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Modernizing Russia: Round III. Russia and the other BRIC countries: forging ahead, catching up or falling behind?

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Introduction. Modernizing Russia: The Context

'Despite many currents and cross currents, continuity is perhaps the most impressive phenomenon in the history of economic doctrines'.¹ These words by a very experienced economic historian are still extremely relevant, also for economic policy. But continuity in economics is of a peculiar and cyclical kind. It does not manifest itself in smooth incremental transitions, but rather in the recurrence of similar sets of ideas in similar contexts over time.

The economics profession and what is considered 'best practice' economic policy is, then, decidedly cyclical. Its cyclicity appears to follow the same type of mechanisms of 'destabilizing stability' described by US economist Hyman Minsky as leading up to financial crises.² In the financial sector, when things are stable and improving over long periods of time, bank routines of risk evaluation grow increasingly lax, and in the end credit is given to people who are not even able to pay interest on the loans they are given ('Ponzi financing', as with subprime loans). In other words, long periods of stability lead to increasing vulnerability: to Minsky's 'destabilizing stability'.

Similar cycles are at work as regards our understanding of economics and industrial policy: long periods of economic progress in the core countries lead to increasingly abstract and irrelevant economic theories. 'Bad' theories – particularly as they are applied outside the economic core – are allowed to dominate the discipline for long periods of time because the underlying economy is strong enough to withstand their poisonous influences, but, eventually, reality catches up and disaster ensues. This brings less abstract and more relevant economic theories and practices back; mindless *laissez-faire* is abandoned and more active economic governance again becomes acceptable. These turning points can, after their most famous manifestation, be referred to as '1848 moments', and they tend to be caused by economic crises, just as the 1848 turning point followed upon the severe financial crisis of 1847.

In his 1848 *Principles of Political Economy* John Stuart Mill describes such moments well:

It often happens that the universal beliefs of one age of mankind – a belief from which no one *was*, nor without an extraordinary effort of genius and courage *could* at the time be free – becomes to a subsequent age so palpable an absurdity, that the only difficulty then is to imagine how such a thing can ever have appeared credible...It looks like one of the crude fancies of childhood, instantly corrected by a word from any grown person.³

¹ Raymond de Roover, 'Scholastic Economics: Survival and Lasting Influence from the 16th Century to Adam Smith', *Quarterly Journal of Economics*, 69, 1955, 161-190.

² Hyman P. Minsky, *Stabilizing an Unstable Economy*, New Haven: Yale University Press, 1986.

³ John Stuart Mill, *Principles of Political Economy*, London: Longmans, Green, Reader, and Dyer, 1848, 3.

Similar economic situations and constellations appear and – even centuries apart – reappear, and similar approaches tend to be reinvented. Sometimes the new theories refer to previous theories addressing similar problems, sometimes not. As regards economic policy, periods of profound qualitative understanding alternate with periods dominated by abstract theories, when knowledge previously recognised as valuable is unlearned. As we shall describe below, since the 1760s, two different approaches to economics – two different parallel streams – have competed for attention and prominence. Sometimes one dominates, sometimes the two streams are seen as complementary, and theoretical pluralism is seen as a natural thing. During these times of pluralism, the economists’ toolbox is at its largest.

In other words, long period of economic progress in the core nations create excessively abstract theories, which – in their turn – create economic havoc, first in the economic periphery and later closer to the core. These abstract theories create social crises, and the theoretical turning-points we have labelled ‘1848 moments’.⁴

In the first wave of irrelevance, the impressive economic growth of the Enlightenment climaxed in the economic school of Physiocracy which – contrary to all previous experience – recommended free trade under all circumstances. (Table 1) In Paris Physiocracy-based free trade in grain made it more profitable to carry grain out of Paris in order to speculate in rising prices, than to produce bread for the population of Paris. Free trade caused a serious shortage of bread and famine.

Table 1. Three Waves of Irrelevant and Economically Destructive Theories

School	Starting Point	Peak	Crises	New Pluralism
Physiocracy (‘Rule of Nature’)	Quesnay 1758	1760s	1789	already 1770s
Classical Economics	Ricardo 1817	1846	1848	ca. 1895
Neoclassical Synthesis	Samuelson 1948	1990	1995 +	NOW

In fact, the French Revolution broke out when news reached Paris that the anti-Physiocrat Jacques Necker had lost his position as French Minister of Finance. In practice, the Physiocrats lost almost every theoretical and practical battle except the one in today’s textbooks in the history of economic thought, where they hold a position which is completely unwarranted if one observes the economic policies that were actually carried out in Europe at the time.

⁴ Erik S. Reinert, ‘The Terrible Simplifiers: Common Origins of Financial Crises and Persistent Poverty in Economic Theory and the new ‘1848 Moment’’, UN DESA Working paper No. 88, December 2009, downloadable at http://www.un.org/esa/desa/papers/2009/wp88_2009.pdf

A second wave of 'destabilizing stability' in economics started with the publication of David Ricardo's *Principles of Economics and Taxation* in 1817. Attempting to keep England's virtual world monopoly in manufacturing, Ricardo produced an economic theory which justified the prohibitions on manufacturing in the colonies, postulating free trade as an agent of economic harmony. This wave peaked in the England's Repeal of the Corn Laws in 1846, discontinuing British protection of agriculture in an effort to prevent other nations from protecting their manufacturing sector. A massive financial crisis in 1847 and revolutions in 1848 in all large European countries – with the exception of Russia and Great Britain – put an end to the second wave of 'economics as a harmony-producing machinery'.

1848 produced three important books all critical of the economic order legitimized by Ricardian economics: Karl Marx and Friedrich Engels' *Communist Manifesto* (Marx was so radical that he was forced to flee Germany for England), Bruno Hildebrand's *National Economics in the Present and in the Future*, (Hildebrand was a liberal who had to flee Germany for Switzerland in order to escape the death penalty), and John Stuart Mill's *Principles of Political Economy*. From completely different political angles, all three books attacked the mainstream economics of the day for suffering from the same weaknesses of which we accuse today's mainstream. By attempting to make economics a much more accurate science than it merits, mainstream economics has created economic disasters: both financial crisis and poverty in the periphery. All three 1848 books understood that national wealth required industrialization, recanting Ricardo's trade theory, the very same theory which at present – in its most simplistic form – provides the basis of the world economic order that locks poor nations into a comparative advantage of being poor.

John Stuart Mill – celebrated today as an important liberal (in the European sense) – acknowledged that poor nations needed manufacturing industry and recommended 'infant industry protection'. In a speech to Belgian workers in 1848, Karl Marx was pleased with Ricardo's free trade theory because premature trade liberalization would create poverty and hasten revolution. Premature trade liberalization may lock nations into monoculture and undiversified economic structures that prevent democracy. A nation without a large division of labour and a web of increasing returns industries is unlikely to be able to support a democratic system. Enlightenment economists and philosophers were very aware of the fact that increasing returns, industrialization and democracy go hand in hand.

The long period of economic boom after World War II created a new movement towards excessive abstraction and irrelevance in economics. The first countries to be hit by a wave of falling real wages – already from the mid-1970s – were Latin America (with the exception of Brazil). The financial crisis starting in 2007 has led to a movement similar to that of 1848: the grow-

ing crisis has shattered the belief in self-regulating markets and led to a new and much more positive view of economic policy and of the role of the state.⁵ A recent front cover of the most ideologically liberalist of all international journals – *The Economist* – announcing that ‘The State Goes Back into Business’⁶ is typical of today’s *Zeitgeist*. The August 2010 cover is an appropriate follow-up of the same magazine’s cover of July 18, 2009, which depicted a book entitled ‘Modern Economic Theory’ experiencing a melt-down like an ice-cream abandoned on the beach on a hot summer’s day, with the subtitle: ‘Where it went wrong – and how the crisis is changing it’.

This is a true 1848 moment: as with the financial crisis in 1847, economics changed completely in 1848. (Table 2) When comparing Russia with the other BRIC countries later in this paper, we shall argue that Russia’s timing in the cycle of economic theory – and the resulting economic policy – has been particularly unfortunate.

Table 2. The Present Shift in Economic Focus: Before and after ‘The 1848 Moment’

Pre financial crisis focus	Post financial crisis (‘Other Canon’) focus
Capital	Technology and entrepreneurship
Financial economy	Real economy
International trade	National production
Economic models	Economic facts and their contexts
Distribute capital (‘aid’) in order to eradicate poverty	Distribute production in order to eradicate poverty
Perfect competition	Poverty eradication needs the high wages and the capital formation that only dynamic imperfect competition creates
Economics strongly ideologically biased. The Cold War polarization maintained: markets are good and the state bad and vice-versa	Separation of analysis and ideology, ‘technocratic’ analysis
Economic activities qualitatively alike	Economic activities qualitatively different
Gross national product/capita	Real wages
Economics as a science defined as the use of certain tools	Economists’ toolbox extended any approach which is relevant
The market as an ideological <u>goal</u>	The market as a <u>tool</u> for wealth creation

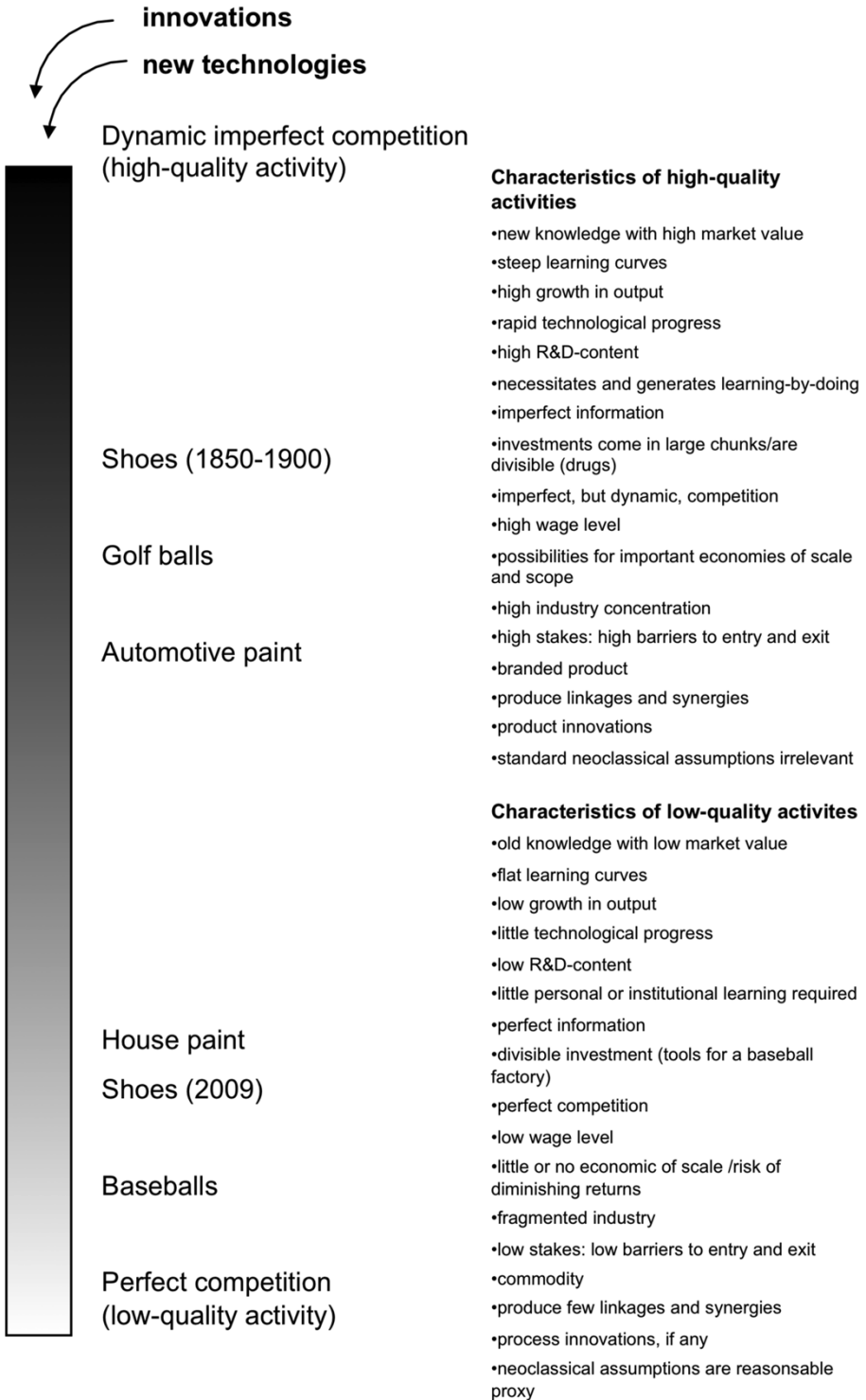
⁵ See, e.g. Mario Cimoli, Giovanni Dosi and Joseph E. Stiglitz, eds, *Industrial Policy and Development*, New York: Oxford University Press, 2009.

⁶ *The Economist*, August 7-13, 2010.

The Other Canon Approach: A Brief Description

This document is written in what we refer to as The Other Canon Approach to economics, indicated in the right-hand column in Table 2. This is the pragmatic and experience-based type of theory to which economics return after the excesses of abstraction that cause the '1848 moments' and the social havoc that accompanies them. A key feature of the Other Canon approach is that economic activities are seen as being qualitatively different in terms of their ability to generate economic growth and economic development. (Figure 1) The Quality Index of Economic Activities developed by The Other Canon ranks economic activities based on their potential to generate wealth. Founded on Schumpeterian (evolutionary) and Keynesian principles, on the principles of the historical schools of economics and on the experience-based economics taught at Harvard Business School, The Other Canon approach sees economic development and high wages as emanating from a combination of three factors: technological change, increasing returns, and the synergies originating in a large division of labour. Compared to today's economics The Other Canon represents a marked shift in focus away from trade to production, and away from perfect information as a standard and a stated goal, to Schumpeterian dynamic imperfect competition as being the goal to strive for. As in the theories of Thorstein Veblen, economic institutions are seen as being the result of the habits formed around a productive structure. Thus the arrow of causality runs mainly from changes in the productive sector to changing institutions, not – as is often assumed by the Washington Institutions – that institutional change per se takes the lead. In our view institutions are best formed simultaneously with a change in a nation's productive structure.

Figure 1. The Quality Index of Economic Activities



Learning from successful Russian Strategies of the Past: Rounds I and II

Russia faced an economic challenge with the change of economic model in 1991. When Russia now faces a new challenge in whether or not to join the WTO, we argue that it is necessary to draw important lessons from what happened to Russia's economic structure after 1991. President Medvedev has rightly called for the modernization of Russia, and we suggest that basic principles of modernization can be learned from two previous processes of modernization in Russia. In both cases we draw parallels between Russia and Germany, a nation which was also a 'latecomer'.

*Modernizing Russia: Round I*⁷

Under Peter the Great (1672-1725) Russia entered a first successful period of modernization, when Russia emulated the best organizational practices of western absolutism and – in particular – the economic structure of the Dutch Republic.⁸ Russia followed the same strategy as that recommended by the leading German economist at the time, Veit von Seckendorff (1626-1692). Just as Peter did, Seckendorff visited Holland, and came back with clear ideas that national wealth could only be produced by emulating the economic structure of that country: by creating a diversified manufacturing sector – maximizing the division of labour – and thus creating the economic synergies that characterize rich countries. Seckendorff's textbook in economic strategy – *Der Teutsche Fürstenstaat* – was first published in 1656 and remained in print for 100 years.⁹

Emulating the Dutch economic structure was what all successful countries did during the Enlightenment, with England in the lead. English economist Joshua Child opens his 1668 book with a comment on 'the prodigious increase of the Netherlanders' which is 'the envy of the present and may be the wonder of all future generations. And yet, the means whereby they have thus advanced themselves, are sufficiently obvious, and in a great measure imitable by most other nations...'¹⁰

⁷ This section, and our understanding of Russian history in general, have been greatly assisted by an unpublished paper by Georgi Derluguian of Northwestern University, 'Five centuries of Russian Modernizations'.

⁸ On how European countries emulated the Dutch Republic at the time, see Erik S. Reinert, 'Emulating Success: Contemporary Views of the Dutch Economy before 1800', in Oscar Gelderblom, ed., *The Political Economy of the Dutch Republic*, Farnham: Ashgate, 2009, 19-39.

⁹ On Seckendorff and the economic strategies of the German states, see Erik S. Reinert, 'A Brief Introduction to Veit Ludwig von Seckendorff (1626-1692)', *European Journal of Law and Economics*, 19, 2005, 221-230.

¹⁰ Quoted in Erik S. Reinert, *How Rich Countries Got Rich ... and Why Poor Countries Stay Poor*, London: Constable, 2007.

What did the foreign visitors learn from studying Holland? First of all they learned that economic activities were qualitatively different: there were 'good' economic activities which caused generalized welfare, and there were 'bad' economic activities, which caused poverty of the masses. These characteristics are outlined in Table 3.

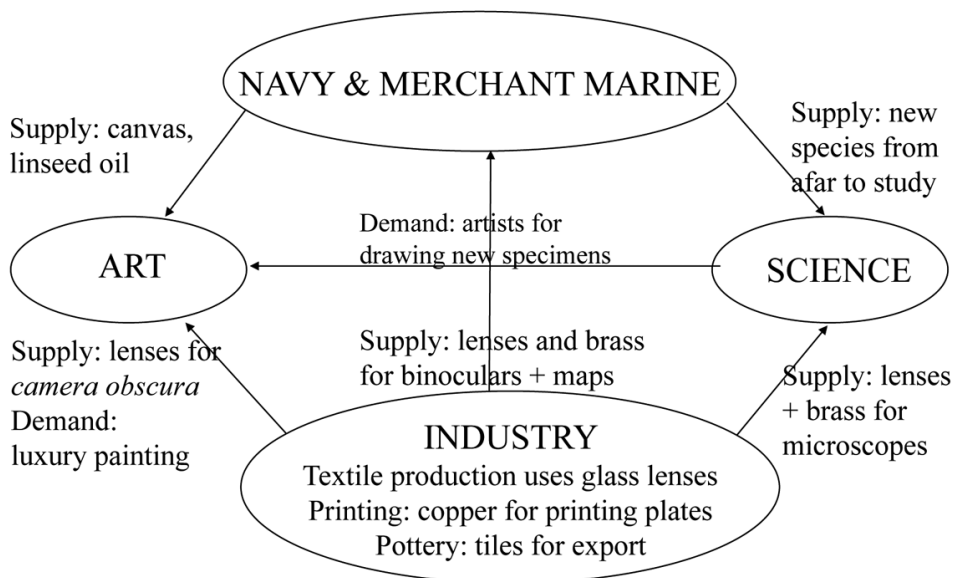
Table 3. Characteristics of 'Good' and 'Bad' Economic Activities

Good (Schumpeterian) Activities	Bad (Malthusian) Activities
Subject to increasing returns (industry, advanced services)	Subject to diminishing returns (raw materials)
Dynamic imperfect competition	'Perfect competition' (commodity competition)
Stable prices	Extreme price fluctuations
Irreversible wages ('stickiness' of wages)	Reversible wages
Creates a middle class	Creates 'feudal' societies
Technical change leads to higher wages to the producer ('Fordist wage regime')	Technical change tends to lower price to consumer
Creates large synergies (linkages, clusters)	Creates few synergies

In addition it is clear that foreign observers in Holland – as Peter the Great or Veit von Seckendorff – observed important dynamic synergies that resulted from the great division of labour, the systemic effects that today are referred to as a 'National Innovation System'.

In Figure 2 we attempt to reconstruct what a foreign visitor would have observed in Delft in Holland at the time of Peter the Great's visit: an innovation system built around a great division of labour between many manufacturing industries, around the navy and warfare, the production of luxury goods, and on the 'idle curiosity' of the scientists so typical of the Enlightenment.

Figure 2. Delft, Holland in the 1600s. An Innovation System based on Diversity



Modernizing Russia: Round II

A second round of modernizing Russia was the extensive industrialization presided over by the very influential policy-maker Sergei Witte (1849-1915), who served under the last two emperors of Russia. In principle, the industrialization process spearheaded by Witte had the same goals as that of Peter the Great, but in a very different technological context (in a different techno-economic paradigm). The key infrastructure at the time of Peter the Great was ships, and Peter concentrated on building the Russian navy. The key infrastructure at the time of Witte was railroads, and Witte built the trans-Siberian railway. The principles were the same – also those listed in Table 3 – but the technological context was different.

Also in the case of Witte there is a parallel with Germany, with German economist Friedrich List (1789-1846), whose texts Witte translated into Russian.

We suggest in this document that today’s modernization of Russia – which we have labeled Modernizing Russia: Round III – has to follow the same principles as did Rounds I and II: the factors listed in Table 3 are still very much at work, and – as we shall see – the ideology that ruled during the 1990s did considerable damage to Russia’s productive structure. This is particularly evident when we compare Russia to the other BRIC countries.

Russia and the other BRIC Countries

The term 'BRIC countries' – Brazil, Russia, India, and China – traces its roots to investment banking, Goldman Sachs coined the term in 2001. The idea of large emerging economies catching up with, and challenging, the West has captured social scientists and policy-makers alike. However, the sheer size and different historical legacies dictate that there are enormous differences between the BRIC economies. Russia's situation is in three ways unique among the BRIC countries. First, Russia was an industrialized nation long before the others, secondly, it experienced unprecedented economic decline in the 1990s and by 2008 Russia barely reached the GDP level of 1989;¹¹ thirdly, unlike Brazil, China, India and in fact most of the developing world, Russia is not a member of the World Trade Organization (WTO).

These unique features beg the following questions that this document seeks to (at least tentatively) answer: first, what is the structural legacy of the decline in the 1990s in terms of technological and industrial capabilities in Russia; and second, what can and should Russia learn from the WTO experience of the rest of the BRIC economies until today. We argue, in brief, that while the decline of the 1990s is relatively well-known and documented on the macro-level (GDP) and more controversially in some of its micro-level and sociological impacts,¹² there seems to be little awareness of the magnitude of devastation that took place during this period within Russia's industry. Along with a massive increase in income from natural resources, a partial disintegration of the R&D system, and a greatly diminished policy capacity, the structural changes of the 1990s continue to pose grave challenges to Russia's economic policy making. In fact, in many areas Russia's technological and industrial capabilities have simply been lost.

In this light the accession to the WTO presents itself as a watershed in Russia's history similar to that of the disintegration of the Soviet Union and the subsequent reforms. The WTO agreements assume that economic activities are alike (ignoring the factors described in Figure 1 above) and consequently assume that the structural changes induced by free trade are in everybody's interests. Economic history and recent decades – and

¹¹ Vladimir Popov, 'The Long Road to Normalcy', UNI-WIDER Working Paper No 2010/3, 2010. Brazil's own lost decade of the 1980s pales in comparison to Russia's experience. On Brazil, see Leonardo Burlamaqui, Jose A. P. de Souza and Nelson H. Barbosa-Filho, 'The rise and halt of economic development in Brazil, 1945-2004: Industrial catching-up, institutional innovation, and financial fragility', in Ha-Joon Chang, ed., *Institutional Change and Economic Development*. London: Anthem, 2007, 239-259.

¹² See, for perhaps the most infamous discussion of the impacts of Russia's privatization policy during 1990s the article by Lawrence King, David Stuckler and Martin McKee, 'Mass privatisation and the post-communist mortality crisis: a cross-national analysis', *The Lancet*, 373, 9661, 399-407, January 2009.

Russia's own experience in the 1990s – teach us that this is simply not so. Free trade tends to reinforce pre-existing structural tendencies and comparative advantages: technologically developed areas (geographical agglomerations of knowledge and production) get richer, while areas dominated by monoculture in raw materials and undiversified economies experience further primitivization and retrogression. Learning from successful cases of managing industrial policy under the WTO – what the rest of the BRIC economies have long been doing – is perhaps the main issue for Russia's economic policy-making in the near future.

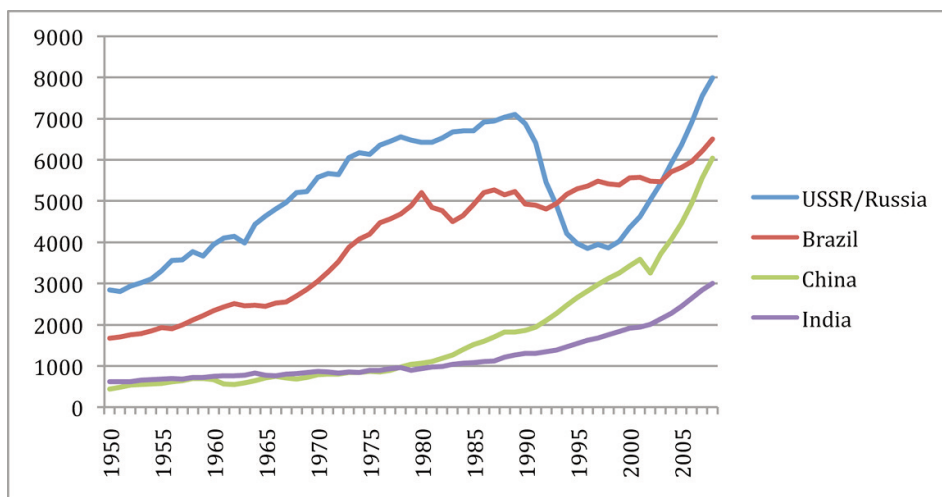
The other BRIC countries to a large extent owe their success to being unsynchronized with the global cyclical fashions of economics that have been described in the preceding paragraphs. Since the late 1940s, India and China have consistently been following a strategy of industrialization. In the case of both India and China, the lack of competition for a long time no doubt hindered progress, but there is a growing recognition that the present successes of these countries are a result of past strategies¹³. As huge countries India, China, and Brazil were all subject to 'ideological inertia' in the sense that the neoliberal fad never penetrated as deeply as it did in the smaller nations. In contrast to the other BRIC countries, the negative effects of the neoliberal period caused severe and lasting damage to Russia's productive sectors (see the figures in Appendix I). While the Washington institutions managed to dismantle the industrial policies of the smaller Latin American nations, BNDS – Brazil's Development Bank – presently has a larger capital base than the World Bank. It is in our opinion important to recognize that Russia has been extremely unfortunate in relation to the fads and swings of the economics profession, and that it will take decades to repair the damage done.

The decline in GDP and output experienced by Russia, and by all other former Soviet republics and to a lesser degree Central European economies, in the 1990s is relatively well documented and undisputed. According to the World Bank's calculations, the recession these countries went through in the 1990s was in most cases worse than the Great Depression in the USA and World War II in Western Europe (in both cases, countries affected recovered considerably quicker).¹⁴ In case of Russia and the BRIC countries, Figure 3 depicts the well-known dynamics of GDP growth over the last half century.

¹³ In the case of India, see Deepak Nayyar, 'Learning to Unlearn from Development', *Oxford Development Studies*, 36 (3), 2008, 259-280.

¹⁴ World Bank, *Economic Growth in the 1990s: Learning from a Decade of Reform*, 2006, available at <http://www1.worldbank.org/prem/lessons1990s/>.

Figure 3. GDP per capita in 1990 international dollars, 1950-2008



Source: Angus Maddison, *The World Economy. Historical Statistics*, Paris: OECD, 2003, and The Conference Board and Groningen Growth and Development Centre, Total Economy Database, June 2010, <http://www.conference-board.org/economics/>

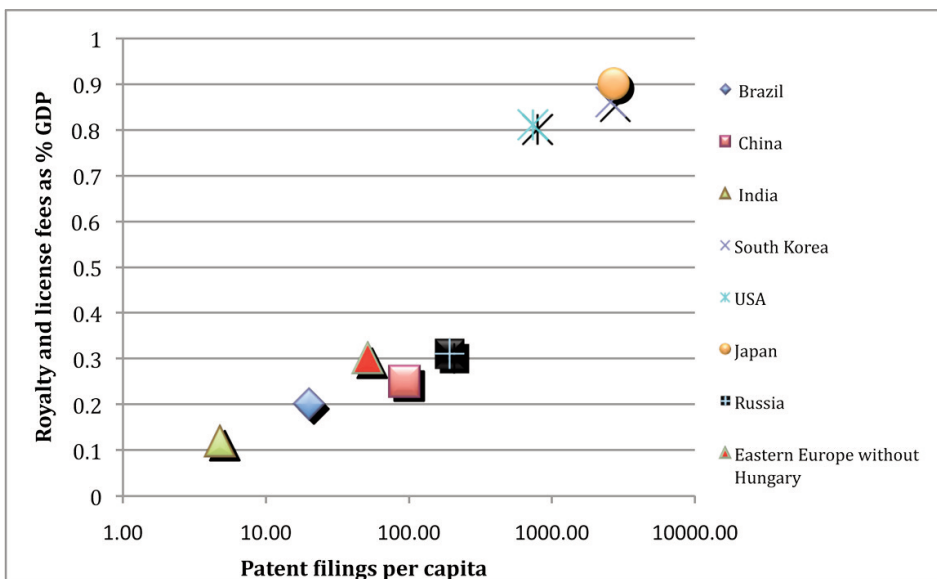
Underneath such a drastic fall in GDP are similar dynamics in terms of value added produced by industry and by other sectors. Figures 11-27 in Appendix 1 show the rapid fall in value added produced particularly in industry, and continuous lowering well into the 2000s as in the case of the share of high and medium technology value added in manufacturing. This is in stark contrast to the rest of the BRIC economies as well as with dynamics in leading catching-up economies such as Korea, let alone with leading developed countries such as the USA and Japan.

Russia's prowess in sciences, particularly mathematics, is proverbial. Indeed, if we take a snapshot view of the knowledge intensity of the BRIC economies – in terms of patents filed and money paid and received for knowledge transactions – Russia is doing rather well, as shown in Figure 4. In fact, Russia is not only outperforming all the other BRIC economies, but also Eastern European members of the European Union. However, zooming out and taking a long-term view reveals a more complex picture, depicted in Figure 5.

While Russia, along with Brazil and India, has been able to rapidly increase its share in world exports, its share in knowledge economy is in fact not increasing at an equal pace. Korea and China are able to climb what we can call a knowledge ladder: exporting a significant amount of their respective outputs and simultaneously rapidly increasing the knowledge intensity of the economy. Moreover, Russia's growth in exports is mostly due to rise in

fuel exports (see Figure14 in Appendix 1) and in terms of a science base (measured here in a very robust way, in number of scientific articles),¹⁵ Russia has in fact been rapidly losing ground to the other BRIC economies (Figure 15).¹⁶

Figure 4. Snapshot of knowledge intensity, 2008¹⁷



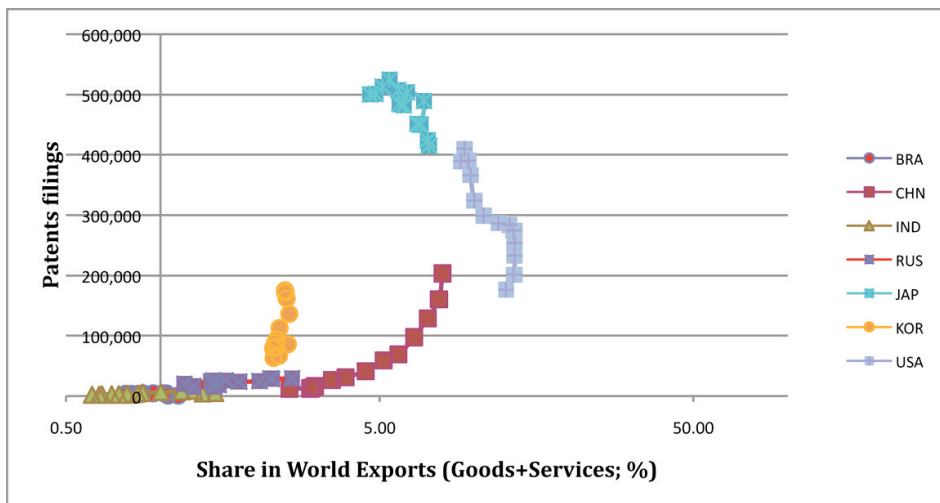
Source: WIPO, World Bank WDI Online database; calculations by the authors; x axis log scaled

¹⁵ See also a recent OECD report on Russia's innovation system, *National Innovation System and State Innovation Policy of the Russian Federation. Background Report to the OECD Country Review of the Russian Innovation Policy*, OECD, 2009.

¹⁶ For a most recent comparison of BRICS (including South Africa) innovation and R&D systems, see José Eduardo Cassiolato and Virgínia Vitorino, *BRICS and Development Alternatives. Innovation Systems and Policies*, London: Anthem, 2009. On the transition of the Russian R&D system, see Slavo Radosevic, 'Patterns of preservation, restructuring and survival: science and technology policy in Russia in post-Soviet era,' *Research Policy*, 32(6), 1105-1124, 2003.

¹⁷ Data for patents are for 2006 and include all filings around the world; data for royalties and licenses are for 2008 and include both payments and receipts. Royalties and license fees include international payments and receipts for the authorized use of intangible, non-produced, non-financial assets and proprietary rights (such as patents, copyrights and industrial processes and designs). Hungary is excluded from Eastern European calculations as it has a very high level of royalty and licensing fees in GDP (1.99%).

Figure 5. Knowledge ladder: Patents vs Share in World Exports (Goods and Services), 1996-2008



Source: WTO and WIPO; calculations by the authors; x axis log scaled

After the tumultuous 1990s, Russia has thus generally developed in the opposite direction of the other BRIC and leading catching-up economies: exports are undiversified, the share of high and medium technology production is diminishing, and losing ground to the other countries in terms of knowledge production.

There are more or less three broad explanations typically given for the rapid collapse of Russia's GDP in the 1990s. Two of the explanations spring from the same ideological well, neoclassical economics cum Washington Consensus policies: first, it is argued, Russia's trouble originated in the profound mismanagement of the macroeconomic environment, particularly in the inability to tame inflation.¹⁸ Secondly, the transition from planned economy to market economy was protracted and undermined by continued trade controls (export quotas and import substitution).¹⁹ A third argument looks at long-term institutional development in Russia and argues that Russia's domestic institution building has always been complicated by copying Western solutions without heeding domestic needs, and that shock therapy essentially threw out the baby with the bath water: non-functioning markets dismantled feeble institutions and undermined state capacity in

¹⁸ Jeffrey Sachs, 'Why Russia has failed to stabilize', 1995, available at <http://www.earth.columbia.edu/sitefiles/file/about/director/documents/russia1995.pdf>.

¹⁹ Vladimir Kononov, 'Russian Trade Policy', in Constantine Michalopoulos and David G. Tarr, eds, *Trade in the New Independent States*, The World Bank/UNDP, 1994, 29-51.

the process.²⁰ None of these, however, explain why Russia is still lagging behind other BRIC and leading catching-up economies. In what follows, we offer an alternative understanding of what happened to Russian industry in the 1990s. We look at Russian economic dynamics through evolutionary and Schumpeterian Other Canon lenses.

While some key neoclassical thinkers argue for an important role for industrial and technology policy in development,²¹ there is still one key aspect in which industrial policy is often misunderstood, namely the role of technology in development.²² More specifically, there are strong disagreements as to what causes and stimulates innovations in the private sector. On the one hand, the evolutionary tradition argues that innovations and economic growth in general take place because of knowledge and skill agglomeration and continuous upgrading and technological change. On the other hand, the neo-classical and also public-choice traditions argue that the main drivers behind innovations and growth are trade and competition: the former using the comparative advantage of nations to bring more, better and cheaper goods to consumers (higher efficiency); the latter creating pressures for companies to incessantly innovate and outcompete the competitors, and to push prices down in the process (higher efficiency, again). This difference goes back to a different understanding of the nature of technological development and its impact on companies and economies.

The evolutionary school argues that technological development is almost always path-dependent; neo-classical arguments assume that technology is essentially freely available to all, competitors and countries alike. The neo-classical view also assumes that technological development is more or less linear, towards ever more complex solutions yet with a rather clear path ahead. Thus, while neoclassical economists set out to rectify market failures that prevent the dissemination of technologies and skills, in the eyes of evolutionary economists, entrepreneurs seek technological innovation *in order to create* market failures. To evolutionary economists, technological development is anything but linear and technology is anything but freely available. Path dependencies, linkages, spillovers, externalities, winner-takes-all markets and highly imperfect and dynamic competition make technology an unpredictable, high-risk and possibly high-return endeavor. These characteristics engender long-term structural changes in the economies in form of technology trajectories, techno-economic paradigms and geographical agglomerations.

²⁰ Vladimir Popov, 'The Long Road to Normalcy', 2010.

²¹ Dani Rodrik, *One Economics, Many Recipes. Globalization, Institutions, and Economic Growth*, Princeton, NJ and Oxford, UK: Princeton University Press, 2007.

²² Mario Cimoli, Giovanni Dosi, Richard Nelson and Joseph Stiglitz, 'Institutions and Policies Shaping Industrial Development: An Introductory Note', LEM Working Paper Series, 2/2006, 2006, available at <http://www.lem.sssup.it/WPLem/files/2006-02.pdf>.

Following a broadly evolutionary approach, we assume that companies innovate in order to hedge their balance sheets; that is, companies innovate in order to generate revenues and outcompete their competitors, and they do so in a number of ways, e.g. by developing new or improved products and services, or by introducing organizational or marketing changes, etc. In trying to hedge their balance sheets through innovations companies rely on skills and routines they have developed, or as Alfred Chandler called this, companies rely on 'learned organizational capabilities' that include technical know-how, management and marketing skill, established networks etc.²³ These capabilities, however, develop and evolve in a wider context which can be called a national system of innovation that can have a huge variety of features from the legal system to particularities of education and R&D.²⁴

In the early 1990s the Washington institutions assumed that Russia needed to deal with two fundamental challenges of transition: to align domestic prices with world markets and to restructure the Soviet industry. While liberalization of prices and tariffs²⁵ was supposed to deliver the first, restructuring was to take place through processes of import spillovers and externalities.²⁶ The argument rested on the logic that foreign investors bring with them new technology and skills that in turn force domestic producers to imitate the foreign competitors and in the process upgrade their own respective technological and production capabilities.

However, as rapid liberalization threatened and also in reality resulted in high inflation and rapid fall in ruble value in the early days of the transition, import externalities could not take place, as domestic products were massively cheaper. Thus, upon the advice of the Washington Institutions, Russia embarked on stabilization through exchange rate appreciation in order to both curb inflation and raise competitiveness of imports to promote industrial restructuring.²⁷ From the evolutionary Other Canon viewpoint this was, however, bound to lead to a catastrophe for domestic producers. Soviet industrial companies, and the industry in general, were built up and ran in a complex cluster-like web of planning and competition; the produc-

²³ Alfred Chandler, *Inventing the Electronic Century. The Epic Story of the Consumer Electronics and Computer Industries*, Cambridge, MA: Harvard University Press, 2005; and Richard Nelson and Sidney Winter, *An Evolutionary Theory of Economic Change*, Cambridge, MA: Harvard University Press, 1982.

²⁴ Chris Freeman, *The Economics of Industrial Innovation*, London: Routledge, 1974.

²⁵ Tariffs, however, played a relatively minor role in the early transition period, being kept low around 12% on average and only in 1994 some tariffs rose rapidly (car production, agriculture, defense); see Konovalov, 'Russian Trade Policy', 1994, 30 and 39-40.

²⁶ Dani Rodrik, "'Disequilibrium' exchange rates as industrialization policy", *Journal of Development Economics*, 23(1), 89-106, 1986.

²⁷ See summary of arguments in Vladimir Popov, 'Recovery and adjustment after the Russian 1998 currency crisis', in Jayati Ghosh and C.P. Chandrasekhar, eds, *After Crisis - Adjustment, Recovery and Fragility in East Asia*, New Dehli: Tulika, 2009, 245-269

tion was generally highly vertically integrated. Perversely mirroring the cluster-like characteristic of Soviet industrial activities, the R&D system was based on similar vertical integration of R&D into specialized institutions that were, however, separated from the production companies. With the liberalization of prices and trade in January 1992, and as government planning of production and distribution ceased to exist, most companies saw drastic drops in their exports to other former Soviet republics and Central European economies.²⁸ While raw materials based exports proved relatively resilient in 1992-1993, Russian machinery exports dropped from 13 billion USD to 5 billion USD.²⁹ At the same time relatively recent capital investments in new production technology were rather common for Russian companies: in 1990, in the machinery sector, more than 50% of the production technology was less than 5 years old.³⁰ That means most of these companies had a large amount of capital investments that they could not yet amortize and thus the companies with the highest relative fixed costs to variable costs (these tend also to be the technologically most advanced ones) were hit the hardest as their balance sheets worsened very quickly. If a company has a lot of machinery and equipment to be amortized, i.e. there have been recent investments into upgrading, this company will be particularly harshly hit if its demand drops and it comes under financial stress because of liabilities to the banking sector. Thus, by definition, the most advanced industries were hit first and also hardest by the free trade shock, i.e. by rapid liberalization. This is called the Vanek-Reinert effect: a free trade shock will kill the most advanced sectors in the least advanced trading area first. The last to survive will be subsistence agriculture.

In addition, as demand disappeared, particularly in the former Soviet trading area, it meant that most industrial value chains and all-important linkages between different producers collapsed. Linkages between producers, also called innovation pathways, simultaneously enforce and enable companies to learn new ways of producing things, by experimenting and consequently improving their processes and products. Once these linkages collapse rebuilding them is almost impossible because of labour mobility, unlearning through idleness, and because entrepreneurs move into activities with higher profit possibility which may, however, not exhibit similar development potential as technologically-based activities.

However, as we can see in Figure 6, the Vanek-Reinert effect was made much worse in Russia by the exchange rate appreciation during 1993-1995. Obviously this appreciation made imports much more competitive, as

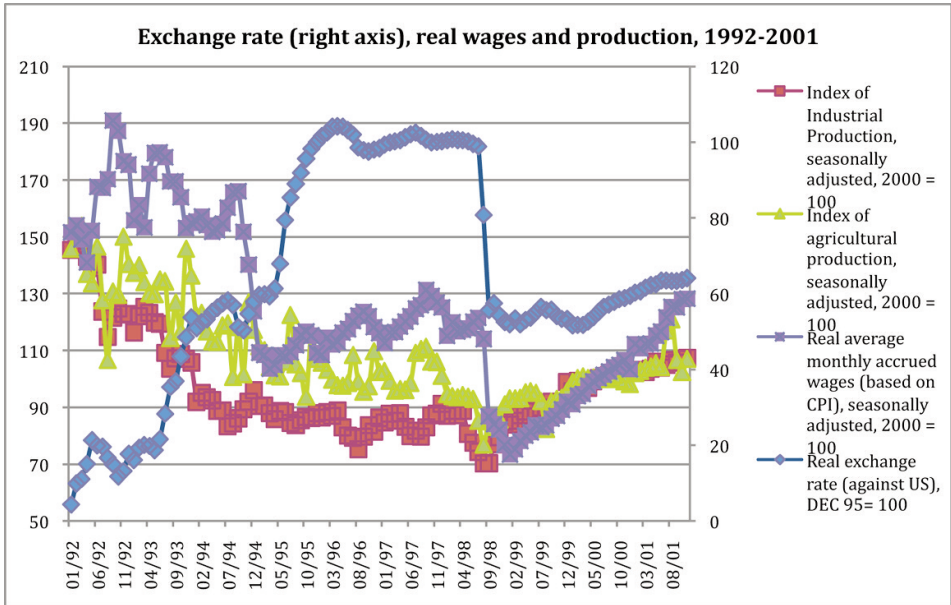
²⁸ Konovalov, 'Russian Trade Policy', 1994, 34, table 2.3.

²⁹ *Ibid.*, 36.

³⁰ Narodnoe Hosjaistvo SSSR v 1990 g., Moscow, 1991, 316.

retail sales hardly changed throughout this period, and at the same time it made domestic producers lose their competitiveness. Figures 11-26 document the unprecedented fall in production (both in industry and agriculture) in Russia in the 1990s. These figures show the surprisingly large dynamics inherent in Russia's economy up to the late 1980s: almost all economic activities experienced strong growth in output. This was followed by an astonishing fall of production in most sectors and, as the figures show, some activities became virtually extinct. However, this also means, that not only does production and employment fall radically in sectors with high learning potential, but the 'pathways of innovation' have collapsed. In other words, the Russian National Innovation System was severely damaged.

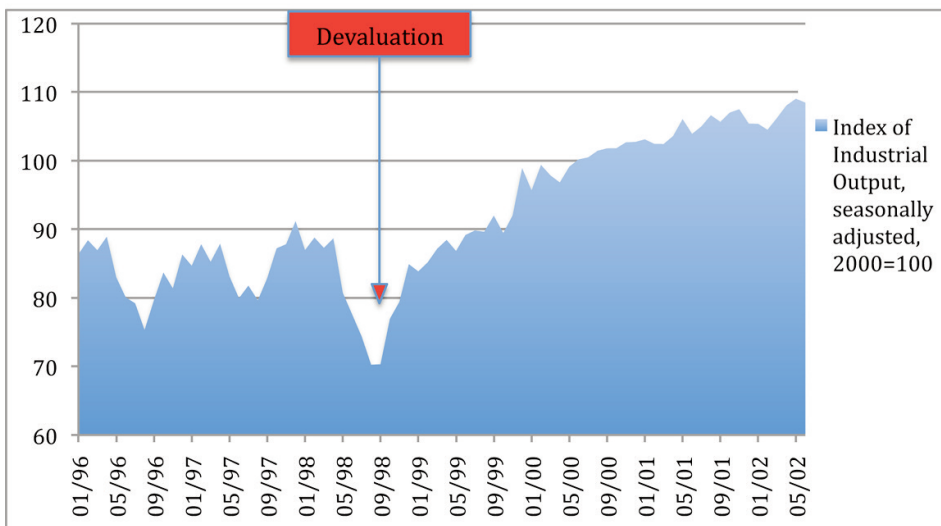
Figure 6. Exchange rate, real wages and production in Russia, 1992-2001



Source: Russian Economic Trends, available at <http://www.recep.ru/phase4/en/ret/retdb.htm>

Figure 7 shows the direct link between the overvaluation of the rouble and the damage done to the productive sector.

Figure 7. Russia's industrial production before and after devaluation in 1998



Source: Russian Economic Trends, available at <http://www.recep.ru/phase4/en/ret/retdb.htm>.; see also Popov, 'Recovery and adjustment', 2009

It is clear that the 1998 financial crisis and the devaluation of the rouble helped local producers regain some of their competitiveness. Also, Russian economic policy has changed considerably since the early 1990s. This policy evolution can be divided into three periods starting in 1990. First, 1992-1998, the period of destructive destruction documented above. Second, 1998-2004, a period we would call gilded recovery, as devaluation enabled some of the production to pick up again, also tariff policy clearly helped in some fields (e.g. car production, poultry), and the rise in global energy prices flooded Russia with petrodollars. But this period is also characterized by rapidly falling real wages – and consequently a collapse of overall demand – and rapid growth in income inequality while social indicators continued worsening (e.g. human development index³¹). The third period, starting with Vladimir Putin's first presidency in 2004, can be seen as an area of emerging state capitalism or, particularly after 2008, as neo-developmental. While Putin during his first term actively sought Russian membership in the WTO, his second term as president brought a marked difference, not only rhetorically but also in terms of actual policy. Indeed, Putin's Russia has been 'accused' by neo-liberalists of pursuing industrial policy.³³

³¹ See Popov, 'Recovery and adjustment', 2009.

³² Rawi Abdelal, 'The Promise and peril of Russia's resurgent state', *Harvard Business Review*, Jan-Feb, 2010, 1-6.

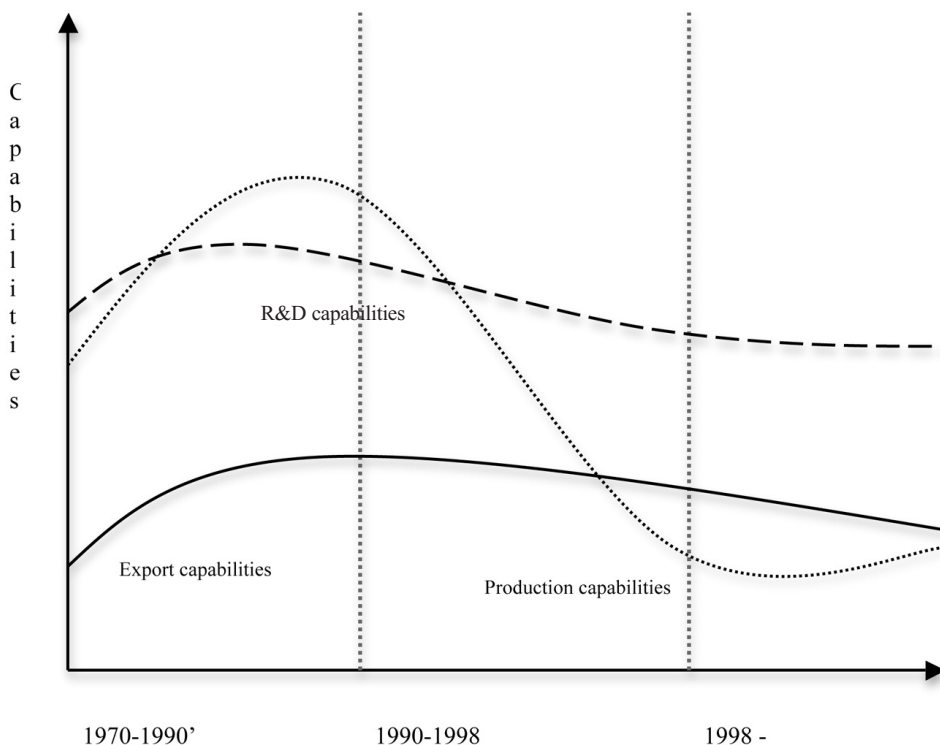
³³ Anders Åslund, 'Why doesn't Russia join the WTO?', *The Washington Quarterly*, April 2010, 49-63, available at http://www.twq.com/10april/docs/10apr_Aslund.pdf.

It appears that Russia is consciously delaying its entrance into the WTO agreements; instead, Russia is set to experiment with various industrial policy means such as priority industrial sectors, local content requirements, public procurement for innovation, import tariffs, etc. However, from the destructive destruction of 1992-1998 Russia has inherited an industrial sector with particular capabilities. In order to understand the dynamics of how Russia's industrial capabilities – capabilities for innovation – have evolved over the past decades, it is useful to compare these to other BRIC economies. Figure 8 attempts schematically to summarize these comparative dynamics.

In comparison to the other BRIC economies, Russia saw particularly its production and R&D capabilities forging ahead of the rest up to the mid or late 1980s. Chris Freeman and Carlota Perez have argued that the Soviet industrial system coped relatively well with the mass production paradigm that came to be exhausted by the early 1980s.³⁴ The switch to the information technology led production paradigm, based as it is on production and innovation networks, was something that the Soviet planning system could not cope with. This shock therapy meant that the other BRIC economies rapidly started catching up with Russia, and in particular in their production and export capabilities eclipsed Russia within a decade. While Russia still enjoys relatively strong R&D capabilities, as we saw above, the dynamics speak clearly for the other BRIC economies, and not for Russia.

³⁴ Chris Freeman, 'The 'National System of Innovation' in historical perspective', *Cambridge Journal of Economics*, 19, 1995, 5-24; and Carlota Perez, *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*, Cheltenham, UK: Edward Elgar, 2002.

Figure 8. Evolution of Russian industrial and technological capabilities in relation to the rest of the BRIC economies³⁵



While it is noticeable that other BRIC countries are parties to WTO agreements, it is more than significant that especially India and China never really succumbed to the Washington Consensus type of policies. Indeed, also within the WTO China and India, and increasingly also Brazil, have become powerful countries with their own clear agenda that they are also increasingly able to push through. So for instance all three countries have made significant changes to their intellectual property laws that, while WTO (that is TRIPS) compliant, give important advantages to domestic producers.³⁶ Similarly, India and China, less Brazil, have been noticeable exceptions in not allowing total freedom for foreign investors and capital movement.³⁷ In other words, the other BRIC economies have been fast learning how to reap benefits from the WTO membership, and at the same time generate policies

³⁵ Under production capabilities we mean such features as diversity and clustering of production, feedback linkages among producers, inter-sectoral linkages, etc; by R&D capabilities we mean both tacit and codified knowledge creation (patents, articles, product development networks); and by export capabilities we mean both volume and diversity of exports.

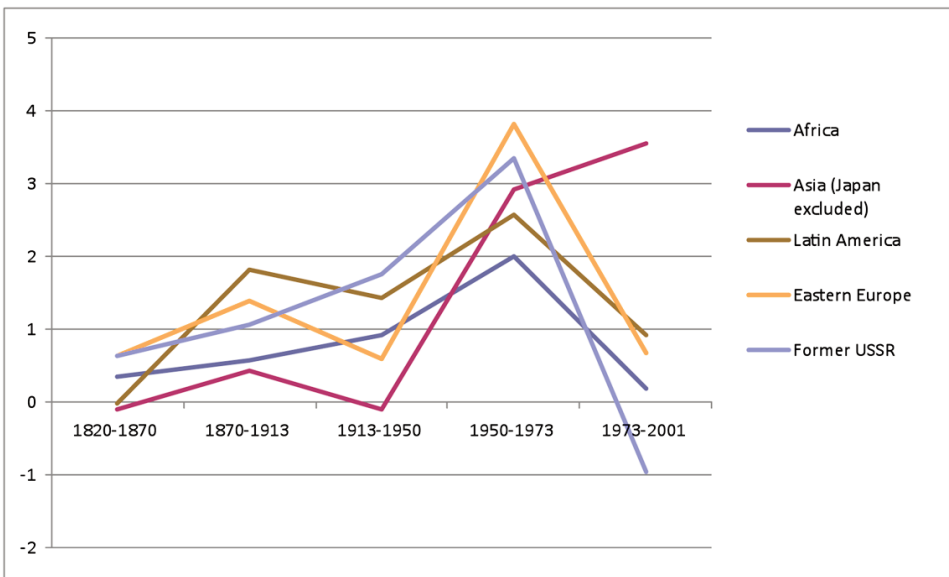
³⁶ Jerome H. Reichman, 'Intellectual Property in the Twenty-First Century: Will the Developing Countries Lead or Follow?', *Houston Law Review*, 46(4), 2009.

³⁷ José Antonio Ocampo and Joseph E. Stiglitz, eds., *Capital Market Liberalization and Development*, Oxford: Oxford University Press, 2008.

for domestic capabilities building. This is something that Russia has seemingly not yet learned how to do. In light of the above analysis, Russia is well advised to take up more seriously an industrial policy aiming at domestic expansion.

The challenges faced by Russia are by no means unique. Indeed, it can be argued that most catching-up economies today face similar challenges that can be summarized under the heading of diminishing returns to integration into the global economy. Figure 9 shows that outside the West, only Asia has escaped rapidly falling growth rates following the introduction of the Washington Consensus policies.

Figure 9. Development Economics lost. Growth rate of GDP per capita in selected world regions; regional average in selected periods between 1820 and 2001; annual average compound growth rate



Source: Data from Angus Maddison, *The World Economy. Historical Statistics*, Paris: OECD, 2003; calculations by the authors

Even in highly innovative fields such as information and communication technologies, catching-up country innovation hubs (technology parks, production agglomerations, etc) may experience diminishing returns to network integration. In electronics, for instance, 'Asian labs remain focused primarily on repetitive detailed engineering and product development tasks.'³⁸ In

³⁸ Dieter Ernst, *A New Geography of Knowledge in the Electronics Industry? Asia's Role in Global Innovation Networks*, East West Center, Policy Studies, No 54, 2009, 29.

other words, despite growing high- tech exports and R&D expenditures, many catching-up countries may experience 'commodification' (perfect competition which makes it difficult to maintain high wages). Indeed, catching-up and developing countries might both seem to industrialize (measured by an increasing share of industry in GDP) and catch up technologically (measured by a raising share of 'high tech' exports), yet none of these indicators necessarily imply an increased capacity to develop, and to pay higher real wages. This is because domestic linkages may remain weak, while intense global competition keeps wages and profits low. To the contrary, there seems to be evidence of emerging high-tech enclaves in developing country innovation which create few linkages and synergies with other domestic actors (industry, research labs and the public sector). Such tendencies repeat themselves in a host of catching up economies, from Estonia to Mexico. This, perhaps, is the strongest reason why the Washington Institutions again are talking about industrial policy. Trade, foreign investments and openness are simply not enough to deliver sustainable growth in terms of technology, employment, high wages, and finance.

Industrial policy came to be discredited in the 1980s by juxtaposing two seemingly different development traditions: East Asia's rise and Latin America's retrogression starting in the mid-1970s (the so called 'lost decades' of Latin America). However, this was only possible by showing, first, that East Asia's rise was based on classical Ricardian comparative advantage, using exports as an 'engine of growth', and secondly, that Latin America's problems had its roots in failed or at least mismanaged import substitution industrialization, closely related to classical development economics. In both cases, this was only one side of the coin: exports were only a part of the success story in East Asia's rapid rise, and rather than import substitution per se, it was the free trade shock – foreshadowing what would hit Russia about 15 years later – that destroyed the productive sectors of the small Latin American countries.

East Asia's story was told in a way as if feedback linkages and positive externalities emerging in these economies through state-led industrialization played only an exogenous role in these countries' development. That is, because technology and innovation were simply left out of the story it was possible to draw a rather simplistic conclusion: export-led growth is what works in development countries. Latin America's problems, in turn, were seen through a double prism of inflation and rent-seeking, without, however, realizing that increasing foreign private lending in the 1970s also spurred the consumption engine into higher gear while domestic production collapsed due to a free trade shock. This was bound to lead to current account problems (through imports) and eventually towards long-lasting financial fragility that undermined industrialization efforts, not the other way around. That is, the role of the post-Bretton Woods international

financial architecture was ignored and, in fact, together with the newly learned 'lessons' from East Asia about export-led growth, financial liberalization was seen as the main source of the much-needed capital for the export-led growth model.

Significantly, both misinterpretations marked a break with a long-standing development tradition reaching back to the Renaissance³⁹ – that was, however, also supported by many, if not most, neo-classical economists at the time – namely, that infant industry protection is a necessary if not sufficient condition for industrialization and diversification. Also John Williamson's original list of Washington Consensus policies did include infant industry protection, and 'a moderate general tariff (in the range of 10 percent to 20 percent, with little dispersion) might be accepted as a mechanism to provide a bias toward diversifying the industrial base without threatening serious costs'.⁴⁰

With these misinterpretations, however, not only were real developments misunderstood, equally important is to note that comparing East Asian and Latin American development experiences yields key lessons about the success and failure of industrial policy. More precisely, perhaps the key lesson is that protectionism does not equal protectionism: just as there is a huge variety of capitalisms, protectionism can also take many forms. If development history teaches us that infant industry protection is a *conditio sine qua non*, then it is exactly the comparison of two very recent instances of this strategy that can teach us the reasons for success and failure. Indeed, based on these two historical experiences, we can create two 'ideal types' of protectionism and, more importantly, of industrial policy. In Table 3, we try to distill from vast and diverse historical data and different contexts two such 'ideal types'.

³⁹ Erik S. Reinert, *How Rich Countries Got Rich ... and Why Poor Countries Stay Poor*, London: Constable, 2007.

⁴⁰ John Williamson, 'What Washington Means by Policy Reform', available at <http://www.iie.com/publications/papers/paper.cfm?ResearchID=486>, 2002 (updated version of his 1990 article).

Table 3: Ideal types of protectionism compared

<i>East Asian</i>	<i>Latin American</i>
Temporary protection of new industries/products for the world market	Permanent protection of mature industries/products for the home market (often very small)
Very steep learning curves compared to the rest of the world	Learning that lags behind the rest of the world
Based on a dynamic Schumpeterian view of the world – market-driven 'creative destruction'	Based on a more static view of the world – planned economy
Domestic competition maintained	Little domestic competition
Core technology locally controlled	Core technology generally imported from abroad/assembly of imported parts/'superficial' industrialization
Massive investment in education/industrial policy created a huge demand for education. Supply of educated people matched demand from industry.	Less emphasis on education/type of industries created did not lead to huge (East Asian) demand for education. Investment in education therefore tends to feed emigration
<i>Meritocracy</i> – capital, jobs and privileges distributed according to qualifications	<i>Nepotism</i> in the distribution of capital, jobs and privileges
Equality of land distribution (Korea)	Mixed record on land distribution
Even income distribution increased home market for advanced industrial goods	Uneven income distribution restricted scale of home market and decreased competitiveness of local industry
Profits created through dynamic 'Schumpeterian' rent-seeking	Profits created through static rent-seeking
Intense cooperation between producers and local suppliers	Confrontation between producers and local suppliers
Regulation of technology transfer oriented towards maximizing knowledge transferred	Regulation of technology transfer oriented towards avoiding 'traps'

Comparing the two, it is clear that the key differences between these 'ideal types' rest on the following: First, the idea that development needs specific economic activities that exhibit long-term potential in terms of learning curves, dynamic imperfect competition, increasing real wages home-market expansion and exports. Such activities provide nation-wide synergetic increasing returns. These, in turn, create possibilities for continuous upgrading through policies targeting education and the labor market. This is what East Asian countries did; while after the mid-1970s Latin American countries (with the exception of Brazil) failed to target windows of opportunities in different activities while the need for local competitive pressure was underestimated. Second, the failure to create dynamic economies of scale led to financial fragility, particularly when foreign capital inflows and lending became prevalent elements in the development strategy, as happened in Latin America in the 1980s. Combined with the basics of the current ICT-led techno-economic paradigm, the lessons from previous successful instances of industrial policy should form the core of the emerging Russian developmental state.

A key feature of the developmental state is its financing of development. While the financial system will in general evolve with changes in technology, these changes will not necessarily be those most appropriate to the support of technological development. Fostering the appropriate innovation in the financial structure should be part of government technology policy. Generally the financial system is regulated in order to provide financial sta-

bility or to control inflation. However, this overlooks the most important role of the financial system in the implementation of technological development.⁴¹ Governments regulate the financial system and task central banks to provide growth of employment or stability of prices, but seldom take measures to ensure that the financial system provides the support for technological development that is the very foundation of economic stability and development.

One means of fostering these changes is through the creation of a national development bank that can provide support for private sector risk-taking by financial institutions. An alternative that is followed in the United States is for government departments interested in technological development to form independent venture capital funds that support the best technological designs in the required area.⁴² An important part of this support is not only the provision of financing, but also ensuring the commercial viability of the enterprise that produces the desired technological development. This support can include a guaranteed purchase but also help in developing a commercially viable product that can sustain the enterprise in addition to government financial support. In this way the private sector provides financial support for targeted areas of development. Obvious areas for such policies are in national defense, energy policy, environmental investments, and public procurement in general.

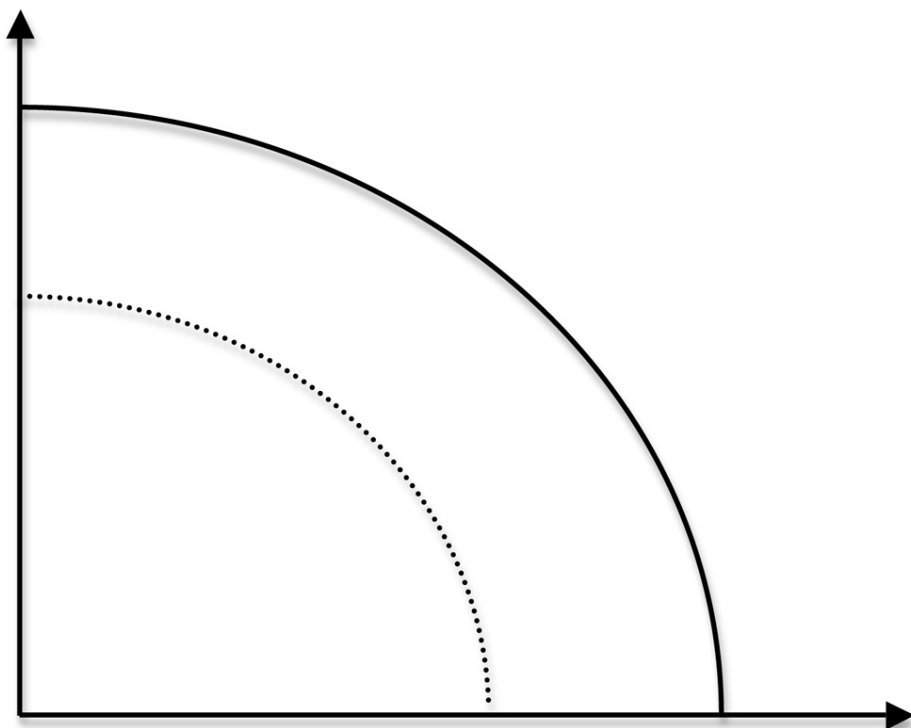
Conclusion

This document has argued that – both compared to the country’s past and its vast possibilities – Russia’s economy produces far from its theoretical Production Possibility Frontier, i.e. the point where all the nation’s factors of production, capital, labour and brainpower are fully utilized. The graphs in Appendix I show this convincingly. This idea is represented in Figure 10, where the solid outer line represents the potential output, and the dotted inner line represents Russia’s present situation. This situation creates a very strong argument for heavy industrial policy, also in the neo-classical economic tradition on which neoliberalism built.

⁴¹ Jan A. Kregel and Leonardo Burlamaqui, ‘Banking and the Financing of Development: A Schumpeterian and Minskyian Approach’, in Silvana de Paula and Gary A. Dimsky, eds, *Reimagining Growth – Towards a Renewal of Development Theory*, London and New York: Zed Books, 2005, 141-167.

⁴² Fred Block, ‘Swimming Against the Current: The Rise of a Hidden Developmental State in the United States’, *Politics & Society*, 36(2), 2008, 169-206.

Figure 10. Russia's Production Possibility Frontiers



Any economic strategy must learn from the destructive destruction that took place in the 1990s (see Figure 3) but also from the success stories. For example, what lies behind the spectacular recent success of the Russian poultry industry (Figure 15, in Appendix I)? How can this success be replicated in other areas of industry and agriculture? The analysis must be based on the shift in priorities which is outlined in Table 2 in the document: a new emphasis on the production of goods and services, away from the focus on finance and trade.

Emphasis must be made on learning from actual policy experiences of other countries, not on the ideologies 'sold' by these countries. In other words: 'Don't do what the Americans tell you to do, do what the Americans did'.

In Appendix II we have listed 'Ten Theses for a New Developmentalism' which – as part of a project funded by the Ford Foundation – was recently produced by a group of economists meeting in São Paulo. This list is useful in a Russian context because it in many ways represents the antithesis of the Washington Consensus that created so much havoc in Russia's productive sectors in the 1990s.

This document is just a preliminary report to a larger project, so our key recommendations are outlined only as bullet point below:

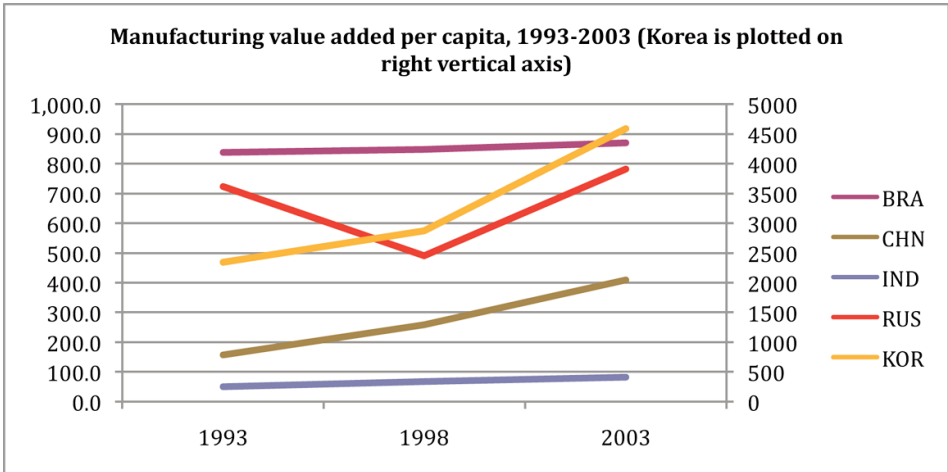
- Income differences between individuals are largely determined by the choice of economic activity. Surgeons have higher income than hospital cleaning ladies. The same mechanisms are at work between nations: what the nation produces will to a large extent determine its relative level of income. Figure 1 and Table 3 in this report outline the differences between activities that are 'good' and those which are 'bad' for a nation. Any efficient industrial policy must bear these elements in mind.
- The present production profile of Russia's industry is of a kind which – under increased free trade – creates a high risk that the Russian population at large may specialize in staying relatively poor.
- This means that, in the opinion of the authors, Russia is not ready for a WTO membership. However, a free trade area with Russia's neighbors is likely to produce benefits to all parties (in Asian development terminology, this could create a 'flying geese' pattern of development).
- Russia's modernization – we have called it 'Modernization Round III' – must be based on the same principles of Russia's two previously successful modernization strategies, those of Peter the Great and Sergei Witte, but once again taking the new technological context (the techno-economic paradigm) into consideration.
- Russia ought to establish a detailed and targeted industrial policy (see also the policy outline in Appendix II) that aims at replicating the success e.g. of the poultry industry. A detailed study of Russian imports should be established in order to pin-point areas where a minimum of policy (and tariff) intervention is likely to produce a maximum effect in terms of employment and national added value.
- A vast country like Russia must have policies both for high-tech, medium-tech, and low-tech industries. Denmark is an example of a country which has created employment and value in relatively low-tech industries within a high-tech setting.
- The housing sector appears to be a candidate for a large-scale innovation-based public initiative, also as regards energy-efficiency.
- The regional dimension needs particular emphasis. A country embracing nine time zones needs strong regional policies. Regional policy is very important within the European Union. On an EU map of Europe more than 90 per cent of the geographical area receive some kind of regional subsidy. As has been done in the United States, the regional aspects could be studied in the form of cluster analyses. Europe and the United States have themselves not followed the strategies that their economists recommended in Russia.
- Selective strengthening of the agricultural sector must be given priority. Regional policy depends on the presence of an agricultural sector. The relatively good performance of Poland compared to its neighbors, e.g. the Baltic countries, is partly due to a private

agricultural sector which provides a buffer – reducing open urban unemployment and social exclusion – when industrial activities fluctuate.

- As shown by the examples of Peter the Great and Sergei Witte, infrastructure is a key element in any national modernization. Building a national and international network of high-speed railways seems to be the best candidate.
- Russia needs to establish a strong development bank that can be the executive branch of the development strategy and handle the needs of large, medium size, and small producers. We recommend Brazil's BNDS as a role model. At present this Brazilian development bank handles more funds than the World Bank.
- While the gas and petroleum sector provides very useful foreign exchange, there is the risk that this sector may hamper the long-term development of the country. The risk of an overvalued ruble that makes Russian industry non-competitive internationally is only one of the risks associated with the group of problems often referred to as 'Dutch Disease'. Norway and its emphasize on financial investment instead of investments in the nation's own productive sector is decidedly an example not to follow in this case.
- It must be attempted to link the excellent scientific production in Russia to commercial production in Russia itself. A conscious brain-gain policy (promoting the return of skilled emigrants) – for a while successfully tried in Ireland and Taiwan – could be part of this strategy.
- Entrepreneurship must be taught and encouraged at all levels. Historically – starting with England in the 1500s – foreign *entrepreneurship* has proved to be much more important than foreign *capital*.
- In the context of development policies in Latin America US economist Albert Hirschman coined the term *Fracasomanía*, meaning the tendency in several Latin American countries to picture their own destiny as one of automatic *fracasos*, or failures. A kind of economic nihilism. Fracasomanía, including giving up to the destructive forces of corruption, is one trap Russia must avoid. It is important to keep in mind that although China and Zimbabwe achieve virtually the same score on the corruption index, one country is developing very fast while the other is retrogressing economically.
- Fracasomanía must be avoided, together with the idea that only two policy possibilities exist, planned economy or neoliberalism. In reality, there are virtually endless alternative types of capitalism, and it should be kept in mind that the two irrational political extremes – planned economy and extreme liberalism (today's neoliberalism)– were both declared dead by the continental European economists who created the Welfare State already more than 100 years ago. In spite of this, these two irrational utopias have continued to haunt Russian policy-making until today.

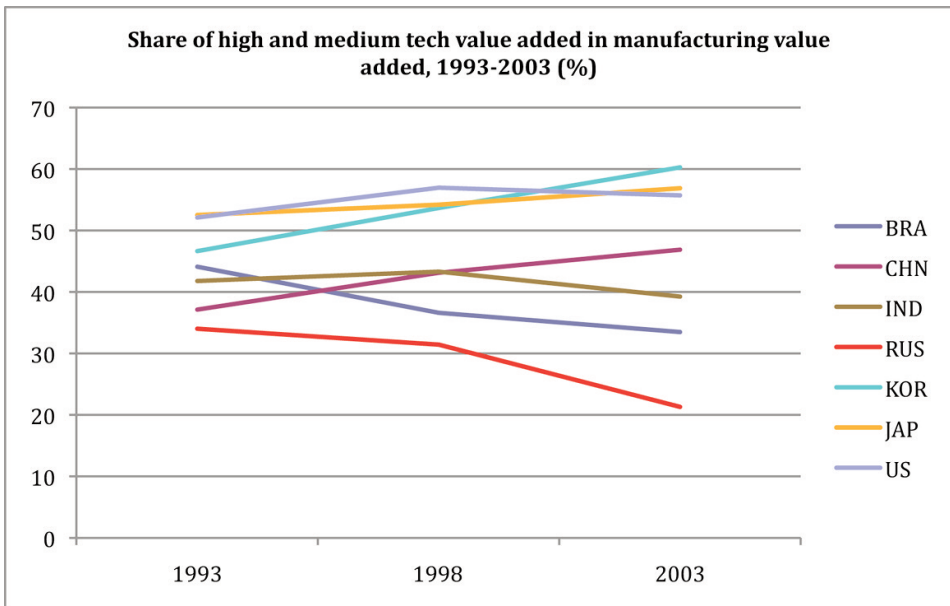
APPENDIX I

Figure 11. Manufacturing value added per capita, 1993-2003



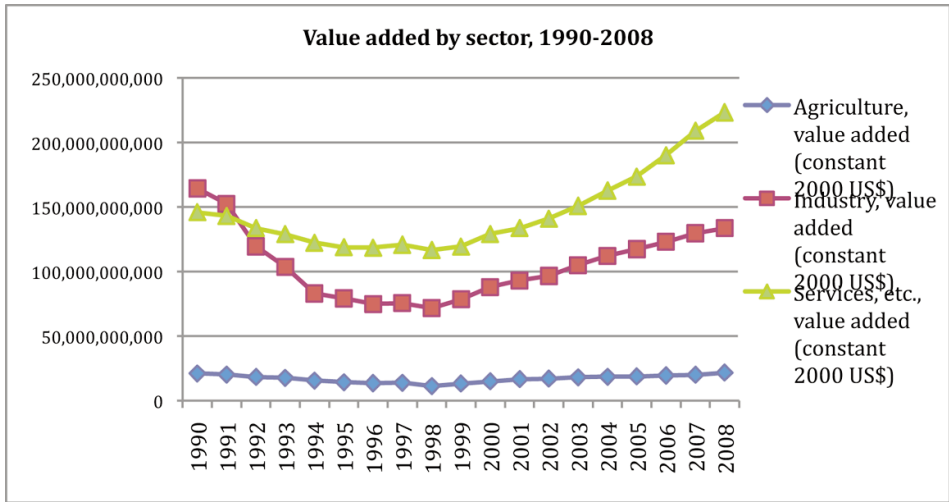
Source: UNIDO

Figure 12. Share of high and medium technology value added in manufacturing value added, 1993-2003



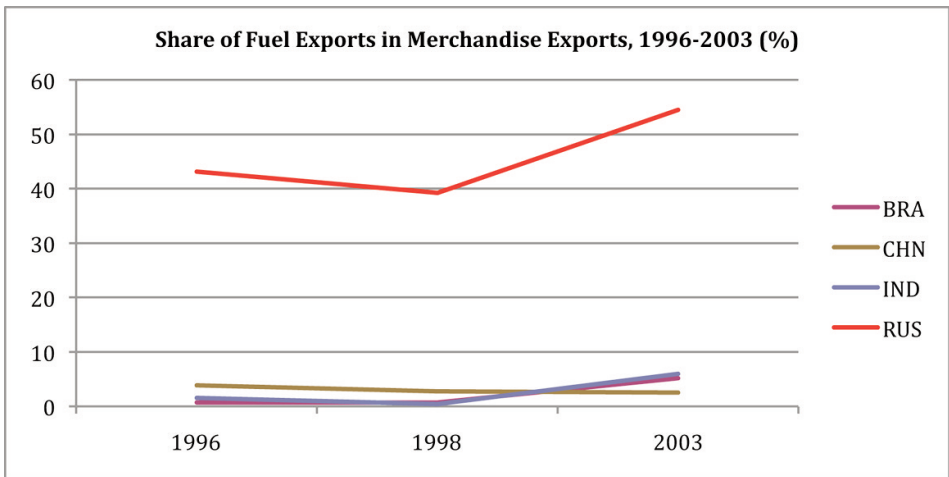
Source: UNIDO

Figure 13. Value added by sector, Russia, 1990-2008



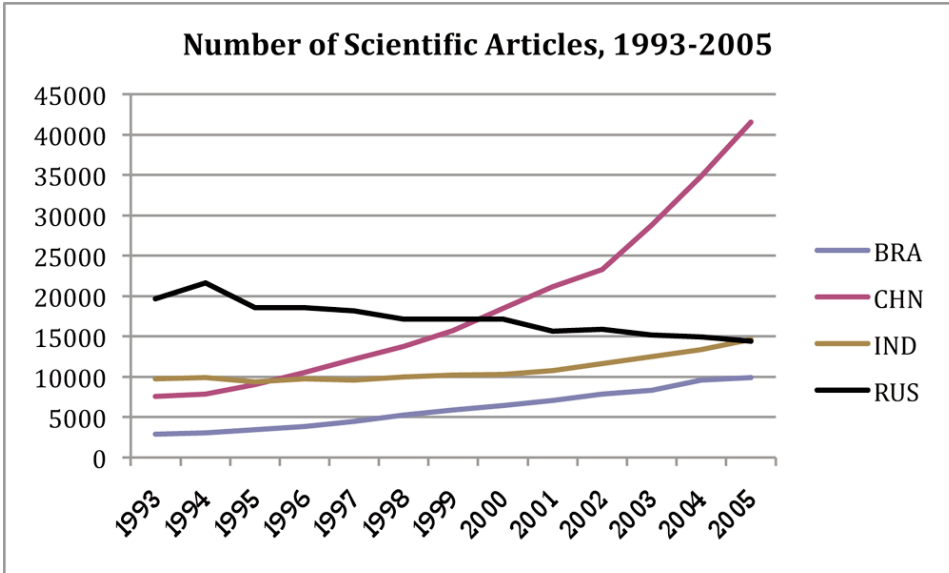
Source: World Bank WDI online database

Figure 14. Share of Fuel Exports in Merchandise Exports, 1996-2003



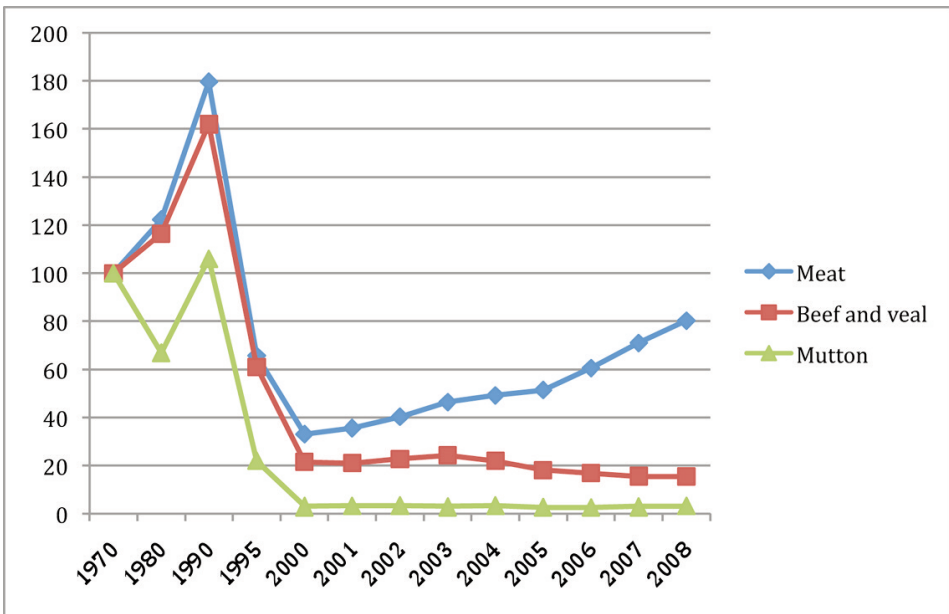
Source: World Bank WDI online database

Figure 15. Number of Scientific Articles, 1993-2005



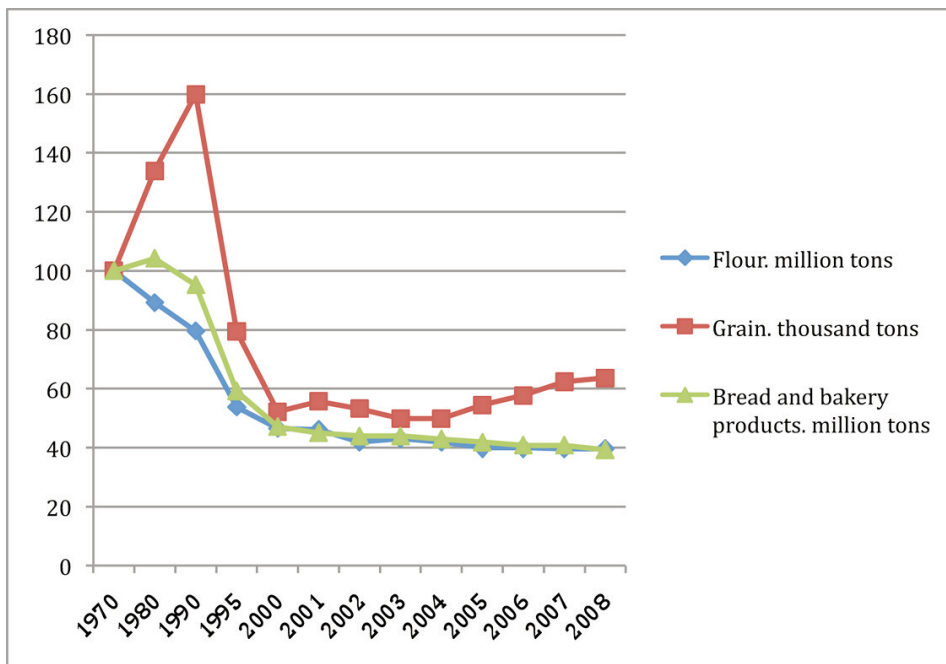
Source: World Bank WDI online database

Figure 16. Russian production of meat, 1970-2008; 1970 = 100; thousand tons



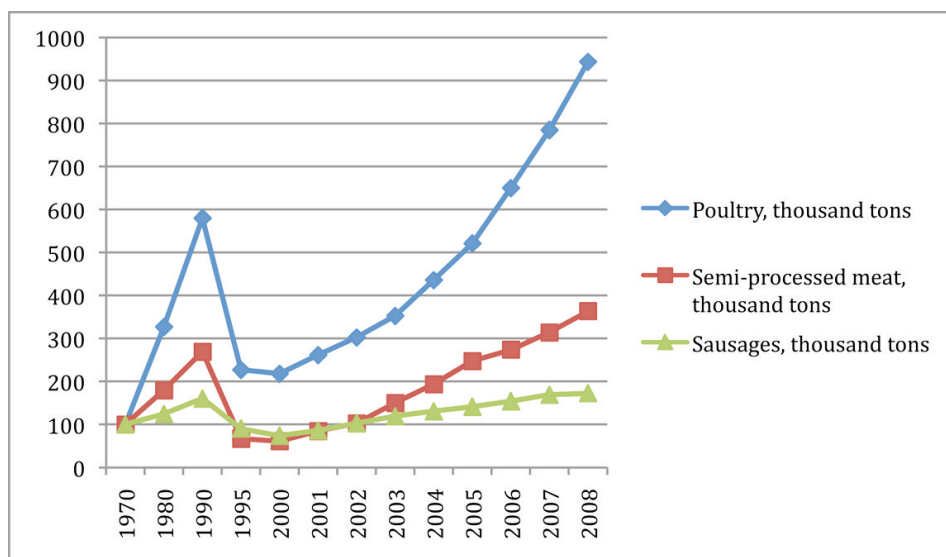
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 17. Russian production of flour, grain and bakery products, 1970-2008; 1970 = 100



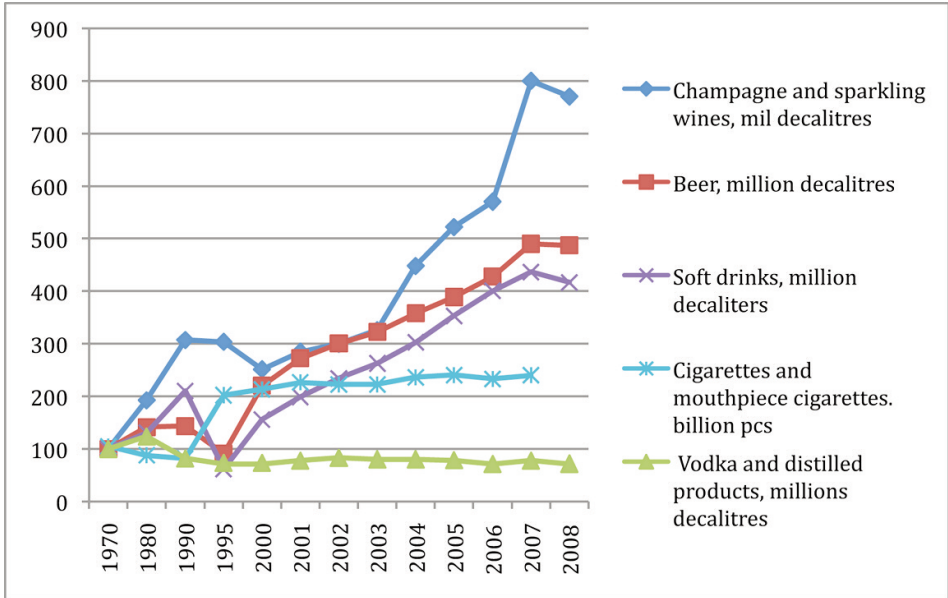
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 18. Russian production of poultry, semi-processed meat and sausages; 1970 = 100



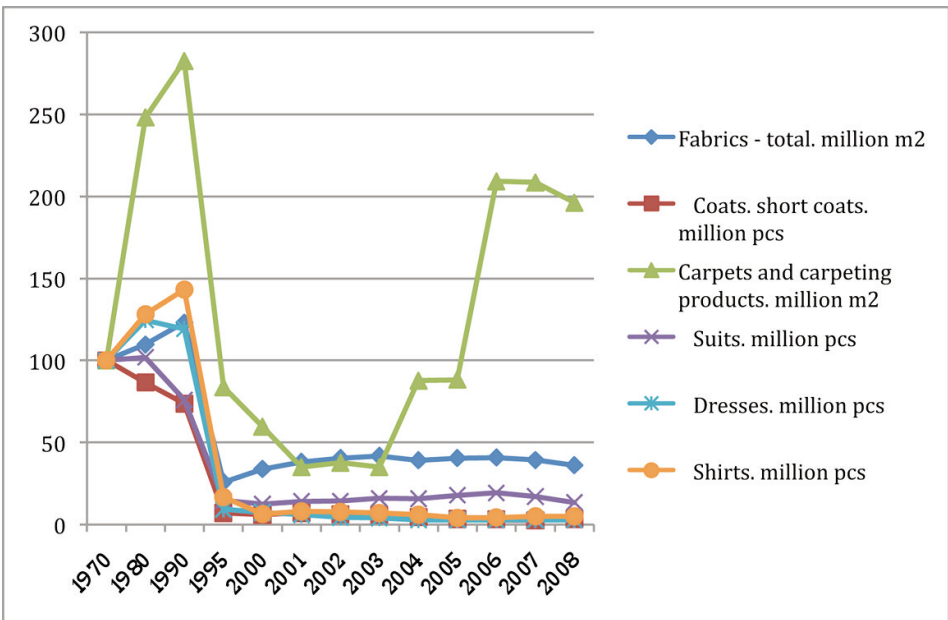
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 19. Russian production of alcoholic beverages and cigarettes; 1970 = 100



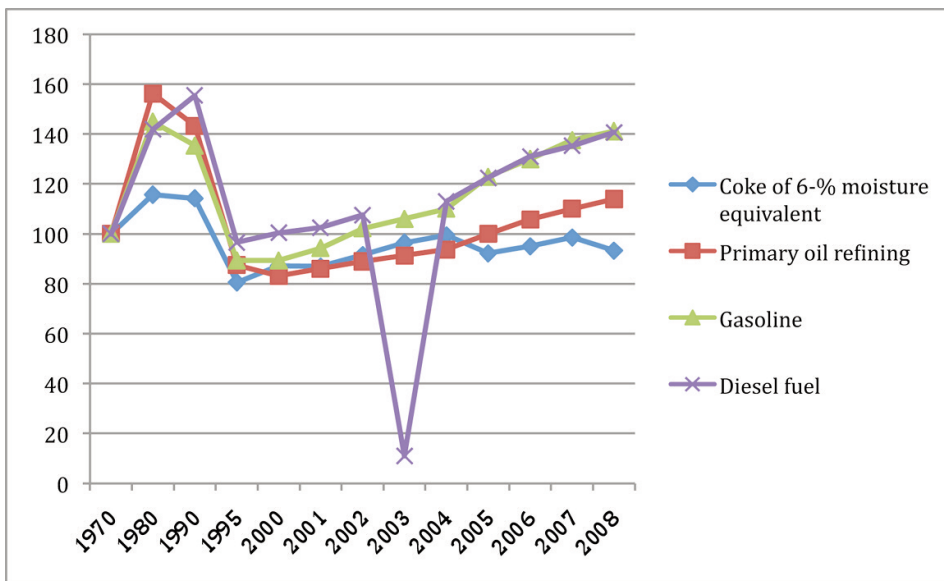
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 20. Russian production of textiles; 1970 = 100



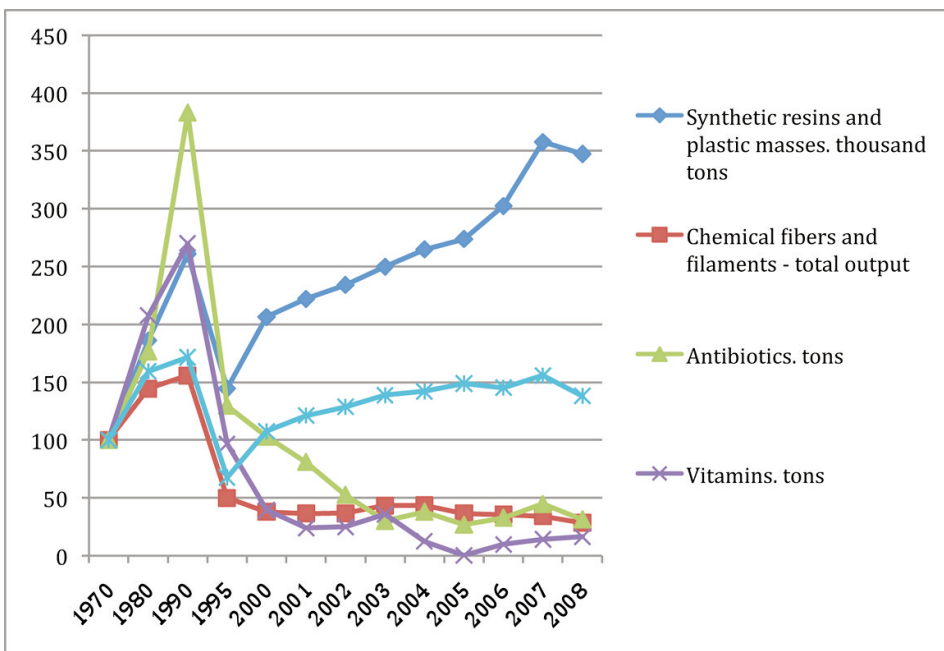
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 21. Russian production of coke, oil, gasoline and diesel fuel; 1970 = 100



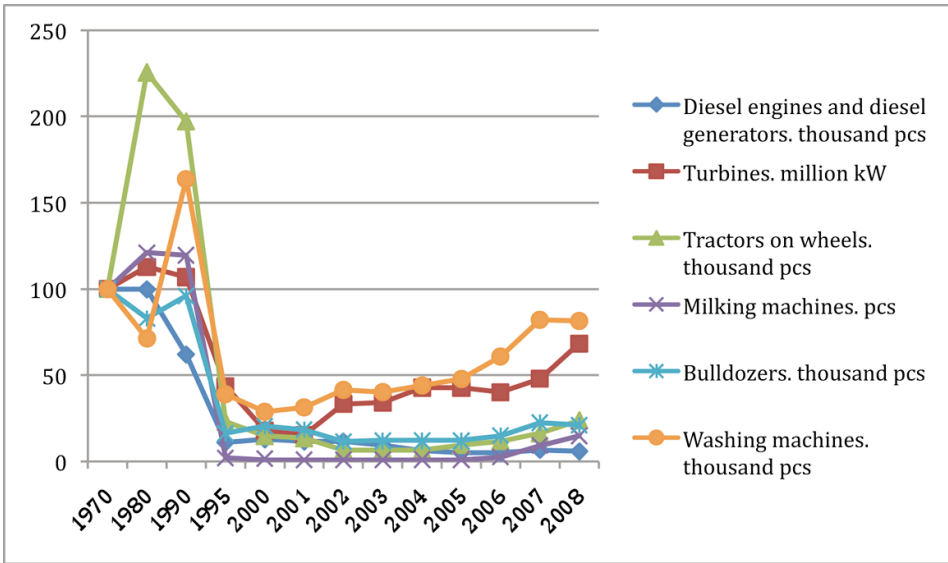
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 22. Russian production of chemicals and medicine; 1970 = 100



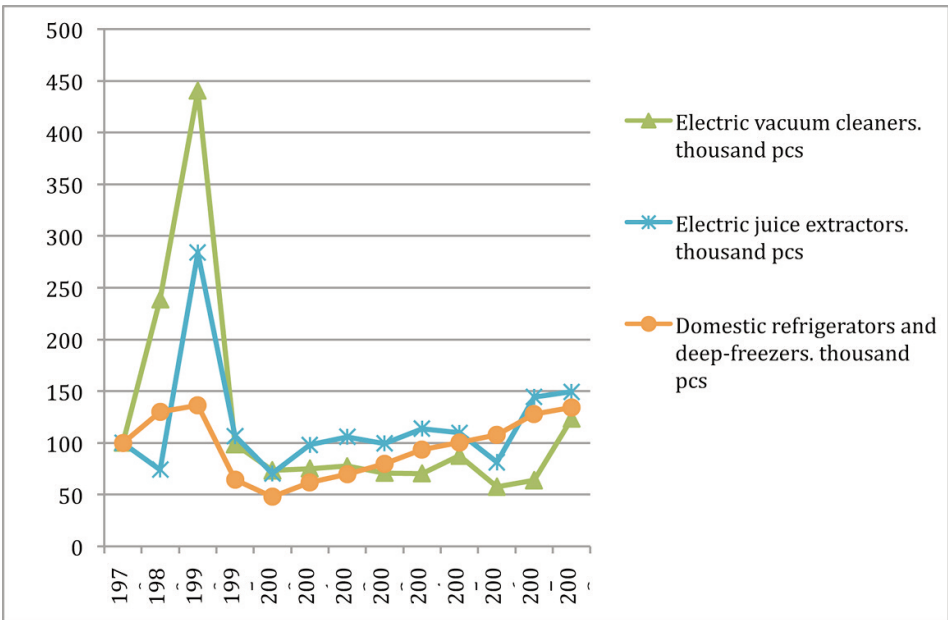
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 23. Russian production of machinery; 1970 = 100



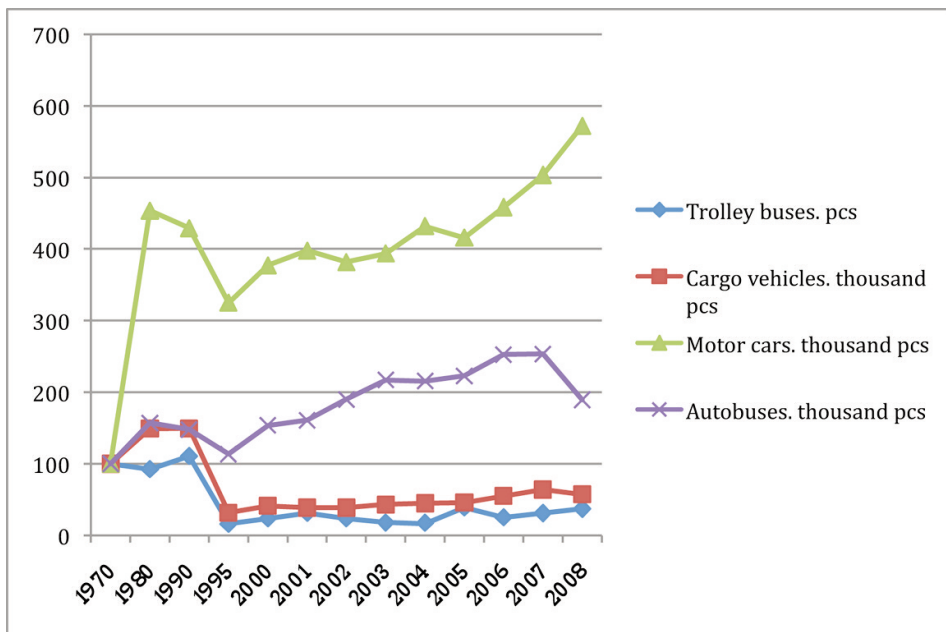
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 24. Russian production of electrical domestic appliances; 1970 = 100



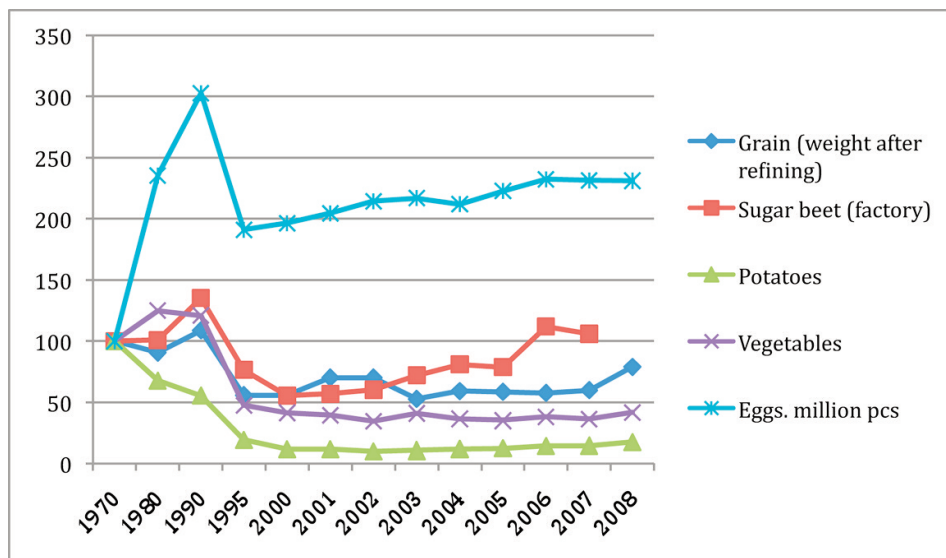
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 25. Russian production of trolley buses, cargo vehicles, cars and buses; 1970 = 100



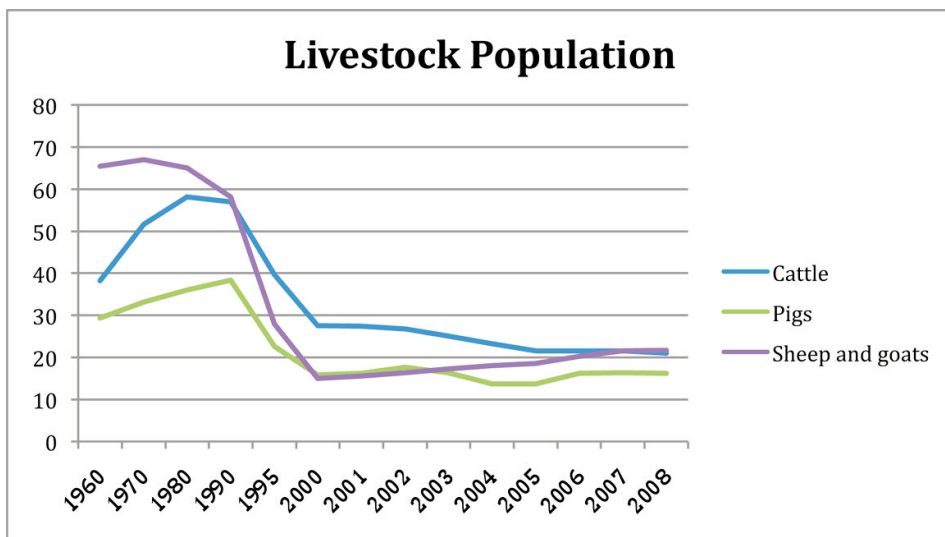
Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 26. Russian production of agricultural produce; 1970 = 100



Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

Figure 27. Russian livestock population; millions



Source: Russian Federal Statistics Service, databases available at <http://www.gks.ru/eng/>; calculations by the authors

APPENDIX II

Ten theses on New Developmentalism

On May 24 and 25 of 2010, a group of economists sharing a Keynesian and structuralist development macroeconomics approach convened in São Paulo to discuss ten theses on New Developmentalism – the name that some of them have been using for some years to describe the national development strategy that middle income countries are today using or should use to promote development and economic catching up.

The meeting was part of the **Financial Governance and the New Developmentalism** project, financed by the Ford Foundation. The project has as its background the failure of the Washington Consensus to promote growth in Latin America and the 2008 Global Financial Crisis that showed the limits and dangers involved in financial globalization and financial deregulation.

The workshop was held in the aftermath of the biggest financial crisis in history in which was evident the impact of open capital markets on exchange rates and the prices of tradable goods. G20 and individual countries are now building the required regulation of financial markets. Given that and the repeated financial crises in middle income developing countries, the general objective of the workshop was to evaluate how effective a new developmentalism strategy might be in promoting growth with stability.

The specific objective was to discuss ten theses on new developmentalism that participants had been asked to think about in advance of the meeting. After two days of lively discussion, the local organizers of the workshop were charged with editing the theses to reflect the debate. The final version has now been endorsed by the original participants of the workshop. Other economists and social scientists committed to the idea of economic growth with stability and social equity are now also invited to subscribe.

1. Economic development is a **structural process** of fully utilizing all available domestic resources to provide the maximum sustainable rate of capital accumulation building on incorporation of technical progress. The primary objective is to provide full employment of available labor resources. Not only should this involve increasing productivity in each industry, it also involves finance and the continuous transfer of labor to industries producing goods and services with higher value added per capita and paying higher wages and salaries.
2. Markets are the major locus of this process, but the **state** has a strategic role in providing the appropriate institutional framework to support this structural process. This includes promoting a financial structure and financial institutions that channel domestic

resources to the development of innovation in sectors that produce high rates of increase in domestic value added. This framework should also include measures aimed at overcoming structural imbalances and promoting international competitiveness.

3. In the context of globalization, economic development requires a **national development strategy** which seizes global opportunities i.e. global economies of scale and multiple sources of technological learning, mitigates barriers to innovation created by excessively strong intellectual property regimes, assures financial stability, and creates investment opportunities to private entrepreneurs.
4. Although the Schumpeterian side of the development process and strategic industrial policy are relevant, **the demand side is where the major growth bottlenecks unfold**. Since Keynes it has been widely recognized that supply does not automatically create demand. However, in developing countries there are two additional structural tendencies that limit demand and investment: the tendency of wages to increase at rates below the growth of the productivity, and a structural tendency to overvaluation of the real and/or nominal exchange rate.
5. The **tendency of wages to increase more slowly than productivity growth** is due to the existence of an abundant supply of labor and of the political economy of labor markets. Besides limiting domestic demand and reinforcing income concentration in the higher classes, this tendency can also affect long term productivity growth negatively. A legal minimum wage, cash transfers to the poor, and principally a government guarantee to provide employment at a living wage could be used to neutralize this tendency to underpay labor. The alternative – chronic overvaluation of the national currency that increases purchasing power– is not a sustainable strategy.
6. The **tendency to cyclical overvaluation of the exchange rate** in developing countries has been due to both the excessive reliance on external savings in the form of foreign capital flows and the Dutch disease in the context of excessively open capital markets and lack of appropriate regulation. This tendency implies that the exchange rate in developing countries is not just volatile, but it also contributes to recurrent currency crises and recurrent bubbles in the financial markets. It also implies that export oriented investment opportunities are chronically insufficient because exchange rate overvaluation renders even the most efficient business enterprises uncompetitive internationally.
7. **Dutch disease may be characterized as a permanent overvaluation** of the national currency due to Ricardian rents originated from the export of commodities based on natural resources or exports based on ultra cheap labor. Dutch disease impedes other tradable industries from prospering. It does so by creating a wedge between the

“current account equilibrium exchange rate” (the exchange rate that balances the current account) and the “industrial equilibrium exchange rate” – the exchange rate that allows tradable industries to be competitive utilizing state-of-the-art technology.

8. Economic development should be **financed essentially with domestic savings**. In order to achieve this goal, the creation of public financial institutions to ensure full utilization of domestic resources, in particular labor, finance innovation and support investment is required. The attempt to use foreign savings via current account deficits usually does not increase the investment rate (as claimed by orthodox economics), but instead increases domestic indebtedness and reinforces financial instability. Growth strategies that rely on foreign savings cause **financial fragility**; get governments caught up in regressive “confidence building” games; and, all too often end with a balance of payments or currency crisis.
9. In order to provide the appropriate framework for development the government must ensure a **stable long term relation between the public debt and GDP** and a **real exchange rate** that takes account of the need to counter the adverse effects on the manufacturing industry of Dutch disease.
10. To achieve long term development **economic policies** should pursue **full employment** as its primary goal, while assuring price and financial stability. These ten propositions are not intended to be a comprehensive recipe for development. Rather they are intended to be a set of propositions that a wide array of economists can subscribe to. These propositions should be adjusted according to a proper mix, specific to each domestic productive, social and political context.

Nothing has been said about the global financial and trade architecture which are clearly matters that need attention in the new environment of globalization that binds economies so closely together, often in forms of adverse competition.

Working Papers in Technology Governance and Economic Dynamics

The Other Canon Foundation, Norway, and the Technology Governance program at Tallinn University of Technology (TUT), Estonia, have launched a new working papers series, entitled "Working Papers in Technology Governance and Economic Dynamics". In the context denoted by the title series, it will publish original research papers, both practical and theoretical, both narrative and analytical, in the area denoted by such concepts as uneven economic growth, techno-economic paradigms, the history and theory of economic policy, innovation strategies, and the public management of innovation, but also generally in the wider fields of industrial policy, development, technology, institutions, finance, public policy, and economic and financial history and theory.

The idea is to offer a venue for quickly presenting interesting papers – scholarly articles, especially as preprints, lectures, essays in a form that may be developed further later on – in a high-quality, nicely formatted version, free of charge: all working papers are downloadable for free from <http://hum.ttu.ee/tg> as soon as they appear, and you may also order a free subscription by e-mail attachment directly from the same website.

The first nine working papers are already available from the website. They are

1. Erik S. Reinert, *Evolutionary Economics, Classical Development Economics, and the History of Economic Policy: A Plea for Theorizing by Inclusion*.
2. Richard R. Nelson, *Economic Development from the Perspective of Evolutionary Economic Theory*.
3. Erik S. Reinert, *Development and Social Goals: Balancing Aid and Development to Prevent 'Welfare Colonialism'*.
4. Jan Kregel and Leonardo Burlamaqui, *Finance, Competition, Instability, and Development Microfoundations and Financial Scaffolding of the Economy*.
5. Erik S. Reinert, *European Integration, Innovations and Uneven Economic Growth: Challenges and Problems of EU 2005*.
6. Leonardo Burlamaqui, *How Should Competition Policies and Intellectual Property Issues Interact in a Globalised World? A Schumpeterian Perspective*
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8. Sophus A. Reinert, *Darwin and the Body Politic: Schäßle, Veblen, and the Shift of Biological Metaphor in Economics*

9. Antonio Serra, *Breve Trattato / A Short Treatise (1613)* (available only in hardcopy and by request).
10. Joseph L. Love, *The Latin American Contribution to Center-Periphery Perspectives: History and Prospect*
11. Ronald Dore, *Shareholder capitalism comes to Japan*
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