

# **TECHNOLOGY GOVERNANCE**

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# Developmentalism

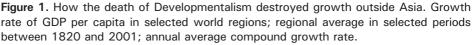
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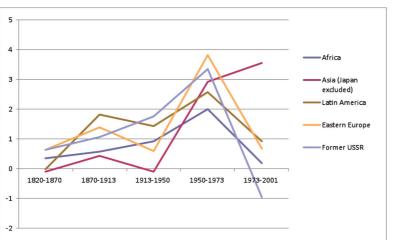
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Develpmentalism – or the idea of the 'developmental state' – was one of the most spectacularly successful ideologies of the 20<sup>th</sup> century. The Cold War and the division of most ideas into a camp of either being politically to the 'right' or to the 'left' has obliterated the fact that Developmentalism was successfully performed along the whole political axis, from fascism via social democracy to communism. In their emphasis on economic growth built on industrial mass production – on the idea that only a certain type of national economic structure is conducive to increased wealth – Stalin, Hitler and the Scandinavian social democracies all represented Developmentalism. With the growth and eventual dominance of neo-classical economics and economic neoliberalism, Developmentalism gradually disappeared along the whole political axis, with the exception of Asia and to some extent Brazil.

The idea of Developmentalism – and the developmental state – is often referred to as a post World War II phenomenon. In spite of the novelty of the term 'developmental state' itself – it came into general use in the 1980s – there is a high degree of continuity both in theory and in the policy tools used by nations during this transition, starting during the late 1400s and lasting until the post World War II period. Figure 1 shows the spectacular success of Developmentalism and the abrupt fall in economic growth which came with the introduction of neoliberal 'structural adjustment' in the 1970s. The present financial crisis in the European Union and in the United States marks the arrival of 'structural adjustment' – deindustrialization and falling real wages – the core economies of the world. The process which started in the world periphery in the 1970s is now reaching the core. (If there is a Russian equivalent to the US expression 'The chickens are coming home to roost' it would be appropriate to put here.





Source: Data from Angus Maddison, The World Economy. Historical Statistics, Paris: OECD, 2003.

### **Definition and Theory**

The core idea behind the Developmentalism is that the productive structure of a nation may be suboptimal, and may be improved with the help of active economic policy. Whether explicit or not, the concept is based on a notion that some economic activities are more conducive to growth and generalized welfare than others. In contrast, today's ruling neo-classical economic theory (and neoliberalism) is based on David Ricardo's theory of international trade where international trade is conceived as nations bartering labour hours which are all of the same 'quality'. Standard economic theory postulates that international trade will bring nations closer together in income (the so-called 'factor-price equalization'). Developmentalism, on the other hand, intuitively understands that integrating one nation with Stone Age technology with another nation with advanced high-tech technology will lead to one nation specializing in being poor and the other nation specializing in being rich. In Developmentalist theory wealth is created by dynamic imperfect competition which generates industrial rents that are shared between the capitalist (higher profits), the workers (higher wages) and the state (higher tax income).

In general terms the goal of the Developmentalism – from the policies starting in England with Henry VII in 1485 through to the policies of East Asia in the 1980s - has been to industrialize: to diversify the economy out of a dependency on agricultural and other raw materials alone. The developmental states aim at increasing national wealth by building a diversified industrial structure where economic activities with large potentials for technological upgrading, subject to increasing returns (falling unit costs), and important synergies (linkages) between a large variety of economic activities play an important role. Figure 2 attempts to rank economic activities according to their ability to produce national developmental rents. For example, the production og golf balls has a high score on the index, and probably the most efficient golf ball producers – in New Bedford, Massachusetts, USA – have a wage of about 14 dollars an hour. At the bottom of the scale are the world's most efficient producers of baseballs, a production that has not been mechanized, who live in Haiti or Nicaragua and make from 50 cents to 1 dollar an hour. In this way it is possible for a nation to be the most efficient in the world and still be desperately poor.

Figure 2. The Quality Index of EconomicActivities.

innovations		
new technologies		
Ý	Dynamic imperfect competition (high-quality activity)	Characteristics of high-quality
		activities
		<ul> <li>new knowledge with high market value</li> </ul>
		•steep learning curves
		<ul> <li>high growth in output</li> </ul>
		<ul> <li>rapid technological progress</li> </ul>
		high R&D-content
		<ul> <li>necessitates and generates learning-by-doing</li> <li>imperfect information</li> </ul>
	Shoes (1850-1900)	<ul> <li>investments come in large chunks/are divisible (drugs)</li> </ul>
		<ul> <li>imperfect, but dynamic, competition</li> </ul>
		•high wage level
	Golf balls	<ul> <li>possibilities for important economies of scale and scope</li> </ul>
		high industry concentration
	Automotive paint	<ul> <li>high stakes: high barriers to entry and exit</li> </ul>
		•branded product
		<ul> <li>produce linkages and synergies</li> </ul>
		•product innovations
		<ul> <li>standard neoclassical assumptions irrelevant</li> </ul>
		Characteristics of low-quality activites
		<ul> <li>old knowledge with low market value</li> </ul>
		•flat learning curves
		•low growth in output
		<ul> <li>little technological progress</li> </ul>
		•low R&D-content
		•little personal or institutional learning required
	House paint	•perfect information
		<ul> <li>divisible investment (tools for a baseball factory)</li> </ul>
	Shoes (2009)	•perfect competition
		•low wage level
		<ul> <li>little or no economic of scale /risk of</li> </ul>
	Baseballs	diminishing returns
		<ul> <li>fragmented industry</li> </ul>
		•low stakes: low barriers to entry and exit
	Perfect competition	•commodity
	(low-quality activity)	<ul> <li>produce few linkages and synergies</li> </ul>
		<ul> <li>process innovations, if any</li> </ul>
		<ul> <li>neoclassical assumptions are reasonsable proxy</li> </ul>

The developmental state bases its ideology and legitimacy on an ability to get out of the traditional poverty trap and promote sustained economic development. The ability to improve the economic conditions of its inhabitants is both the goal of the ruling elite and a means to keep power. This applies as much to the so-called "enlightened despotism" of Europe in the 1700s as to the East Asian developmental states after World War II. In order to achieve its goal, the developmental state needs a strong, but not necessarily big, state and a loyal and competent bureaucracy that identifies with the national goals. The bureaucracy under Frederick the Great (King of Prussia from 1740 to 1786), Peter the Great in Russia, and in the Japanese Ministry of Trade and Industry (MITI) in the period after World War II represent Developmentalism at work. Elements of nation-building and nationalism tend to be integral parts of the policies of developmental states. In many cases, from Asia to Russia and Latin America, Developmentalism often involved hardship in the agricultural sector in order to finance industrialization.

The market-based version of the developmental state largely depends on private capital and ownership. Its bureaucracy is capable of stimulating, shaping, and cooperating with the private sector, identifying industrial projects where the profit-making interests of the private sector coincide with the economic goals of the nation. These interests will normally be common when the private sector invests in projects that <u>increase the technological competence</u> of the nation, often in industries previously dominated by companies based in wealthier countries. In the communist planned economy version of Developmentalism, the goals and policies were exactly the same.

## Policy tools of the Developmental State

The policy toolbox used by developmental states has been remarkably stable over time, although increasing in sophistication. Based on observations of the industrial structure of wealthier nations, the desired types of activities are consciously targeted and supported by different policy measures. The targeted activities are invariably more technologically advanced than those presently dominating in the nation to be developed.

Patents and tariff protection as institutions for creating and spreading new knowledge and new practices were created in the late 1400s, and used then in order to upgrade the technological skills of a nation. Entrepreneurs wishing to set up production in a backward area or country were given temporary monopolies (patents) in the area and/or temporary tariff protection. In this way new industries were forcefully spread to new areas from where they had first been set up. In Tudor England, in Prussia under Frederick the Great, in Russia under Peter the Great and Catharine the Great, and much later during the industrialization of Korea, bringing in foreign skills played a

much more important role than bringing in foreign capital. Whereas earlier foreign skills were brought in by way of migration of skilled workers and artisans, attracted by generous economic incentives, during the Korean industrialization Japanese engineers moonlighting to Korea on weekends and on temporary assignments played a similar role.

Traditional policy tolls also include tax breaks and subsidized credits for targeted activities, export bounties, and emphasis on training and education to match the needs of the targeted activities. Examples of the latter is the sophisticated apprentice system put in place in England under Elizabeth I in the late 1500s, the founding and sponsoring of scientific academies in Europe in the 1700s, and the emphasis on the education of a large number of engineers in the industrialization of Korea.

Praising the protectionist industry-building Navigation Acts as 'the wisest of all the commercial regulations of England' in his <u>Wealth of Nations</u> (1776), Adam Smith is a clear spokesman for a standard policy of the Developmental State. Smith's only mention of the concept of the 'invisible hand' in this book is when it works towards the goal of the Developmental State, industrialization: 'preferring the support of domestic to that of foreign industry'. Smith, however, was writing at a time when England had attained world leadership and the developmental state had outplayed its role. He therefore agrees with England's past, but not present and future, pro-development interventions. By de-contextualizing the history of economic thought, neo-classical economics and neo-liberalism have in many cases profoundly falsified economic history. Read in context, Adam Smith was a Developmentalist on behalf of England.

In his 'Report on the Subject of Manufactures' (1791) Alexander Hamilton - the first US Secretary of the Treasury – outlines a plan to industrialize the United States that is prototypical of a developmental state, employing the same theoretical arguments that were used in Continental Europe at the time and that had been used in England until recently. Hamilton advocated bounties and incentives to manufacturers to be financed from the tariffs imposed on the import of manufactured goods. This report was translated into Russian in the early 1800s. In the 19th century, German economist Friedrich List was the main theoretician of the developmental state. Living in the United States for several years, even becoming a US citizen, List was inspired by the successful industrialization of the Unites States. List's writings became very influential in Russia, where Count Sergei Witte - an economic advisor to the two last tsars - translated his book and promoted his ideas. The typical Developmentalist combination of building industry and building infrastructure is found in Witte's policy. He initiated the work on the trans-Siberian railway.

### The Developmental State: Timing, successes, and relative failures

The developmental state bridges the transition from poverty to industrialization and national economic strength. Once the technological state-of-theart – the frontier of knowledge – has been reached, the planning-based policies of the developmental state become increasingly irrelevant and inefficient. Once a nation has achieved technological leadership, there is no longer any leading nation or leading technology to aim for and to catch up with, and other less bureaucratically oriented policy tools become the appropriate ones. As the manufacturing sector grows stronger, this sector also needs larger markets and will be interested in freer trade with the rest of the world. So, for more than one reason, a successful developmental state carries the seeds of its own destruction.

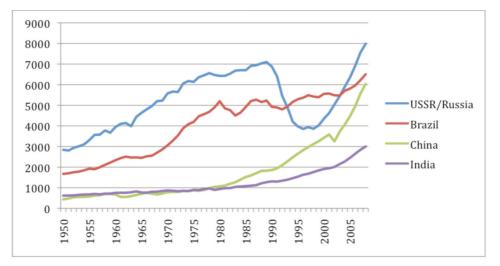
Both Smith and List, in different ways, emphasized the temporary nature of the policies for a developmental state. Once the desired economic structure had been achieved, free trade and openness to the world markets would be the final goal for them both.

Whereas the East Asian developmental states have been resounding successes, similar experiments in other areas, for example Latin America and India, have been less successful. This can partly be accounted for by the different policies pursued in these areas in the post World War II era. Whereas East Asian nations temporarily protected and targeted largely indigenously developed or indigenously improved technologies for the world markets, Latin American nations permanently protected technologies that were largely imported, for small local markets. Latin American industrialization was, consequently, much less advanced and more shallow - based on the imports of semi-manufactured goods - and much less able to compete internationally. East Asian bureaucrats also tended to place rigorous demands for technological and economic performance on the local companies they were supporting, an aspect largely absent in most of Latin America. Brazil and India represent intermediary cases, with characteristics of both these groups of nations. However, even in the least successful cases of Developmentalism in Latin America, real wages were considerably – sometimes up to 100 per cent – higher than they are today after structural adjustment.

#### The Rhetoric-Reality Gap

In spite of the rhetoric to the contrary, also the United States used Developmentalist policies going against the neoclassical theory of comparative advantage. Let us make one hypothetical example. The day after the successful launch of the Sputnik on October 4, 1957, the Soviet Ambassador to the United States receives an audience with then President Eisenhower, and conveys the following message: 'We in the Soviet Union have read David Ricardo's theory of international trade, which forms the core of the capitalist thinking in international affairs. According to that theory it is now obvious that the Soviet Union has a comparative advantage in advanced technology, like space technology, and the United States has a comparative advantage in agriculture. In fact Soviet agriculture has problems at the moment. So, in line with capitalist theory, we suggest that the Soviet Union specializes in advanced technology and the US specializes in agriculture'. We know what Eisenhower and the United States did in response to what was to become the 'Sputnik Shock'. The US launched a huge space programme in a new institution, NASA, whose goal it was to emulate – to copy and improve upon Soviet technology.

This has always been the rule of successful economic imperialism: emulation for the rich countries and 'comparative advantage' for the poor. This is why the slogan 'Don't do as the Americans tell you to do, do as the Americans did' is such a powerful slogan. As opposed to Brazil, India and China, Russia unfortunately fell into the trap of comparative advantage after 1991. (See figure 3)



**Figure 3.** As the only BRIC country Russia discontinues Developmentalism for neoliberalism. 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/

### The Fall and Demise of Developmentalism

Influenced by neo-classical economics – with its implicit postulate that 'all economic activities are alike' – Developmentalism slowly lost out to neo-liberalism starting in the 1970s. Since the 1948 Havana Charter – which formed the foundation for GATT and later the WTO – unemployment had been a valid reason for industrial protection. Grounded on the massive problems of unemployment in the 1930s, it was considered legitimate for a nation to protect its economy until the 'production possibility frontier' – in other words a full utilization of national resources – had been reached. With neoliberalism the World Bank started assuming full employment in their economic models, even in poor countries in Africa where perhaps only 10 per cent of the working population have a full job. With this assumption added to the assumption that 'all economic activities are qualitatively alike', immediate free trade ('shock therapy') became the policy rule worldwide. The free trade shock therapy had devastating effects, also in Russia.

During the period of Developmentalism the ruling elites achieved legitimacy through the creation of increasing real wages and economic welfare for the population. During the present neoliberal regime elites seem to attempt acquiring legitimacy by having their country join a perceived international 'club' of reach countries, even if this 'club membership' may be in direct conflict with the long-term economic interest of the nation. Mexico joining the North American Free Trade Association NAFTA has led to diminishing real wages, but the elites could be proud Mexico – as a 'prize' for joining NAFTA – was allowed to become a member of the OECD, the 'Club of the Rich' countries. On January 1, 2011, Estonia joins the club of countries using the Euro as a currency. Real wages in Estonia have fallen for nine consecutive quarters, but as a 'compensation' for a total fall in real wages of around 30 per cent, the Estonians can pride themselves of being a member of the prestigious Euro Club.

In Russia's economic position today, it can be argued that joining the WTO now instead of in ten years after national industries – high tech and low tech – have been rebuilt, has a character of joining the 'club of the rich' in exchange for lower wages, just as in the cases of Mexico and Estonia. It is not clear how the European economy will look after the financial crisis: some kind of post-industrial feudalism with a very large lower class is certainly one of the possible outcomes.

China, India and Brazil are doing well today because – due to an institutional inertia – neoliberalism never killed Developmentalism. In my view there are important lessons to draw from this for Russia.

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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.

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- 34. Erik S. Reinert, Developmentalism

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Wolfgang Drechsler (drechsler@staff.ttu.ee), and Erik S. Reinert (reinert@staff.ttu.ee), who all of them will be happy to receive submissions, suggestions or referrals.