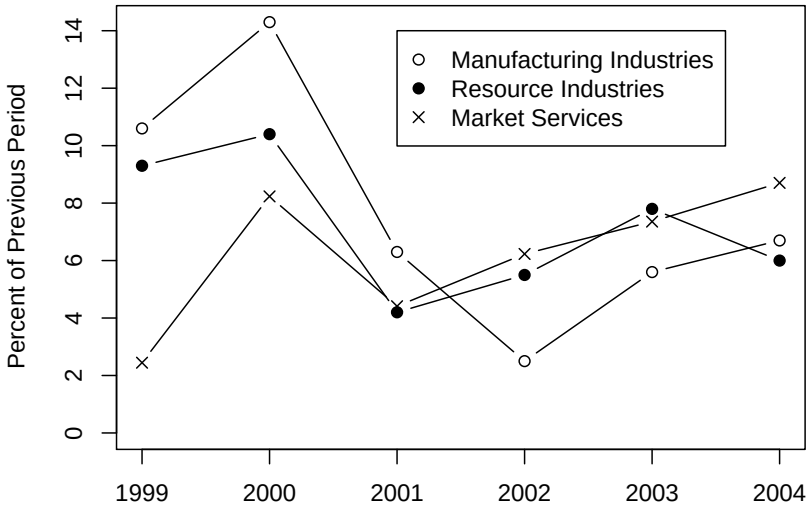
For periods after 2000 I-O tables of Russia aren't available yet. Some hints on development of structure of the Russian "Industry" sector after 1998 are provided in the Transition Economic Reports of the World Bank Office in Moscow. Reports No. 7–9[21] show growth rates of "resource" and "manufacturing" industries' *output* in real terms from 1999 until 2003 or 2004, respectively. "Resource" industries are there defined as non-ferrous and ferrous metals, fuel and energy, and wood and wood

21. World Bank (2004b) and the following reports.



Source: World Bank, WDI 2004; OECD (2001); own computations.

Fig. 3: Structure of Gross Value Added (P-S-T) of Six Resource Abundant Countries, at Basic Prices, Shares as Percent of GNP



Note: 1. Composition of aggregates: see main text.
2. 2004 only Q1−Q3.

Source: Goskomstat (2005) and own computations, World Bank Russian Economic Reports No. 7 and 9.

Fig. 4: Annual Growth of Output of Resources Industries, Manufacturing and Market Services in Real Terms in Russia, 1999–2004

processing; "Manufacturing" contains electricity, chemical industry, machine building, construction materials, light industry, and foods. Fig. 4 p. 13 additionally shows the growth rate of output of market services computed from Goskomstat (2005) data.[22] The high growth rates of manufacturing in 1999 and 2000 appear in consequence of the real depreciation of Rouble after the financial crisis in 1998, together with a strong increase of the export to domestic oil price ratio. In 2002 resource industries paced out manufacturing, while the catching up of the latter is probably driven by increased demand from resource sectors for e.g. railway cars.[23]

Table 10: Trade Margins in International Comparison

		USA[a]			Canada[b]	RF	
		1977	1987	1992	2000	1995[a]	2000[c]
Export trade margin	% of GNP			0.7		6.0	14.2
Export trade margin ratio	%			7.0		21.8	31.9
Export trade margin ratio in the oil and gas sector	%	5.3	14.2	6.5	17.2[d]	38.7	47.2

a. Source: Kuboniwa (2002)
b. Source: World Bank (2004c)
c. Source: Kuboniwa (2004)
d. Oil refining

Another oddity is to be found in tables 7 and 8 p. 11 (compare also the development of value added of trade sector in table 6 p. 10): While the share of value added of mineral fuels is continuously increasing, it remains relatively small, compared with the likewise rising share of exports of mineral fuels at GNP. The latter shows particularly in 1999 a jump that has opened a scissors between these GNP shares, calling for explanation. Fuel exports contain transport and trade components that raise their value. In view of the three sector hypothesis the question arises, wether these services meet an increased demand of residents raised by their income. In a broader context one may ask if the shares of transport and trade at export value of fuels are justified by real economic activities.[24] While transport margins in a huge country like Russia must have some weight in export prices,[25] the trade margins particularly for Russian oil and gas are some times higher compared to the margins of other oil exporting countries like Canada or the US.

This is clearly pointed out by the figures of table 10 and contributes to an explanation of the enormous high margins in Russia's trade sector that amounted to 32.4 % of

22. For the definition of market services see table 3 p. 7.
23. Compare World Bank (2004b) p. 5.
24. World Bank (2004b) and World Bank (2004a), and Kuboniwa (2002), Tabata (2002) and Kuboniwa (2004) were engaged in this question.
25. See Sagers (2002).

GNP in 2000.[26] One explanation of these peculiarities are strategies of tax evasion or tax avoidance of oil and gas related enterprises in Russia. A legal one of these called *transfer pricing* uses trading subcompanies located in a region with low taxes to purchase the raw materials from the extracting company for very low prices.[27] Thus a big part of value added, originally generated in mining (primary), is statistically assigned to the service (tertiary) sector.

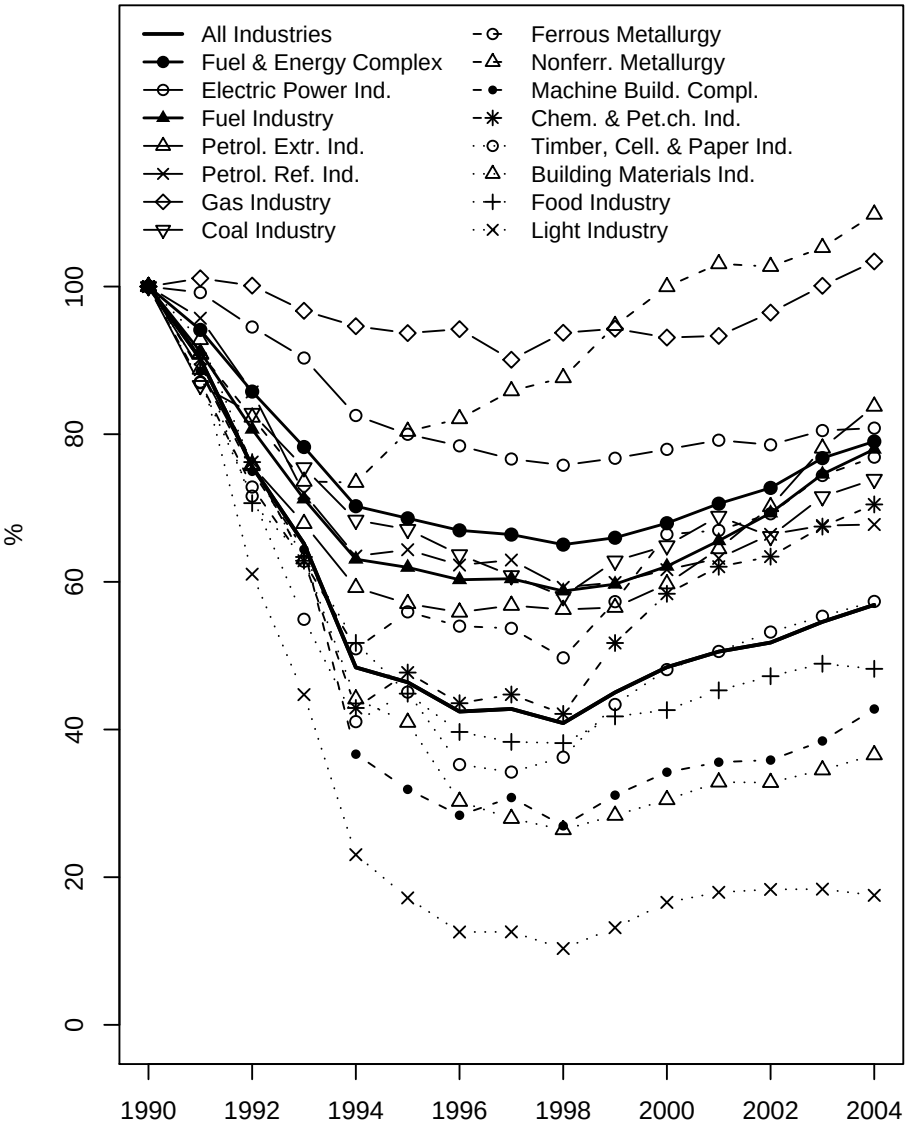
How we can deal with these strong distortions of sectoral GNP structure? World Bank (2004a) suggests a recalculation of sectoral GNP based on trade margins of Canada, that shifts in consequence the amount of 12.7 % of GDP (at basic prices) from trade to mining.[28] Correcting the figures in table 9 p. 12 we have to state that in 2000 respectively *one third* of the Russian value added is originated in the primary, secondary, and tertiary sector. This clearly confirms the suspicion of primarisation of the Russian economy expressed above. If we adjust the structure of the A-I-S divided economy at basic prices in table 4 p. 8, the similarity of the corrected structure in 2000 with the uncorrected figures of 1991 becomes apparent.

4. Output of industrial branches and of selected goods

Hitherto only monetary aggregates in current prices were considered. To appraise structural change from the view of three sector hypothesis that are the right reference magnitudes. Regarding to convergence issues – including the question how to stop the tendency of primarisation – we should also take a look at economic aggregates in real terms. Because of the non-applicability of deflated sectoral macroeconomic indicators we'll rely on *production indices*, computed by Prof. V. A. Bessonov.[29]

The decline of individual branches of the Russian "Industry" sector didn't show one uniform pattern over time. However, one can identify typical patterns of recession differing in depth and duration (see fig. 6 p. 17). Each of them is to some extent fitted to a group of composed indices of industrial production activities, pointing on common features of its members: while gas industry suffered a longer decline with very small depth (3), oil industries recovered only after a longer depression with medium

26. Kuboniwa (2004) table 1.3 p. 153. The trade margin in the oil and gas sector in 2000 was 42.3 % (13.7 % of GNP), of which 68.8 % (9.8 % of GNP) stemmed from exports (ibid.). According to Kuboniwa (2002), 1995–97 total trade margins ranged about 25 % of GDP.
27. See World Bank (2004b) and World Bank (2004a).
28. Also Ahrend (2004), p. 8, applies Canadian trade margins for adjustment of sectoral shares. Other suggestions made in World Bank (2004b) and World Bank (2004a) use distribution (i.e., trade *and transport*) margins from Norway, the UK, and the Netherlands, that causes adjustments amounting to 14, 17.6 or 18.9 %, respectively. However, the application of transportation margins of these relatively small countries appears inadequate in face of the huge distances between the Russian oil and gas fields and the transfer points at Russia's borders. See also fn. 25 p. 14.
29. Fig. 5 p. 16 is based on monthly production volume indices from January 1990 to August 2004. Their weights and other features are well described in Bessonov (2002). I thank Prof. Bessonov for the provision of his time series and further useful information. Production indices derived from 235 goods weighted with 1999 product outputs are available from TsEK (2005), see also Kauffmann (2005a) p. 53.



Source: TsEK (2005), Bessonov (2002), own computations.

Fig. 5: Russian Federation: 16 Composite Production Volume Indices Derived from 126 Goods, Weights from 1995 Product Outputs

depth (1). The recovery of non-ferrous metallurgy appeared after a short decline of mean intensity (2), while the most branches suffered a medium recession and picked back up slowly (between 4 and 1). Some branches – particularly light industry – have not passed the bottom of recession yet (4).

It attracts attention that all resource based industries including chemical industries and the energy complex lay over the mean chart "All Industries", while the graphs of foods, machine building, construction materials and light industries are located below the average. This validates the predication of primarisation of the Russian economy

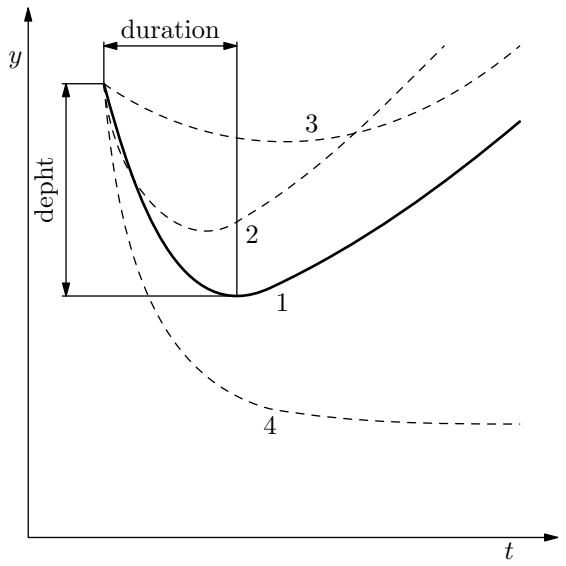


Fig. 6: Recession Patterns

pronounced above. Moreover, this nurtures the hypothesis that the production of final goods using advanced technologies in Russia recedes, while the remaining economic activity focuses on the production of raw materials and semi-manufactured products.

To find out more indications to maintain or reject this claim, we analysed time series of produced quantities (number of pieces, square metres, litres, etc.) of single goods or groups of goods (e.g. tractors, carpets or milk), published by Goskomstat Rossii.[30] To make developments of different goods comparable, index numbers were computed each expressing the output of production of a good in a considered period related to the quantity of this good produced in 1985. The investigation was restricted to goods from three branches: timber and wood processing industries (incl. cellulose and paper), the machine building and metal processing complex (incl. many consumer goods, electronics, etc.), and light industries. The last one is that branch of the Russian "industry"-sector that suffers the deepest and longest recession. The machine building complex is the largest of Russian "industry" branches; it encompasses many activities of the MIC, and is dwelling in a deep slump, too. Russian timber and wood processing industries embrace a mix of raw materials, semi-finished products and final goods.

The graphs at the following pages 18–24 show the development of output of a selection of goods, belonging to these three branches of the Russian "industry" sector.

30. See Goskomstat (2000) and Goskomstat (2002a).

Fig. 7: Selected Products of Russian Timber, Wood Processing, Cellulose and Paper Industries: Index Numbers of Physical Output

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

a) Drapery and Carpets

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

b) Textile and Clothing

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

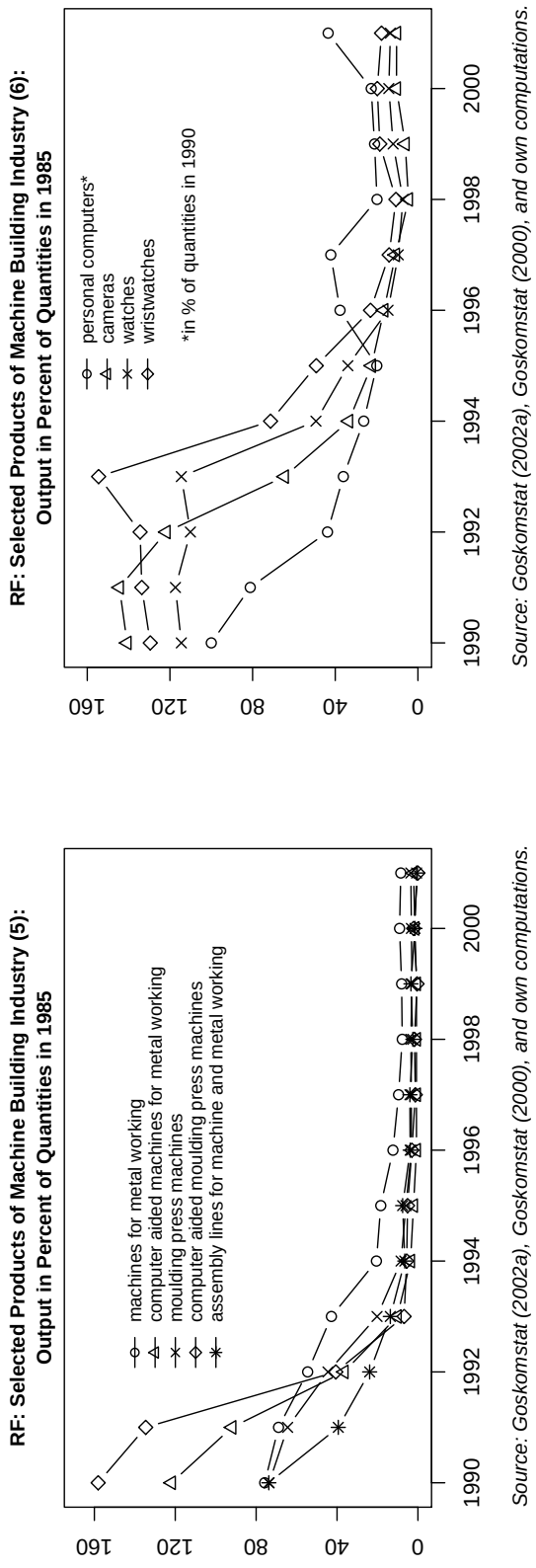
c) Footwear and Leather

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

d) Sanitary Products and Sports Goods

Fig. 8: Selected Products of Russian Light Industries: Index Numbers of Physical Output

Fig. 9: Selected Products of Russian Machine Building and Metal Processing Industries: Index Numbers of Physical Output I



Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

a) Machines for Metal Processing

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

b) Computers, Cameras, and Watches

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

c) Automotive Engineering

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

d) Agricultural Engineering

Fig. 10: Selected Products of Russian Machine Building and Metal Processing Industries: Index Numbers of Physical Output II

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

a) Electric Home Appliances (i)

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

b) Electric Home Appliances (ii)

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

c) Electric Home Appliances (iii)

Source: Goskomstat (2002a), Goskomstat (2000), and own computations.

d) Consumer Electronics

Fig. 11: Selected Products of Russian Machine Building and Metal Processing Industries: Index Numbers of Physical Output III

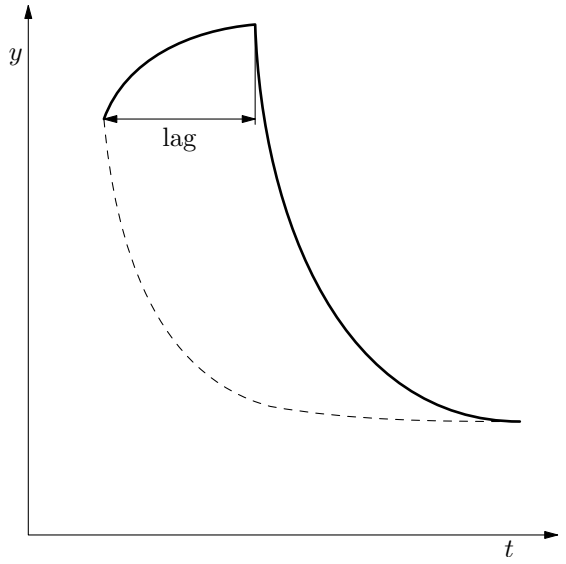


Fig. 12: Lagged Transformation Recession

Many – but not all – single charts have one of the typical U-shapes demonstrated in fig. 6 p. 17. Interestingly, some curves show an increasing run during the first years after 1990 before they start to drop. Fig. 12 sketches this kind of "lagged recession", that appears e.g. in fig. 7b (sets of furniture), fig. 9d (pendents, sconces), fig. 10b (watches, wristwatches), and 11 a–d (consumer final goods and electronics). Fig. 13 p. 24 bundles the indices of some products that would go beyond the ceiling of the graphs before.

We'll get back to this anomaly in the next section. Lagged or not lagged, without exception all considered goods suffered a more or less deep slump, in consequence of the disorganisation and disintegration after the collapse of the Soviet Union, and of the initial shock of liberalisation. Further distinctive features appear to approve our assumption:

- Both duration and depth of recession are comparatively small if the type of good is near to raw materials. This is well visible in fig. 7a (wooden framehouses and their components versus timber and plates); compare also the decline of other final products in fig. 7 and 8 (e.g. sports goods) with this one of raw and semi-manufactured materials (e.g. timber or newsprint, also cotton fabric).

- Many consumer final goods dropped to a very low level of output and persisted in that position. This regards particularly sports goods and leisure wears (fig. 7c and 8d, and parts of the production of furniture (fig. 7b), clothing (fig. 8b), leather and footwear (fig. 8c), and, to some extent, household appliances and consumer electronics (fig. 11 a–d).

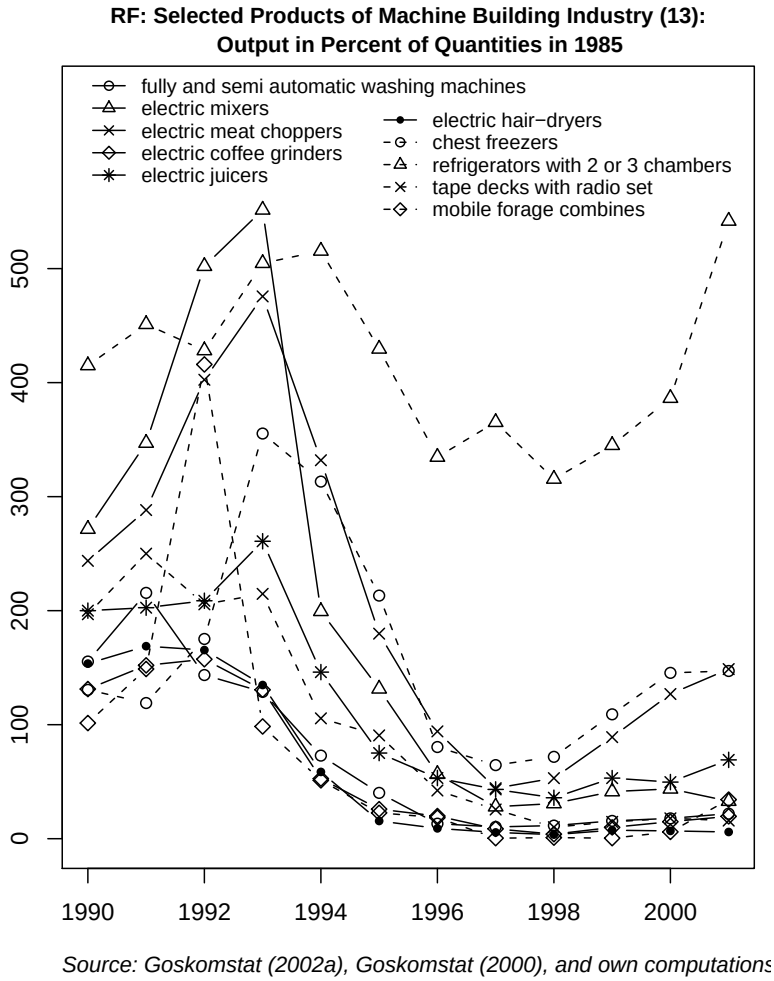


Fig. 13: Selected Products of Russian Machine Building and Metal Processing Industries: Deviant Developments

- In the fields of machine building (and railcars as well, fig. 9 a–c), output decline was rather small compared with that of machines for metal processing (fig. 10). One reason for this could be the importance of e.g. explosion-proofed motors or railway cars for extraction and transport of natural gas or crude oil, while machines for metal working were faced with slumping demand and rising import competition at one time.

- The manufacturing of cars and buses shows only slightly decreasing output indices with an upswing in 1994 and 1996, respectively. The production of lorries powered by petrol fuel deceased almost completely, while that of diesel lorries has stabilised and revives (fig. 10c).

- A great part of agricultural engineering came to a standstill. But there are exceptions (see fig. 10d and 13) that raise hopes, that this branch could gain competitiveness in the future.

Goskomstat Rossii publishes time series of output from all industrial branches. Their complete analysis could bring some very interesting details to light, but this would go far beyond the scope of this paper. The investigation of broad economic sectors in section 3 showed that the importance of primary economic activities – particularly of mining – has grown during the transition period at least until 2000. According to these findings, the analysis of output indices of industrial sectors and goods has pointed out, that activities in mineral fuels and other raw materials show a more slight and shorter decline of output in comparison with final consumer goods or machines for metal processing. However, the appearance of deviant recession patterns showing an increase of output during the first years of transition was not visible at the analyse neither of broad economic aggregates nor of branches of the Russian "industry" sector and was, in so far, a surprise. Nearby all of these products were technologically advanced goods, produced in the *military industrial complex*, to meet the demand of household consumers that was neglected for decades. In the next section we will trace this interesting phenomenon to get some hints for a better understanding of the deep structural crisis of the Russian economy.

5. Structural change and conversion

The results obtained by examination of structural change in Russia in the light of three sector hypothesis were rather contradictory. Surely, the decline of the inherited oversized Russian heavy industry is an imperative, to get an economy that orients towards human needs. However, three sector theory predicts increasing per capita income, driven by high productivity in manufacturing, and activating increasing demand for services. Regarding to countries in transition, productivity in manufacturing should increase, while its share at domestic output, and at factor input anymore, should decrease. But, all this does not occur in Russia. Both continuing rise of importance of exports of raw materials, and the diverging development of income distribution creating extremely inequality,[31] are features commonly attributed to less-developed countries. What Russia distinguishes from these ones are the encompassing health care, the good availability of well educated employees, and, in some parts of the economy, at least, the high level of technology. However, *these* parts belonged to the Soviet, later Russian, Military-Industrial Complex.

In 1990, the Soviet MIC encompassed eight ministries and was involved in further parts of the economy.[32] Its technological predominance resulted from its high appreciation in policy and society, that ensured the supply of funds to attract the best academics and engineers to its enterprises. Its supremacy regarding quality of production was primarily owed to the existence of one quality conscious – and quality enforcing – demander: the Russian armed forces. In the centrally planned economy,

31. See, e.g., Sapir (1994) p. 114 et sqq., and Gustafsson/Nivorozhkina (2004).
32. To the MIC belonged about 2000 associations and enterprises and 600–800 scientific establishments. For an overview, see Cooper (1991) ch. 2., and Noren (1994). — Simultaneously, other enterprises that were not resident in the MIC were engaged in production of arms and related goods. This considerably complicates the estimation of size of the MIC (ibid.).

the planning of production was degenerated to the pure control of quantity in absence of market prices, with the consequence, that the meaning of quality got lost in many fields, but not in the one of armament and related goods.[33] This special standing of the MIC might be decisive for the assignment of about 230 enterprises, belonging to civil machine building ministries as yet, to the MIC in 1988.[34]

The preponderant optimism at the start of conversion was caused by the belief, that the raise of productivity of (civilian) manufacturing would be possible, if technological prowess were successfully transferred from military to the civilian sector. The Soviet MIC was involved into the civilian sector to a large extent already before conversion policy has started.[35] The entire production of modern consumer goods like electric household appliances, consumer electronics, and computer science was integrated into the MIC. Was is not straightforward, that the enlargement of the MIC to other, hitherto not involved, sectors could be the key to modernise those parts of the economy that were disadvantaged during the last decades, e.g. civilian machine building? In consequence of this policy, and of dropping military orders, the share of civilian production of the MIC rose from 44 % of its gross output in 1988 to 60 % in 1991[36] Since 1992, armament procurement declined more sharply then the civilian output, hence the share of the latter at the MIC's output rose to 80 % in 1994.[37] None the less, the output decline both of civilian production of MIC, and of non-military machine building as well, accelerated in 1993 and 1994, particularly in the technological advanced sectors like communications equipment, radio industry and electronics.[38] Why the upswing of civilian production, expected from many early enthusiasts of conversion, failed to appear?

- Numerous measures of conversion were aimed at the security of existence of enterprises by addition of civilian goods to the production plan, when military orders dropped out. However, these extensions were often by-products of military production (e.g. production of chairs and upholstery by aviation enterprises, or of consumer electronics by manufacturers of radar equipment), that didn't use the technological capabilities of the firms sufficiently, nor did they meet the desire of consumers.[39] Indeed, rising quantities of distinct consumer (and other) goods don't say anything about its qualities, sales, and values.

- Cost of civil production in military enterprises became exceedingly high not only because their resources were diverted from their intended use, but due to the necessity to maintain the capability for rapid re-conversion to military utilisation, too.[40] Additionally, the decline of output exceeded the decline of labour input by far.

33. This comes true only for parts of the MIC and is, in so far, an overstatement. But it describes the perception of the MIC in wide parts of the Soviet Society.
34. See e.g. Cooper (1991) ch. 4.
35. For an overview of civilian activities of the Soviet MIC, see Cooper (1986).
36. Noren (1994) p.501.
37. Kuznetsov (1996) p. 9.
38. Noren (1994) p. 503, O'Prey (1995) p. 46 et seq.
39. For examples, see e.g. Adelman/Augustine (1992) p. 34, O'Prey (1995) p. 29., and Gonchar (1998) p. 24–27.
40. Noren (1994) p. 506, Blank (1995) p. 694.

On the other hand, because the wage position of workers employed in the MIC and in the civilian machine building sector had worsened strongly, many high-skilled employees left these branches and went abroad or to mineral extraction industries, for example. This – and the absence of investment into military and non-military machine building – has crushed the productivity in these sectors.

- After domestic markets were liberalised, foreign competitors rapidly entered and were favoured by rising real exchange rates. One consequence was the crowding out of domestic suppliers of advanced goods. Additionally, the scarcity of money gave rise to give up for many firms.[41]

- On the other hand, many enterprises of the MIC survived because they were (and are) the sole large-scale enterprise in a city or region. Some attempted to continue (or reanimate) military production. However, on regional level some examples of successful conversion raise hopes.[42]

- One explanation for the observed absence of "spin offs" of innovations from military to civilian production could be a feature of the Soviet economy that Sauer calls *fragmentation*: Because the bulk of firms has supplied on pure seller's markets, and was subject to soft budget constrains only, most of them did not find any reason to innovate or to adopt innovations from abroad, from other firms, or from research institutes. Many innovations that long diffused through market economies, were not adopted from socialist planned economies.[43] This reluctance against innovations had to be attributed to many defence enterprises, too. One can say that researchers and manufacturers operated isolated of each other by an invisible barrier, that impeded the transfer of knowledge from its producers to its (potential) recipients.[44]

The excessive enlargement of the MIC during the cold war might be caused by a general overvaluation of its activity: The belief that the most skilled parts of labour force and of capital stock should conduce immediately to country's defence, while innovations, produced here, could be used in the civilian part of the economy, too, has proven false in practice. Indeed, in a global economy, innovations sprout more fruitfully in the competitive environment of an open, civilian society, than in the insularity of national military sectors.[45]

41. Noren (1994) p. 503 et seq., Kuznetsov (1996) p. 24
42. E.g., former defence enterprises in Nizhny Novgorod met demand from local automobile industry (GAZ) and from Gazprom, Gonchar (1998) p. 27. For examples from the St. Petersburg and Novosibirsk regions see Opitz (1995) p. 40 et sqq., and Gonchar/Opitz (2000).
43. See, e.g., Leary/Thornton (1989).
44. See Sauer (1993) p. 69 et sqq. for an overview. Sauer (1994) gives a profound explanation (both in German). Kuznetsov (1996) p. 19 et seq. provides a good example to show how economic agents in the Soviet Union solved the problem of overcoming this barrier, with the consequence of allocative inefficient technical change leading to a "*low-level equilibrium trap*", in which the more efficient outcome permanently locked out (ibid., p. 20, emphasis as in the origin).
45. See, e.g., Rupp (1992).

6. Conclusions

Is Russia becoming a service economy? Recalling the results from section 3, we must state that until 2001 rather the opposite was true. The tendency of primary sector's growth, instead of genuine services' rise, clearly rejects the claims of an prospering service economy. This outcome resulted mainly due to

- the computation of sectoral GNP shares at market prices,
- the formation of a primary sector by integrating agricultural and mining activities, and
- the separation of trade activities that were shifted to the service sector (e.g. by means of "transfer pricing"), to put them back to mining, where they originated.

Just from the view of three sector hypothesis, a sustainable increase of the service sector should coincide with permanently rising per capita income. The strong economic growth during the last five years encouraged demand for services.[46] However, to continue this trend requires that processing industries replace extractive industries as the main carrier of economic growth, and domestic investment take place of capital flight. Gavrilenkov points out, that the growth mechanism based on higher capacity utilisation has been defunct since 2002, hence "the only way now to grow is through increased investment".[47]

To accomplish an investment climate in favour of mobilising domestic earnings from raw material's export (and foreign capital as well) for investment in Russia, must be a main objective of Russian economic policy for the next years. Beside rapid institutional change,[48] this includes the use of exchange rate policy to protect domestic enterprises,[49] a well-balanced outcome of the accession negotiations to the WTO,[50] and sectoral specific measures, e.g. different taxation of different economic activities.[51]

The development of output of the branches of the Russian "Industry" sector analysed in section 4 clearly confirmed the tendency to a natural resource based economy. The presented charts of index numbers of goods were, in principle, shaped similarly

46. For an overview, see Mikheeva (2005).
47. Gavrilenkov (2004) p. 112.
48. This means the "instituional development in areas such as corporate governance, restructuring, banking and financial markets, and the development of small and medium-sized businesses" (World Bank (2005), p. 13 et seq.).
49. See, e.g., Tabata (2000). One the other hand, one has to consider that not all inherited "old" firms must survive, and that the appreciation of the Rouble can, inversely, promote structural change (see, e.g., Gavrilenkov (2004) p. 108 et sqq.).
50. On the one hand, Russia's WTO accession "may give Russian reforms a palpable boost" (Schrettl (2004) p. 22), that could contribute to sustainable growth (Chowdhury (2003) p. 8), promoted by "increasing information about foreign goods and technologies" embodied in imported goods (Yudaeva et al. (2002) p. 35). On the other hand, it must be secured that the "positive external stimulus" (Gorban et al. (2001) p. 3), triggered by the association, really takes effect, and that new emerged services and (e.g. technologically advanced) industries will not be crowded out by foreign competitors in consequence of a too fast trade liberalisation.
51. See, e.g., Ahrend (2004) p. 37.

to the industrial branches where they are located, but with exceptions: some technologically advanced goods, produced in the MIC, exhibit the specific pattern of "lagged recession", referring to the conversion measures during the first stages of transition. In section 5 we quoted some possible explanations for the absence of that kind of structural change, that would be necessary for the generation of economic growth, i.e. the application of technologically advanced production methods in manufacturing: particularly the fragmentation of the Soviet economy into industrial enterprises, that could act on seller's markets without risk, and producers of technological knowledge, that was treated as public good and as top secret as well (because of its potentially military use), may be a legacy that is hardly to overcome. The promotion of international technology partnerships and of joint ventures in advanced technology fields could contribute to generate endogenous economic growth, using the inherited human capital resources.[52]

One has to consider, that the shares of sectors at GNP at market prices found out – ⅓ primary, ⅓ secondary, ⅓ tertiary – are mean values that say nothing about the sectoral distribution of economic activities in the Russian cities or regions. Indeed, economic growth – and hence structural change – exhibits strong divergences over Russian regions.[53] The three sector approach, applied without spatial diversification, completely prescinds from regional disparities. To evaluate structural change during transition, the interregional comparison of economic structure within the Russian Federation could turn out to be the more appropriate approach. To understand the problems of structural change in Russia, the interaction of both sectoral and spatial shifts of economic activities, has to be considered. In this sense, the analysis of structural change in Russia has got off the ground only recently.[54] This could be the starting point for further investigation.

References

Adelman, K. L., Augustine, N. R. (1992): Defense conversion: bulldozing the manegement. – *Foreign Affairs 71*, 26–47.

Ahrend, R. (2004): *Accounting for Russia's Post-Crisis Growth.* Economics Department Working Papers No. 404: OECD.

Bessonov, V. A. (1998): O smeshchaniyakh v otsenkakh rosta rossiyskikh potrebitel'skikh tsen. – *Ekonomicheski Zhurnal VShE 2*, 31–66.

Bessonov, V. A. (2002): Transformational recession and structural changes in Russian industrial production. – *Problems of Economic Transition 45*, 6–93.

Blank, S. J. (1995): Reform and revolution in Russian defense economics – *The Journal of Slavic Military Studies 8*, 691–717.

52. See, e.g., Opitz/Sauer (1999a) (in German), Opitz/Sauer (1999b), Rassadin/Sánchez Andrés (2001), and Kuznetsov (2004).
53. See e.g. Mikheeva (1999) and Mikheeva (2004).
54. See, e.g., Ickes/Ofer (2003), Kumo (2003).

Chenery, H. B., Taylor, L. (1968): Development patterns: among countries and over time. – *The Review of Economics and Statistics 50*, 391–416.

Chowdhury, A. (2003): *WTO Accession: What's in it for Russia?* BOFIT Online 2003 No. 10: Bank of Finland, Institute for Economies in Transition.

Clark, C. G. (1940): *The Conditions of Economic Progress.* Third edition. London: Macmillan.

Cook, M., Healey, N. M. (1995): *Growth and Structural Change.* Houndmills *et al.*: Macmillan.

Cooper, J. M. (1986): The civilian production of the Soviet defence industry. – Amann, R., Cooper, J. M. (eds.): *Technical Progress and Soviet Economic Development.* Oxford: Blackwell, 31–50.

Cooper, J. M. (1991): *The Soviet Defence Industry: Conversion and Economic Reform.* New York: Council on Foreign Relation Press.

Döhrn, R., Heilemann, U. (1991): *Sectoral Change in Eastern Europe – the Chenery Hypothesis Reconsidered.* RWI-Papiere, Nr. 25: Rheinisch-Westfälisches Institut für Wirtschaftsforschung.

Döhrn, R., Heilemann, U. (1996): The Chenery hypothesis and structural change in Eastern Europe. – *Economics of Transition 4*, 411–425.

Faber, C., Strohe, Hans-G. (2000a): Consumer prices in Russia and transforming official statistics. – Welfens, P. J. J., Gavrilenkov, E. (eds.): *Restructuring, Stabilizing and Modernizing the New Russia: Economic and Institutional Issues.* Berlin, Heidelberg, and New York: Springer, 223–241.

Fisher, A. G. B. (1939): Production, primary, secondary and tertiary. – *Economic Record 15*, 24–38.

Fourastié, J. (1949): *Le grand espoir du XXe siècle.* Third edition. Paris: Gallimard.

Fuchs, V. R. (1968): *The Service Economy.* New York, N.Y.: National Bureau of Economic Research.

Gavrilenkov, E. (2004): Growth in Russia and Economic Diversification. – Tabata, S., Iwashita, A. (eds.): *Slavic Eurasia's Integration into the World Economy and Community.* Sapporo: Slavic Research Center, Hokkaido University, 93–121.

Gerschenkron, A. (1962): *Economic Backwardness in Historical Perspective: A Book of Essays.* Cambridge, Massachusetts: Belknap Press.

Gonchar, K. R. (1998): *Conversion within the Context of Economic Reform: The Case of Nizhniy Novgorod Oblast.* BICC paper 14: Bonn International Center for Conversion.

Gonchar, K. R., Opitz, P. (2000): Regional conversion in the Russian case. – *International Regional Science Review 23*, 103–119.

Gorban, M. S., Guriev, S., Yudaeva, K. (2001): *Russia in the WTO: Myths and Reality.* CEFIR Policy Paper No. 2: Centre for Economic and Financial Research at the New Economic School (CEFIR), Moscow.

Goskomstat (2000): *Rossiyskiy statisticheskiy ezhegodnik 2000.* Moskva: Goskomstat Rossii.

Goskomstat (2001): *Tablitsy "zatraty-vypusk" Rossii za 1996 i 1997 gody.* Moskva: Goskomstat Rossii.

Goskomstat (2002a): *Rossiyskiy statisticheskiy ezhegodnik 2002.* Moskva: Goskomstat Rossii.

Goskomstat (2002b): *Sistema tablits "zatraty-vypusk" Rossii: za 1998 i 1999 gody.* Moskva: Goskomstat Rossii.

Goskomstat (2003): *Sistema tablits "zatraty-vypusk" Rossii za 2000 god.* Moskva: Goskomstat Rossii.

Goskomstat (2005): *Regulyarnaya statistika RF.* Internet: http://stat.hse.ru.

Gries, T., Jungblut, S. (1997): Catching up of economies in transformation. – Welfens, P. J. J., Wolf, H. C. (eds.): *Banking, International Capital Flows and Growth in Europe: Financial Markets, Savings and Monetary Integration in a World with Uncertain Convergence.* Berlin, Heidelberg: Springer, 297–313.

Gustafsson, B., Nivorozhkina, L. I. (2004): Changes in Russian poverty during transition as assessed from microdata from the city of Taganrog. – *Economics of Transition 12*, 747–776.

Hishow, O. N. (2003): Rußland und die Welthandelsorganisation: Kosten-Nutzen-Aspekte für die Beteiligten – *Osteuropa-Wirtschaft 48 (1)*, 13–40.

Ickes, B. W., Ofer, G. (2003): *The Political Economy of Structural Change in Russia.* The Pennsylvania State University, Dpt. of Economics, The Hebrew University of Jerusalem, Dpt. of Economics: Paper prepared for "Political Economy of Transition: Job Creation and Job Destruction", Conference, 14–17 August 2003, ZEI, Bonn, Germany.

Izyumov, A. I. (1991): The national experience of the USSR. – United Nations, H. C. (ed.): *Conversion: Economic Adjustments in an Era of Arms Reduction (Volume II). Disarmament Topical Papers 5.* New York: United Nations, 61–75.

Kauffmann, A. (2005a): Entwicklung der Struktur des Bruttoinlandsproduktes der Russischen Föderation. – Fuhrmann, W. (ed.): *Working Paper, International Economics Nr. 2005-01.* Potsdam: Universität Potsdam, 1–65.

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Kuboniwa, M. (1999): The new Russian input-output tables: a milestone in Russian statistics. – *The Journal of Econometric Study of Northeast Asia 1 No. 2*, 3–20.

Kuboniwa, M. (2002): An analysis of singularities of Russia's marketization using input-output tables. – *The Journal of Econometric Study of Northeast Asia 4 (1)*, 1–13.

Kuboniwa, M. (2004): Russia's oil and gas flow reconsidered. – Tabata, S., Iwashita, A. (eds.): *Slavic Eurasia's Integration into the World Economy and Community.* Sapporo: Slavic Research Center, Hokkaido University, 143–159.

Kuboniwa, M., Gavrilenkov, E. (1997): *Development of Capitalism in Russia: The Second Challenge.* Tokyo: Maruzen.

Kumo, K. (2003): *Migration and Regional Development in the Soviet Union and Russia: A Geographical Approach.* Moscow: Beck Publishers.

Kuznets, S. (1957): Quantitative Aspects of the Economic Growth of Nations: II. Industrial Distribution of National Product and Labor Force. – *Economic Development and Cultural Change (Supplement) 5*, 3–111.

Kuznets, S. (1971): *Economic Growth of Nations: Total Output and Production Structure.* Cambridge, Mass.: Belknap Press of Harvard University Press.

Kuznetsov, E. N. (1996): Learning to learn: emerging patterns of enterprise behavior in the Russian defense sector, 1992–1995. – Kuznetsov, E. N., Musienko, I. V., Vorobyev, A. (eds.): *Learning to Restructure: Studies of Transformation in the Russian Defense Sector.* Bonn International Center for Conversion: BICC Brief 3, 7–40.

Kuznetsov, E. N. (2004): Mechanisms to stimulate innovation-based growth in Russia. – *Problems of Economic Transition 46 No. 9*, 35–65.

Leary, N. A., Thornton, J. (1989): Are socialist industries inoculated against innovation? A case study of technological change in steelmaking. – *Comparative Economic Studies 31*, 42–65.

Lukyanova, A. (2003): *Transition to Postindustrial Society: A Study of the Service Sector Employment in Russia.* Working Paper No. 03/09: Economics Education and Research Consortium (EERC), Moscow.

Mikheeva, N. N. (1999): Analysis of interregional economic inequality in Russia. – *Studies on Russian Economic Development 10*, 514–521.

Mikheeva, N. N. (2004): Regional aspects of economic growth in Russia. – *The Journal of Econometric Study of Northeast Asia 5 No. 1*, 43–69.

Mikheeva, N. N. (2005): The service sector in the Russian economy: an interindustry analysis. – *Studies on Russian Economic Development 16*, 47–58.

Noren, J. H. (1994): The Russian military-industrial sector and conversion. – *Post-Soviet Geography 35*, 495–521.

O'Prey, K. P. (1995): *A Farewell to Arms? Russia's Struggle with Defense Conversion.* New York: Twentieth Century Fund Press.

Opitz, P. (1995): *Krisenmanagement in der russischen Rüstungsindustrie.* BICC report 6: Bonn International Center for Conversion.

Opitz, P., Sauer, T. (1999a): Ost-West-Kooperation im Technologiebereich – Wachstumspolitische Option für den russischen Transformationsprozeß? – Höhmann, Hans-H. (ed.): *Spontaner oder gestalteter Prozeß? Die Rolle des Staates in der Wirtschaftstransformation osteuropäischer Länder.* Baden-Baden: Nomos, 348–370.

Opitz, P., Sauer, T. (1999b): Strategic technology alliances: a way to innovative enterprises in Russia? – *Post-Communist Economics 11*, 487–501.

Raiser, M., Schaffer, M., Schuchhardt, J. (2003): *Benchmarking Structural Change in Transition.* EBRD Working Paper No. 79: European Bank for Reconstruction and Development.

Rassadin, V. N., Sánchez Andrés, A. (2001): Dual-purpose technologies in the defense industry and the prospects of their use. – *Studies on Russian Economic Development 12*, 591–595.

Romer, P. M. (1987): Growth based on increasing returns due to specialization. – *American Economic Review 77*, 56–62.

Rupp, R. (1992): Dual use industries. – *NATO's Sixteen Nations 2/92*, 26–29.

Sagers, M. J. (2002): Comments on the flow and taxation of oil-gas export revenues in Russia. – *Eurasian Geography and Economics 43*, 628–631.

Sapir, J. (1994): Conversion of the Russian defence industry – a macroeconomic and regional perspective – Wallin, L. B. (ed.): *Proceedings of a Symposium on The Post-Soviet Military-Industrial Complex (FOA Symposium No. 10)* Stockholm: The Swedish National Defence Research Establishment, 103–141.

Sauer, T. (1993): Probleme der Rüstungskonversion in der GUS. – Oppenländer, K. H. (ed.): *Die Lage der GUS und Probleme der Wirtschaftspolitik im Übergang zur Marktwirtschaft.* München: Ifo Institut für Wirtschaftsforschung, 63–77.

Sauer, T. (1994): *Mißlungene Vergesellschaftung: Fragmentierung als Problem des Innovationsprozesses im sowjetischen Wirtschaftssystem.* ifo studien zur ostforschung 12: ifo Institut für Wirtschaftsforschung, München.

Schrettl, W. (2004): Russia's integration into the world economy: a European perspective. – Tabata, S., Iwashita, A. (eds.): *Slavic Eurasia's Integration into the World Economy.* Sapporo: Hokkaido University Press, 3–25.

Schroeder, G. (1998): Dimensions of Russia's industrial transformation, 1992 to 1998: an overview. – *Post-Soviet Geography and Economics 39*, 243–270.

Strohe, Hans-G., Faber, C. (2000b): Official statistics in Russia and the measurement of the crisis – some remarks on Russian price statistics. – Welfens, P. J. J., Gavrilenkov, E. (eds.): *Restructuring, Stabilizing and Modernizing the New Russia: Economic and Institutional Issues.* Berlin, Heidelberg, and New York: Springer, 471–475.

Tabata, S. (1996): Changes in the structure and distribution of Russian GDP in the 1990s. – *Post-Soviet Geography and Economics 37*, 129–144.

Tabata, S. (2000): The great Russian depression of the 1990s: observations on causes and implications. – *Post-Soviet Geography and Economics 41*, 389–398.

Tabata, S. (2002): Russian revenues from oil and gas exports: flow and taxation. – *Eurasian Geography and Economics 43*, 610–627.

TsEK (2005): *Indeks promyshlennogo proizvodstva: raschety TsEK.* Tsentr Ekonomicheskoy Kon'yunktury pri Pravitel'stve RF. Internet: http://stat.hse.ru.

Wolfe, M. (1955): The concept of economic sectors. – *The Quarterly Journal of Economics 69*, 402–420.

World Bank (2004a): *From Transition to Development: A Country Economic Memorandum for the Russian Federation.* Moscow: World Bank, Russia Country Department.

World Bank (2004b): *Russian Economic Report No. 7 (February 2004).* Internet: http://www.worldbank.org.ru.

World Bank (2004c): *World Development Indicators (WDI) 2004.* Washington DC: World Bank.

World Bank (2005): *Russian Economic Report No. 10 (March 2005).* Internet: http://www.worldbank.org.ru.

World Bank, Goskomstat (1995): *Russian Federation: Report on the National Accounts.* Washington, D. C.: The World Bank.

Yudaeva, K., Bessonova, E., Kozlov, K. K. (2002): Russian industry and WTO accession: death knell or new beginning? – *Transition Newsletter 13 No. 3*, 33–35.

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