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Abstract

In this paper we consider relationship between foreign direct investment (as one of the mechanisms of technological development) and long-term economic growth. In the beginning we discuss the role of FDI in the increase of total factor productivity from the viewpoint of endogenous growth theory. We then turn to the comparative analysis of FDI inflow to Russia and other countries broken down by economic industries. We find that Russian industries capable of increasing TFP and positively impacting the long-term economic growth are significantly underinvested relative to other countries. Since, in our opinion, pre-existing sources of Russia's economic growth are almost completely exhausted, we suggest several economic policy measures aimed at attracting FDI in Russia and improve the absorptive capacity of the country.

JEL Classification: E66, F21, O15, O43

Key words: FDI, TFP, economic growth, human capital, economic policy

FDI and Long-term Economic Growth in Russia

Policy can influence growth, either for good or ill, in many ways.

The task is thus to try to exploit as many as possible of these avenues for good.

Arnold C. Harberger

Introduction

Despite the growing interdependence of the countries within international economic system and the gradual formation of a global market economy, standards of living in different countries are improving unevenly.

Economic growth rates in different countries varies significantly. For example, during the second half of XX-th century a number of countries have experienced "economic miracle": growth rate of the economies of South Korea, Singapore, Hong Kong, Taiwan, Spain and Mexico (ca 7% per year) significantly exceeded growth rates of economies of the other countries.

Based on the results of the academic studies¹ main sources of the economic growth are the accumulation of capital, the quantity and quality of labor and natural resources and the availability of effective knowledge and technology. "Knowledge and technology" is usually determined as the total factor productivity (TFP)², a residual of economic growth which accounts for effects in total output not caused by inputs, i.e. cannot be explained through increase in capital, labor or any other observed factor of production. Studies show that different rates of economic growth in different countries more attributable to the growth in the total factor productivity, rather than the observed increase in the factors of production³.

Technological progress of the country is largely determined by the volume of foreign direct investment (FDI) attracted by the country. There is a cross-country evidence of positive relationship between the average annual volume of FDI inflows and GDP per capita (Figure 1), as well as between the average annual volume of FDI inflows and total (public and private) expenditure on research and development (R & D) (Figure 2), which have a direct influence on long-term economic growth.

¹ Solow, R. (1957). Technical change and the aggregate production function. *The review of Economics and Statistics*, 39(3), pp. 312-320

² Acemoglu, D. (2008). *Introduction to modern economic growth*. Princeton University Press, p. 84

³ Helpman, E. (2009). *The mystery of economic growth*. Harvard University Press, ch. 3

Easterly, W., & Levine, R. (2001). What have we learned from a decade of empirical research on growth? It's Not Factor Accumulation: Stylized Facts and Growth Models. *The World Bank Economic Review*, 15(2), 177-219.

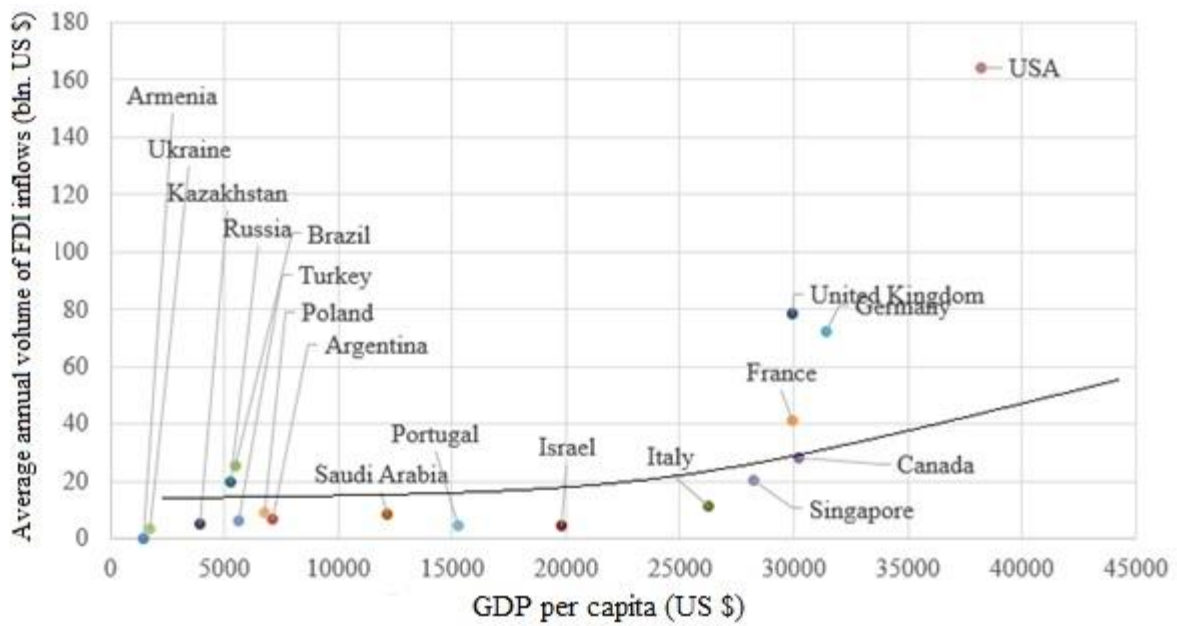


Figure 1 – Average annual volume of FDI inflows (bln. US \$) and GDP per capita (US \$), 1991-2012

Source: World Bank Development Indicators, author's calculation

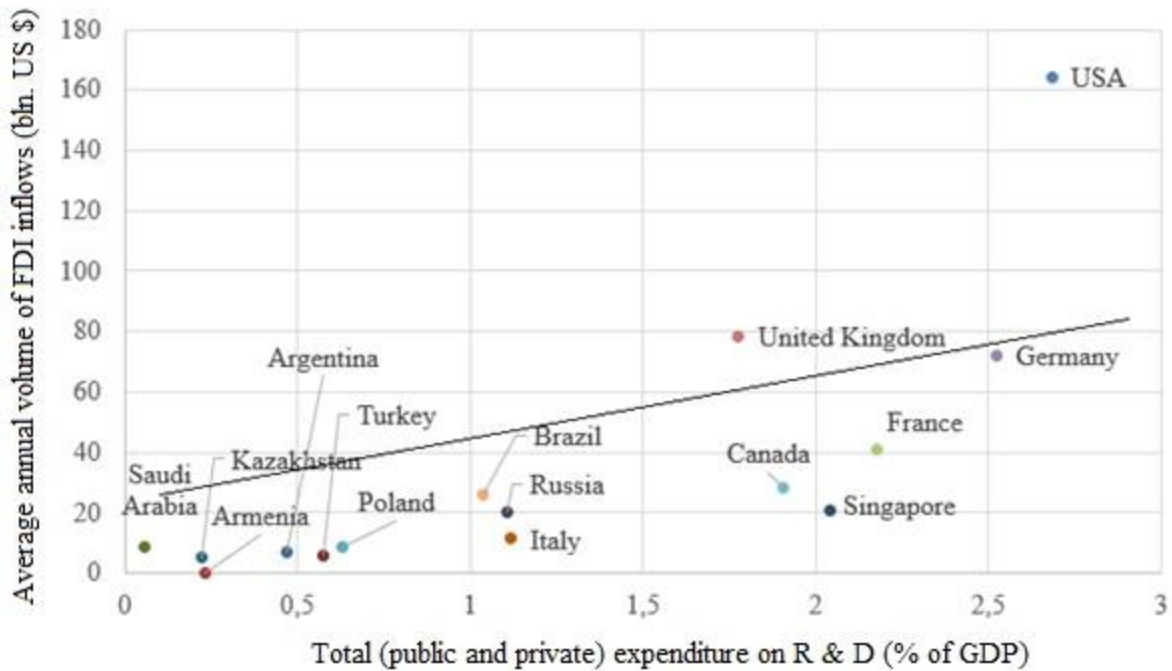


Figure 2 – Average annual volume of FDI inflows (bln. US \$) and total (public and private) expenditure on R & D (% of GDP), 1991-2012

Source: World Bank Development Indicators, author's calculation

Figures 1 and 2 show that the amount of FDI in the economy is directly related to R & D expenditure. The latter increase TFP by increasing the level of education, improving the quality of human capital and development of new technologies.

Furthermore, R & D results in faster economic growth and an increase of GDP per capita. For example, 10% – 50% of growth in production in OECD countries is the result of R & D expenditure growth⁴.

In addition to the direct effect of physical capital accumulation one of the main mechanisms of FDI impact on economic growth is the spread and development of technology. In contrast to the classic model of exogenous growth proposed by Solow (1956), the modern theory of endogenous growth initiated by the study of Arrow (1962)⁵ emphasizes the importance of country's relative technological development for its future economic growth. Within the theory of endogenous growth, economic growth of the country depends on accumulated knowledge, speed of development of new and adoption of existing technologies.

Although the spread of technology may exist in various forms, such as, for example, imports of high-tech products or attraction of highly skilled foreign professionals, one of the main mechanisms of knowledge spillover is FDI.

There is a number of academic studies that emphasize the importance of FDI for technological progress of countries, especially developing ones.

In the study Findlay (1978)⁶ the author concludes that FDI increases the rate of technological progress through the "contagion" effect: country that hosts FDI gets access to advanced technologies for the production of goods and services, as well as to the best corporate governance practices used by foreign firms. In the study Krugman (1979)⁷ the author has built a general equilibrium model, the diffusion of technology from developed to developing countries in which, in addition to the direct benefits, such as reduction of production costs of goods and services in developing countries and the emergence of new varieties of goods and services in the global economy, brings indirect benefits for developing countries namely improving of terms of trade.

⁴ Mohnen. (1996). R&D Externalities and Productivity Growth. *STI Review*, 18(1), 39-66.

⁵ Ideas of Arrow (1962) were later developed in the following studies:

Romer (1986). Increasing Returns and Long-run Growth. *The Journal of Political Economy*, 1002-1037.

Lucas (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22(1), 3-42.

See also Aghion, Howitt, (1998) *Endogenous Growth Theory*, MIT Press

Acemoglu (2009). *Introduction to modern economic growth*. Princeton University Press,

⁶ Findlay, R. (1978). Relative Backwardness, Direct Foreign Investment, and the Transfer of Technology: a Simple Dynamic Model. *The Quarterly Journal of Economics*, 1-16.

⁷ Krugman, P. (1979). A Model of Innovation, Technology Transfer, and the World Distribution of Income. *The Journal of Political Economy*, 253-266.

Among other things FDI inflows stimulates domestic investment and helps to improve the quality of institutions in the host country, as well as the development of competition in domestic markets for goods and services, eventually leading to higher productivity, lower prices and optimal allocation of resources in the economy⁸.

Speaking about the impact of FDI on economic growth through technological progress it is necessary to note possible reverse causality, i.e. when a relatively high rate of economic growth of country attracts large amounts of FDI. In addition to the relatively high rate of return on investments (rate of return is 5% in developed countries, whereas in developing and transition economies - 8% and 13% respectively)⁹, developing countries with relatively high rates of economic growth can attract FDI for the following reasons:

1. investors enter the emerging market;
2. investors acquire specific assets, access to natural resources, minimize production costs.

Although there are number of empirical studies coming to different (and at times polar) results¹⁰ using various inference techniques for estimation of the link between

⁸ Agosin, M. R., & Machado, R. (2005). Foreign Investment in Developing Countries: Does It Crowd in Domestic Investment? *Oxford Development Studies*, 33(2), pp. 149-162

Kim, D. D. K., & Seo, J. S. (2003). Does FDI Inflow Crowd out Domestic Investment in Korea?. *Journal of Economic Studies*, 30(6), 605-622.

Hofmann, P. (2013). *The Impact of International Trade and FDI on Economic Growth and Technological Change*. Springer.

Busse, M., & Hefeker, C. (2007). Political Risk, Institutions and Foreign Direct Investment. *European Journal of Political Economy*, 23(2), 397-415.

Acemoglu D., Johnson S., Robinson J. A. (2005). Institutions as the Fundamental Cause of Long-Run Growth // *Handbook of Economic Growth*. Amsterdam: Elsevier.

Alguacil, M., Cuadros, A., & Orts, V. (2011). Inward FDI and Growth: The Role of Macroeconomic and Institutional Environment. *Journal of Policy Modeling*, 33(3), 481-496.

Dunning, J. H. (2002). *Global Capitalism, FDI and Competitiveness* (Vol. 2). Edward Elgar Publishing.

Gugler, P., & Brunner, S. (2007). FDI Effects on National Competitiveness: A Cluster Approach. *International Advances in Economic Research*, 13(3), 268-284.

⁹ UNCTAD World Investment Report 2013 *Global Value Chains: Investment and Trade for Development*, New York and Geneva, 2013

¹⁰ Nair-Reichert, U., & Weinhold, D. (2001). Causality Tests for Cross-Country Panels: a New Look at FDI and Economic Growth in Developing Countries. *Oxford Bulletin of Economics and Statistics*, 63(2), 153-171.

Carkovic, M., & Levine, R. (2002). Does Foreign Direct Investment Accelerate Economic Growth?. U of Minnesota Department of Finance Working Paper.

Zhang, K. H. (2001). Does Foreign Direct Investment Promote Economic Growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy*, 19(2), 175-185.

Li, X., & Liu, X. (2005). Foreign Direct Investment and Economic Growth: an Increasingly Endogenous Relationship. *World Development*, 33(3), 393-407.

Hansen, H., & Rand, J. (2006). On the Causal Links between FDI and Growth in Developing Countries. *The World Economy*, 29(1), 21-41.

Mencinger, J. (2003). Does Foreign Direct Investment Always Enhance Economic Growth?. *Kyklos*, 56(4), 491-508.

FDI and economic growth economists agree that the FDI and economic growth mutually "reinforce" each other. That is, country has to ensure the basic economic conditions for potential growth to attract FDI, and at the same time, to increase the rate of its economic growth country have to attract significant amounts of FDI. In other words, FDI have a multiplier effect – the basic improvement of institutional environment and the quality of human capital required to attract FDI, consequently contributes to the disproportionately greater improvements in the institutional environment and quality of human capital after FDI are attracted.

Comparison of FDI in Russia and ROW

Comparison of the values of FDI inflows in various countries broken down by economic industry is presented below. Table 1 and Figure 3 show that Russia lags behind the other BRIC countries in terms of attracting FDI in the education industry and has received modest FDI inflow. Such humble results in attracting FDI to education industry negatively affects one of the main sources of endogenous growth – human capital. For example, total FDI in education industry in 2012 in Brazil equaled to U.S. \$ 82 million (average for the period 2004-2012 - \$ 65 million), in China – U.S. \$ 15 million (average for the period 2004-2012 - \$ 22 million), in India – U.S. \$ 105 million (average for the period 2004-2012 - U.S. \$ 86 million), at the same time FDI in education industry in Russia was equal to U.S. \$ 1 million (average for the period 2004-2012 was equal to \$ 1 million as well).

Chowdhury, A., & Mavrotas, G. (2006). FDI and Growth: What Causes What?. *The World Economy*, 29(1), 9-19.

De Mello Jr, L. R. (1997). Foreign Direct Investment in Developing Countries and Growth: A Selective Survey. *The Journal of Development Studies*, 34(1), 1-34.

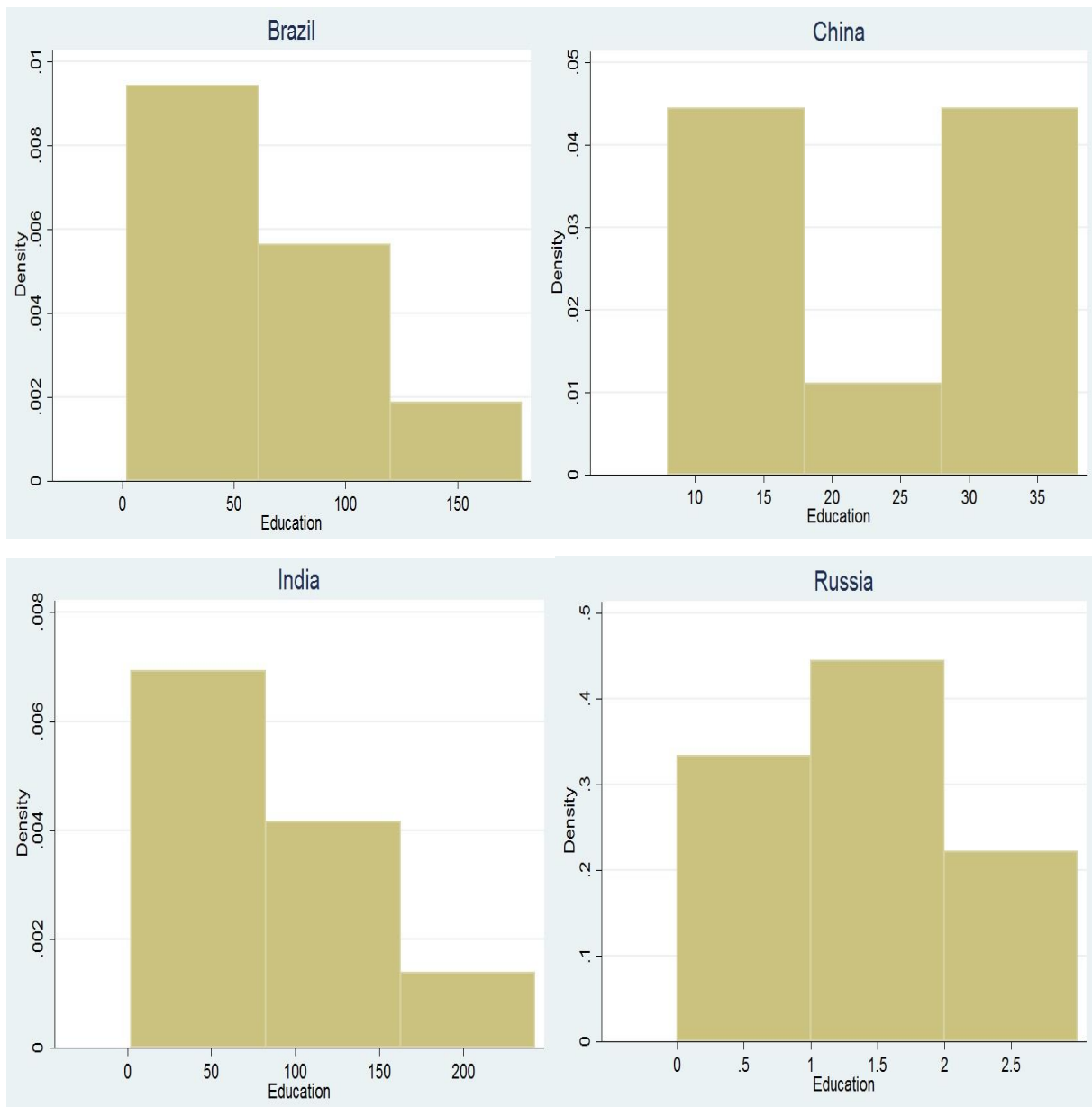


Figure 3 – Histogram of FDI inflows in the education industry by country, 2004-2012

Source: UNCTAD Stat, OECD Stat, International Trade Centre, Bureau of Economic Analysis, Central Bank of Russia, Federal State Statistics Service of Russia, author's calculation

FDI inflows in Russia's industry of wholesale and retail trade do not deviate significantly from those of other BRIC countries (although China has a leadership), but lags far behind from amount of FDI received by the industry in developed countries, such as USA (see figure 4).

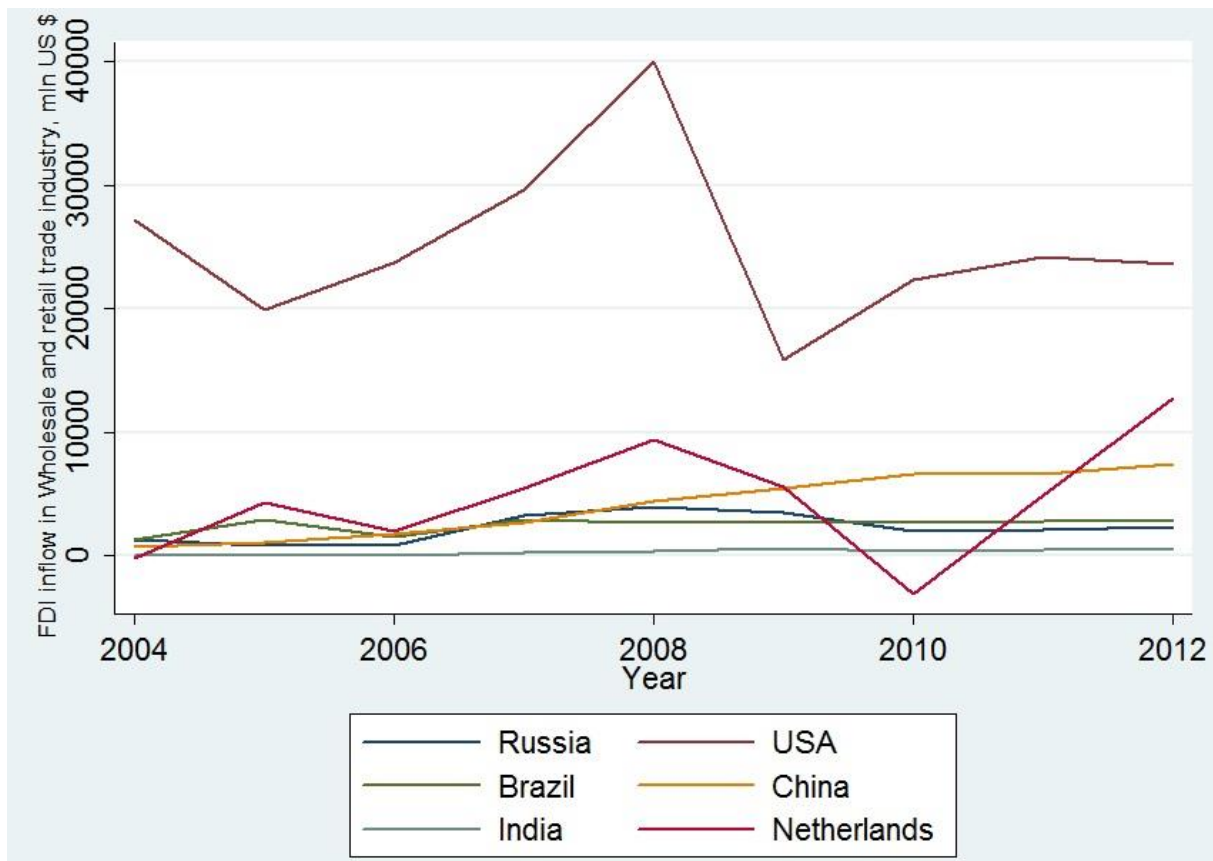


Figure 4 –FDI inflows in the wholesale and retail trade industry by country, 2004-2012

Source: UNCTAD Stat, OECD Stat, International Trade Centre, Bureau of Economic Analysis, Central Bank of Russia, Federal State Statistics Service of Russia

Besides, the wholesale and retail trade industry received the most significant amount of FDI in Russia (see table 1). This can be explained by the fact that multinational corporations seek to maximize profits on the Russian market, which has rose as a result of the consumer boom that followed the recovery of economy growth observed in the period of 1999-2008. Recovery of Russian economy was caused by the exceptionally favorable external economic conditions: high world prices for oil and gas, as well as the implementation of import substitution strategy through retention of a real exchange rate of the ruble, undervalued after 1998 financial crisis. Currently the sources of such growth model are almost completely exhausted and we expect a decline in FDI inflows into the Russian industry of wholesale and retail trade in the medium term. Growth of this particular industry coincides with the growth of GDP and real disposable income, but has a limited impact on the long-term economic growth.

Table 1 – FDI inflows in various countries breakdown by economic industries (2004-2012), millions of US dollars

Country	Industry	Year								
		2004	2005	2006	2007	2008	2009	2010	2011	2012
Argentina	Mining and quarrying	198	638	929	297	752	489	1544	1111	1214
	Agriculture	381	425	425	451	1302	396	685	456	591
	Machinery and equipment	51	179	184	417	311	-13	818	774	703
	Construction	3	-7	159	126	364	280	94	401	482
	Wholesale and retail trade	-3	374	307	491	698	348	562	931	1024
	Transport and communication	-202	1262	412	502	1260	787	885	1503	1522
	Finance	158	45	417	508	779	603	310	1003	1040
	Education	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Health care and social services	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Armenia	Mining and quarrying	43	98	66	81	34	21	32	39	47
	Agriculture	n/a	n/a	n/a	n/a	23	7	5	5	7
	Machinery and equipment	0	0	0	0	0	0	0	0	0
	Construction	1	4	6	1	2	0	2	3	3
	Wholesale and retail trade	5	3	10	11	2	5	9	10	11
	Transport and communication	68	71	96	168	359	444	254	280	329
	Finance	21	29	30	96	134	98	54	87	96
	Education	1	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a
	Health care and social services	n/a	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a
Brazil	Mining and quarrying	574	1045	415	3536	11037	1520	6591	7131	9282
	Agriculture	166	210	176	317	498	255	353	401	499
	Machinery and equipment	309	255	430	431	506	390	277	292	343
	Construction	320	204	321	1717	1746	1165	18	204	409
	Wholesale and retail trade	1220	2843	1486	2841	2663	2833	2674	2771	2796
	Transport and communication	3207	2112	1532	1455	1518	1145	2054	2219	2583

Table 1 continued

	Finance	1055	2155	3245	6324	6187	4948	1038	1988	2693
	Education	2	51	37	50	179	57	61	68	82
	Health care and social services	1	3	4	7	5	4	4	4	5
Chile	Mining and quarrying	350	589	1126	305	2372	1015	889	2615	2838
	Agriculture	0	1	3	1	1	11	6	48	50
	Machinery and equipment	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Construction	119	8	9	2	2	1	7	7	5
	Wholesale and retail trade	17	3	19	263	3	2681	558	57	49
	Transport and communication	1426	569	237	82	710	428	407	220	738
	Finance	61	240	132	259	192	299	491	778	2309
	Education	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Health care and social services	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
China	Mining and quarrying	276	240	420	489	573	501	684	691	720
	Agriculture	727	426	299	924	1191	1429	1241	1353	1421
	Machinery and equipment	4068	3973	3827	3821	3822	3614	3624	3711	3381
	Construction	772	490	688	434	1093	692	1461	1508	1622
	Wholesale and retail trade	740	1039	1789	2677	4433	5390	6596	6632	7439
	Transport and communication	1273	1812	1985	2007	2851	2527	2244	2543	2792
	Finance	253	12301	6741	257	573	456	1124	989	1248
	Education	38	18	29	33	36	14	8	10	15
	Health care and social services	87	39	15	12	19	43	90	94	97
France	Mining and quarrying	-142	267	475	170	1260	387	-133	-618	330
	Agriculture	9	32	14	14	16	33	-52	86	-41
	Machinery and equipment	204	968	2257	-166	318	-324	643	-1533	1078
	Construction	-241	506	1842	246	-85	310	-785	875	-152
	Wholesale and retail trade	-8440	-3456	-6808	6519	-160	-1974	229	4149	1280
	Transport and communication	1084	-1259	4884	-3126	-4708	-2775	6427	-2020	1348
	Finance	427	11710	6183	12277	13730	29345	20003	7545	6609

Table 1 continued

	Health care and social services	23	11	6	-1	66	3	15	17	-118
Netherlands	Mining and quarrying	981	883	-1951	2603	11655	459	333	1394	108
	Agriculture	1	13	5	12	-26	1	0	-242	0
	Machinery and equipment	231	184	596	688	809	117	-616	880	8139
	Construction	-96	143	38	651	198	-672	172	631	-137
	Wholesale and retail trade	-215	4288	2009	5462	9384	5549	-3114	4878	12770
	Transport and communication	269	4341	-1456	1033	-507	1104	327	12056	7199
	Finance	2670	4874	10587	108382	-30957	-5637	-16652	1367	-4681
	Education	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Health care and social services	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-7	n/a
Norway	Mining and quarrying	170	2780	982	2862	4927	5488	6412	6125	6728
	Agriculture	917	1378	1639	-1349	-5335	40171	671	n/a	n/a
	Machinery and equipment	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Construction	350	245	-127	1030	1624	-13845	-1631	n/a	n/a
	Wholesale and retail trade	960	1522	573	301	186	-145	926	624	1031
	Transport and communication	-84	-25	817	222	3351	-1560	129	191	327
	Finance	1410	84	1812	1659	-861	498	778	971	1043
	Education	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Health care and social services	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Russia	Mining and quarrying	78	99	208	263	334	376	280	351	395
	Agriculture	96	118	190	224	503	260	360	381	469
	Machinery and equipment	527	166	127	77	197	447	716	771	824
	Construction	138	117	271	891	958	744	426	513	670
	Wholesale and retail trade	1299	767	840	3256	3994	3518	1912	2061	2314
	Transport and communication	335	245	379	591	1282	480	416	474	505
	Finance	279	589	1502	1123	1713	634	777	791	1148
	Education	0	0	1	3	2	0	1	1	1
	Health care and social services	5	12	26	32	19	25	5	14	11

Table 1 continued

Spain	Mining and quarrying	430	158	196	133	-1271	1442	-472	1869	420
	Agriculture	-125	44	-35	-30	194	477	-105	-111	42
	Machinery and equipment	82	96	79	131	192	-140	-303	203	215
	Construction	-100	-210	8	2536	1011	608	4315	1103	1484
	Wholesale and retail trade	-601	-691	122	4575	-1961	-8961	-3681	-2450	2272
	Transport and communication	-1825	1442	5740	4682	-1343	1861	3192	3878	-2449
	Finance	2926	484	3845	6162	4764	-2363	5981	3736	2783
	Education	n/a	n/a	n/a	n/a	209	198	184	n/a	n/a
	Health care and social services	n/a	n/a	n/a	n/a	88	538	230	-164	19
Turkey	Mining and quarrying	73	41	123	336	145	89	135	146	214
	Agriculture	4	5	6	9	41	48	80	32	38
	Machinery and equipment	6	42	67	141	226	219	64	76	32
	Construction	3	81	215	287	337	209	314	301	1339
	Wholesale and retail trade	72	78	456	234	2088	390	435	709	198
	Transport and communication	639	3284	6806	1151	193	403	218	259	229
	Finance	69	3856	6954	11717	6136	817	1620	5882	1400
	Education	11	7	10	0	5	1	17	68	48
	Health care and social services	35	26	71	176	147	105	112	231	545
USA	Mining and quarrying	1690	-444	4652	6846	16940	7500	21724	26821	13673
	Agriculture	-26	54	-12	419	313	361	162	-109	121
	Machinery and equipment	440	7325	9957	16569	9221	5402	1234	9530	4459
	Construction	-500	2626	3009	2446	353	307	141	520	357
	Wholesale and retail trade	27193	19959	23696	29607	40091	15796	22361	24190	23602
	Transport and communication	2664	3021	10519	11884	8550	-7876	-10199	-4277	3398
	Finance	55438	28527	64004	12808	120105	45069	47881	34252	147
	Education	n/a	n/a	n/a	n/a	n/a	n/a	26	160	-21
	Health care and social services	n/a	n/a	n/a	n/a	n/a	43	2347	-1175	1140

Sources: UNCTAD Stat, OECD Stat, International Trade Centre, Bureau of Economic Analysis, Central Bank of Russia, Federal State Statistics Service of Russia.

It is clear from the figures presented in the Table 1 that the mining and quarrying industry in Russia is underinvested. It can be caused by regulatory restrictions for foreign investors to access the industry as well as several other factors, such as poor quality of institutions, the risk of government intervention and other. For example, total FDI in mining and quarrying industry in 2012 in Brazil was equal to U.S. \$ 9,282 million (average for the period 2004-2012 - \$ 4,570 million), in China – U.S. \$ 720 million (average for the period 2004-2012 - \$ 510 million), in India – U.S. \$ 674 million (average for the period 2004-2012 - U.S. \$ 310 million), in Kazakhstan – U.S. \$ 1,345 million (average for the period 2004-2012 - U.S. \$ 636 million), at the same time in Russia the comparative figure is U.S. \$ 395 million (average for the period 2004-2012 - \$ 265 million). Thus, FDI in the Russian mining and quarrying industry is even lower than that in Spain, which is relatively poorly endowed with natural resources.

Among other things, table 1 shows that Russia lags behind the other BRIC countries in terms of attracting FDI to the transport and communications industry, the development of which is capable of increasing TFP and can have a positive impact on the long-term economic growth. The total FDI in transport and communications industry in 2012 in Brazil was equal to U.S. \$ 2,583 million (average for the period 2004-2012 - \$ 1,981 million), in China – U.S. \$ 2,792 million (average for the period 2004-2012 - \$ 2,226 million), in India U.S. – \$ 1,963 million (average for the period 2004-2012 - U.S. \$ 1272 million), in Kazakhstan 1345 million U.S. \$ (average for the period 2004-2012 - U.S. \$ 636 million), while in Russia this figure is U.S. \$ 505 million (average for the period 2004-2012 - \$ 523 million).

Based on the analysis of statistical data, we can infer that Russian industries capable of increasing TFP and positively impacting the long-term economic growth are significantly underinvested relative to other countries. It is important to emphasize that we consider only official data without taking into account the presence of the "round-trip investment", which in case of Russia, can reach 25-50% of total FDI inflows¹¹. This phenomenon more explicitly indicates the low current investment attractiveness of Russia and closed nature of its economy for foreign investors.

¹¹ Ledyeva, Karhunen, Whalley, (2013). If Foreign Investment Is not Foreign: Round-Trip Versus Genuine Foreign Investment in Russia (No. 2013-05), CEPII

Measures to attract FDI in order to stimulate long-term economic growth

Every country has to possess certain absorptive capacity to attract and effectively use FDI. We can illustrate the concept of absorptive capacity on the example of the quality of human capital. If the quality of human capital is relatively low (the country has poor absorptive capacity) even a significant inflow of FDI and transfer of the most advanced technologies of production of goods and services will not contribute to long term economic growth due to the fact that human capital will not be able to acquire new knowledge and skills and then use them in production process.

Below we discuss some of the key measures that can improve absorptive capacity of Russia in order to attract FDI and maximize positive externalities of FDI inflow for the economy.

Macroeconomic policy

Sound macroeconomic policies is a determining factor for attracting FDI. In the medium term Russian authorities have to maintain a disciplined fiscal administration, prevent growth of inflation rate above 3-3.5%, ensure stable employment level and implement responsible management of public sector debt.

It should be noted that due to the specific of investment process in Russia the use of tax incentives to foreign investors should be strictly administered and include procedures for identification of ultimate beneficial owners. During the liberalization of access of foreign investors to the Russian market, a number of liberalization tools can stimulate an increase in round-trip investment as the investment of foreign companies can use noticeably more privileged position than the investment of local enterprises. This may increase the incentives for local businessmen to register their entities in foreign jurisdictions. Then they can use their dominant position in the Russian market relative to foreign players (for example, the advantage of having experience of operating in the Russian business environment) to invest in Russia under the guise of foreign companies while using various privileges provided for genuine foreign investors. Thus, authorities should avoid imbalances in establishing "rules of the game" for local and foreign investors in order to minimize incentives for Russian businessmen to register their companies in foreign jurisdictions for the subsequent implementation of round-trip investment.

Institutional environment

The difference in institutions is one of the fundamental reasons of the differences in the economic development between various countries¹².

In case of Russia, extremely underdeveloped institutions and the presence of regulatory uncertainty continue to worsen the country's investment climate year after year.

The eradication of corruption in all branches of government (executive, legislative and judicial) should become a primary measure of improvement in the institutional environment, in particular through a sharp increase in the level of transparency of government and state support of civil society initiatives in the investigation of the criminal activity of Russian officials in order to increase the pressure of civil society on corruption. It is necessary to ratify the 20th article of the UN Convention against Corruption and modernize the Russian legislation to eliminate formal barriers to ratification of the 20th and other unratified articles of the UN Convention against Corruption in order to ensure the extermination of corruption. In the medium term, such measures may increase transparency and reduce the use of illegal business practices, which in turn should positively impact the investment climate in the country, increase foreign investment and ultimately ensure long-term sources of economic growth.

Financial markets

Underdevelopment of financial markets does not allow the country to experience the full benefits of FDI, as a lack of financial resources prevents local companies to attract external funding and use the opportunities in business from the inflow of FDI. In other words, the underdevelopment of financial markets limits the development of business activity in the host country of FDI, which thereby reduces the positive externalities from FDI for long-term economic growth.

One of the fundamental problems of the Russian financial market is the absence of long-term domestic investors, i.e. low share of long-term investors in the structure of customers of financial institutions. Possible solutions to the problem, which at the same time will increase Russia's TFP by improving the quality of human capital, is the organization of a national financial literacy program. In the medium term, this measure

¹² For further reading see Acemoglu, Johnson, Robinson, (2005). Institutions as a Fundamental Cause of Long-run Growth. Handbook of Economic Growth, 1, 385-472.

can promote the creation of an internal long-term investors by attracting funds of the population – in the form of direct investment in the financial market instruments (through brokerage services and by collective investment institutions), as well as investments in pension systems.

Another problem of the Russian financial market is the low capitalization of Russian financial institutions. Possible solution to the problem is the implementation of statutory level of guarantee of the bank's equity. It is necessary for the largest banks to generate contingent capital, which is available to use only when the banks are in a precarious financial position¹³. This measure will help to minimize the risks of the financial sector in times of decline in economic activity, as well as minimize the anti-crisis public expenditures. In practice, this measure can be implemented through emission of special debt securities.

Further implementation of macroprudential regulation of banks, banking groups and bank holding companies is necessary to reduce systemic risk of economy and financial sector in particular. Furthermore, it is necessary to make a transition to the guidelines in the field of banking regulation of the Basel Committee on Banking Supervision ("Basel III"), in the medium term this will help to reduce costs of attracting external funding.

Reducing state involvement in the economy

The main problems of state involvement in the economy are distortion of market conditions, noising of price signals and inhibition of competition development in the domestic market. All these problems potentially reducing both foreign and domestic investment. It is necessary for Russian economy to further decrease the state involvement in competitive industries and continue privatization of large state-owned enterprises. It is also necessary to optimize the amount of funding of government programs implemented in the market industries of the economy.

Human capital.

Undoubtedly the set of measures to improve the quality of human capital in the medium term needed in the field of higher and secondary education, such as, for

¹³ For further reading see Culp (2002). Contingent capital: Integrating corporate financing and risk management decisions. *Journal of Applied Corporate Finance*, 15(1), 46-56.
Pazarbasioglu, Zhou, Le Leslé, Moore (2011). Contingent Capital: Economic Rationale and Design Features, International Monetary Fund.

example, development of undergraduate technical programs and new educational technologies. However, in the long-term efforts of the federal and regional authorities should be focused on development of pre-school education. Investments in early childhood education of the population increase cognitive and non-cognitive skills of individuals, provide a net benefit to the social welfare and lead to long-term income growth¹⁴. In this regard, at the expense of the reducing the consolidated budget expenditures on the defense industry and law enforcement, it is necessary to increase expenditures on preschool education to the level of 7-9 % of the total expenditures of the consolidated budget. These expenditures should be directed to building new kindergartens, to raising a level of wages for existing teaching staff and conducting training courses for them, as well as to attracting new highly qualified teaching staff for the purpose of teaching children special disciplines, e.g., the basic concepts of foreign languages and mathematics. Preschool education development in Russia in the long term may create favorable conditions for FDI and maximize the positive externalities from FDI inflows to the country's economy.

Physical infrastructure.

In order to attract FDI in Russia it is necessary to further develop and improve the quality of physical infrastructure, such as bridges, ports, road and railways and other. Results of academic studies suggest that the level of development of physical infrastructure has a significant impact on FDI inflows¹⁵. In addition, the physical infrastructure is necessary to ensure that local companies could use foreign technology in its production process, and, in the future, spread these developments across the economy.

Doing business ranking.

Political task for Russia's entry into top 20 rankings of «Doing business»¹⁶ can be solved based on the characteristics of index calculation. It is a well-known fact that the

¹⁴ See for example Heckman, Raut (2013). Intergenerational Long Term Effects of Preschool-Structural Estimates from a Discrete Dynamic Programming Model, No. w19077. National Bureau of Economic Research

¹⁵ Coughlin, Terza, Arromdee (1991) State Characteristics and the Location of Foreign Direct Investment within the United States. *Review of Economics and Statistics* 73(4): 675-83

Wheeler, Mody (1992) International Investment Location Decisions: The Case of U.S. Firms. *Journal of International Economics* 33(1-2): 57-76

Cheng, Kwan (2000) What are the Determinants of the Location of Foreign Direct Investment? The Chinese Experience. *Journal of International Economics* 51(2): 379-400

¹⁶ In December 2011, Vladimir Putin, then prime minister, outlined that by 2020 Russia should enter the top 20 rankings.

overall rating of the country is formed based on an indicators of economy's largest business city. In case of Russia largest business city of the country is Moscow, i.e. result in an overall «Doing business» ranking of Russia reflects the degree of ease of doing business only in the capital. Note that Moscow is not a leader among Russian regions in terms of ease of doing business, on the contrary – a joint subnational study of the World Bank and International Finance Corporation "Doing Business in Russia" (2012) reveals that Moscow takes the last place among Russian regions on the aggregate rating of doing business, while best business practices are scattered across different regions of the country. Use of best regional practices in Moscow will facilitate significant strengthening of Russia's positions in the «Doing business» ranking. In particular, Moscow authorities should adopt and use best practices of: St. Petersburg, Volgograd, Ulyanovsk, Kaluga, Vladikavkaz and Vladivostok regarding business registration procedures; Surgut, Stavropol and Kaliningrad regarding the issuance of construction permits; Saransk, Vladikavkaz and Rostov-on-Don in terms of getting electricity.

Conclusion

Endogenous growth theory suggests that long-term economic growth will mostly occur in countries aimed at openness of the economy, development of human capital, domestic competition and attracting foreign direct investment than in countries implementing policy of isolationism and following its "own special way."

After more than 20 years after the formation of post-Soviet Russia, the economic profile of the country underwent various, although minor changes. Direction of increasing the openness of the Russian economy and Russia's integration into the international economic community must be preserved, and promotion of it has to be significantly intensified. Further integration of Russia into the international economy, not only through export of natural resources and weapons, but also through attracting of multinational corporations with their knowledge and technology to Russia, will contribute to the growth of TFP and provide new sources of long-term economic growth in Russia, reduce costs of production of goods and services as well as the trade costs, increase social welfare in Russia and the world, and even increase life expectancy of Russian citizens.

Without a doubt, international community needs Russia as an open and transparent business partner, economic development potential of which remains high, but in the current economic situation Russia needs the global economic community as a business partner much stronger. Russian political leaders must clearly realize this, especially making fateful decisions that can suddenly deploy the country's direction of openness and integration into isolationism, leading to collapse.

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Appendix

Descriptive statistics for the BRIC countries and U.S. broken down by economic industry

Brazil				
Machinery and equipment				
	Percentiles	Smallest		
1%	255	255		
5%	255	277		
10%	255	292	Obs	9
25%	292	309	Sum of Wgt.	9
50%	343		Mean	359.2222
			Std. Dev.	84.83775
		Largest		
75%	430	390		
90%	506	430	Variance	7197.444
95%	506	431	Skewness	.3893122
99%	506	506	Kurtosis	1.919797
Transport and communication				
	Percentiles	Smallest		
1%	1145	1145		
5%	1145	1455		
10%	1145	1518	Obs	9
25%	1518	1532	Sum of Wgt.	9
50%	2054		Mean	1980.556
			Std. Dev.	645.7703
		Largest		
75%	2219	2112		
90%	3207	2219	Variance	417019.3
95%	3207	2583	Skewness	.5720448
99%	3207	3207	Kurtosis	2.46452
Finance				
	Percentiles	Smallest		
1%	1038	1038		
5%	1038	1055		
10%	1038	1988	Obs	9
25%	1988	2155	Sum of Wgt.	9
50%	2693		Mean	3292.556
			Std. Dev.	2054.12
		Largest		
75%	4948	3245		

90%	6324	4948	Variance	4219408
95%	6324	6187	Skewness	.4600343
99%	6324	6324	Kurtosis	1.71997
Education				
	Percentiles	Smallest		
1%	2	2		
5%	2	37		
10%	2	50	Obs	9
25%	50	51	Sum of Wgt.	9
50%	57		Mean	65.22222
			Std. Dev.	48.15023
		Largest		
75%	68	61		
90%	179	68	Variance	2318.444
95%	179	82	Skewness	1.419755
99%	179	179	Kurtosis	4.823534

China				
Machinery and equipment				
	Percentiles	Smallest		
1%	3381	3381		
5%	3381	3614		
10%	3381	3624	Obs	9
25%	3624	3711	Sum of Wgt.	9
50%	3821		Mean	3760.111
			Std. Dev.	205.5909
		Largest		
75%	3827	3822		
90%	4068	3827	Variance	42267.61
95%	4068	3973	Skewness	-.3150628
99%	4068	4068	Kurtosis	2.562146
Transport and communication				
	Percentiles	Smallest		
1%	1273	1273		
5%	1273	1812		
10%	1273	1985	Obs	9
25%	1985	2007	Sum of Wgt.	9
50%	2244		Mean	2226
			Std. Dev.	510.8867
		Largest		
75%	2543	2527		
90%	2851	2543	Variance	261005.3

95%	2851	2792	Skewness	-.4736673
99%	2851	2851	Kurtosis	2.339664
Finance				
	Percentiles	Smallest		
1%	253	253		
5%	253	257		
10%	253	456	Obs	9
25%	456	573	Sum of Wgt.	9
50%	989		Mean	2660.222
			Std. Dev.	4146.233
		Largest		
75%	1248	1124		
90%	12301	1248	Variance	1.72e+07
95%	12301	6741	Skewness	1.683856
99%	12301	12301	Kurtosis	4.302834
Education				
	Percentiles	Smallest		
1%	8	8		
5%	8	10		
10%	8	14	Obs	9
25%	14	15	Sum of Wgt.	9
50%	18		Mean	22.33333
			Std. Dev.	11.67262
		Largest		
75%	33	29		
90%	38	33	Variance	136.25
95%	38	36	Skewness	.1694524
99%	38	38	Kurtosis	1.389747

India				
Machinery and equipment				
no observations				
Transport and communication				
	Percentiles	Smallest		
1%	70	70		
5%	70	95		
10%	70	588	Obs	9
25%	588	882	Sum of Wgt.	9
50%	1572		Mean	1272.111
			Std. Dev.	887.8397
		Largest		
75%	1963	1739		

90%	2468	1963	Variance	788259.4
95%	2468	2072	Skewness	-.2021483
99%	2468	2468	Kurtosis	1.581627
Finance				
	Percentiles	Smallest		
1%	301	301		
5%	301	318		
10%	301	1330	Obs	9
25%	1330	1353	Sum of Wgt.	9
50%	1531		Mean	1896.111
			Std. Dev.	1420.405
		Largest		
75%	2206	1746		
90%	4430	2206	Variance	2017551
95%	4430	3850	Skewness	.7113524
99%	4430	4430	Kurtosis	2.373121
Education				
	Percentiles	Smallest		
1%	2	2		
5%	2	10		
10%	2	43	Obs	9
25%	43	56	Sum of Wgt.	9
50%	72		Mean	86.44444
			Std. Dev.	75.58953
		Largest		
75%	105	91		
90%	243	105	Variance	5713.778
95%	243	156	Skewness	.9264463
99%	243	243	Kurtosis	3.074244

Russia				
Machinery and equipment				
	Percentiles	Smallest		
1%	77	77		
5%	77	127		
10%	77	166	Obs	9
25%	166	197	Sum of Wgt.	9
50%	447		Mean	428
			Std. Dev.	296.5169
		Largest		
75%	716	527		
90%	824	716	Variance	87922.25

95%	824	771	Skewness	.1347275
99%	824	824	Kurtosis	1.388998
Transport and communication				
	Percentiles	Smallest		
1%	245	245		
5%	245	335		
10%	245	379	Obs	9
25%	379	416	Sum of Wgt.	9
50%	474		Mean	523
			Std. Dev.	302.0952
		Largest		
75%	505	480		
90%	1282	505	Variance	91261.5
95%	1282	591	Skewness	1.947724
99%	1282	1282	Kurtosis	5.735367
Finance				
	Percentiles	Smallest		
1%	279	279		
5%	279	589		
10%	279	634	Obs	9
25%	634	777	Sum of Wgt.	9
50%	791		Mean	950.6667
			Std. Dev.	459.841
		Largest		
75%	1148	1123		
90%	1713	1148	Variance	211453.8
95%	1713	1502	Skewness	.3163909
99%	1713	1713	Kurtosis	2.090791
Education				
	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	9
25%	0	1	Sum of Wgt.	9
50%	1		Mean	1
			Std. Dev.	1
		Largest		
75%	1	1		
90%	3	1	Variance	1
95%	3	2	Skewness	.7954951
99%	3	3	Kurtosis	φев.25

USA				
Machinery and equipment				
	Percentiles	Smallest		
1%	440	440		
5%	440	1234		
10%	440	4459	Obs	9
25%	4459	5402	Sum of Wgt.	9
50%	7325		Mean	7126.333
			Std. Dev.	4961.048
		Largest		
75%	9530	9221		
90%	16569	9530	Variance	2.46e+07
95%	16569	9957	Skewness	.3910141
99%	16569	16569	Kurtosis	2.630418
Transport and communication				
	Percentiles	Smallest		
1%	-10199	-10199		
5%	-10199	-7876		
10%	-10199	-4277	Obs	9
25%	-4277	2664	Sum of Wgt.	9
50%	3021		Mean	1964.889
			Std. Dev.	7924.232
		Largest		
75%	8550	3398		
90%	11884	8550	Variance	6.28e+07
95%	11884	10519	Skewness	-.2941893
99%	11884	11884	Kurtosis	1.772855
Finance				
	Percentiles	Smallest		
1%	147	147		
5%	147	12808		
10%	147	28527	Obs	9
25%	28527	34252	Sum of Wgt.	9
50%	45069		Mean	45359
			Std. Dev.	34556.12
		Largest		
75%	55438	47881		
90%	120105	55438	Variance	1.19e+09
95%	120105	64004	Skewness	.938444
99%	120105	120105	Kurtosis	3.623475
Education				
	Percentiles	Smallest		

1%	-21	-21		
5%	-21	26		
10%	-21	160	Obs	3
25%	-21	.	Sum of Wgt.	3
50%	26		Mean	55
			Std. Dev.	93.92018
		Largest		
75%	160	.		
90%	160	-21	Variance	8821
95%	160	26	Skewness	.5131697
99%	160	160	Kurtosis	2