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CHINA, INDIA AND RUSSIA:

ECONOMIC REFORMS, STRUCTURAL CHANGE

AND REGIONAL DISPARITIES

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Abstract

This paper studies the different patterns of growth of China, India and Russia by exploring and comparing the processes of reforms that have generated and accompanied their high and sustained rates of growth. Focusing on the sector transformations involved into the three economies, we show that the growth strategies implemented present specific characteristics in terms of gradualism and policy choices. We analyze the effects of economic growth on regional income disparities and to what extent the recent increase in prosperity has been homogeneously distributed within the three giants. Making use of Theil's T statistics and transition probability matrices, our findings reveal that income disparities within the Indian states and Chinese provinces have increased and, more in particular, landlocked and rural areas are in general still far from reducing the income gap from coastal and richest regions. In the case of Russia, the great divide is fuelled by the presence of hydrocarbons resources, which tend to be concentrated in the West Siberia.

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1. Introduction

The process of globalization has established China and India as the new economic powers in the world scene. Their incredible rhythm of growth in the last decades has completely changed the relations and equilibrium among the economies taking part to the international integration process. Furthermore, the successful experience of these two countries has induced a rapid increase in the demand for commodities and raw materials. Russia, a leading hydrocarbons producer, has been one of the most beneficiary of such request[1]. In particular, starting since 1999, the country has taken on a sustained and stable pattern of growth close to that of China and India. The Russian recovery has taken place after some years of turmoil following the Soviet Union collapse and culminated with the August 1998 financial crisis.

The choice of the three economies is motivated not only by the striking results in terms of their economic performances, but also by their historical, political and economic characteristics. To different extents, they have all experienced central-planning systems where the role of communist parties or left-orientated governments has been dominant and controlling all the decisions about economic policy. Even if the communist political apparatus is still present in China, major market-orientated and pro-liberalization reforms have been implemented to adapt the socialist ideology to the global capitalism. Furthermore, Russia, China and India present similar features in geographical terms; they are among the biggest countries all over the world in terms of land extension. In the case of China and India the huge territorial extension is also associated with the first and the second highest populations respectively and together the two countries account for more than one third of the whole world population.

The positive performance of these economies has attracted mounting attention among researchers and economists. The debate has focused not only on their impact on the global economy but also on the reasons behind the jump in their rates of growth. The literature has developed many explanations to describe the economic growth process in the three countries. Large-scale capital investment, financed by large domestic savings and foreign investment, seems to have played a key role in China. The reforms, through the creation of the Township and Village Enterprises (TVE's), and the Special Economic Zones (SEZs), led to a further

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[1] Together with Russia the other country that seems to have adapted at best to the increased Chinese and Indian demand for raw materials is Brazil. The four countries have been labelled as the BRIC and are expected in less than forty years to acquire a share in the world economy larger than G6 group (Wilson and Purushothaman, 2003). In this paper we have been focusing only on the three Asian emerging economies.

expansion in the household savings (Morrison, 2006). In turn, this has induced an acceleration in the rate of growth of the economy. In India, the process of growth has been mainly caused by an improvement in labour productivity. This followed the rapid surge in TFP that can be explained through the positive effect of the registered manufacturing enterprises privatization coupled with high barriers to foreign trade (Rodrik and Subramaninan, 2004). The post-recession Russian recovery has been driven by the general increase in international oil prices accompanied by more appropriate exchange rate levels that have made exports profitable. Furthermore, Berkowitz and De Jong (2003) argue that the sharp increase in the rate of growth also derived from price liberalization policies, which brought a further improvement in the terms of trade.

The different sources of economic growth have not prevented the rise of huge regional disparities within each of the three giants. The gap between faster growing and poor regions has been increasing constantly over time constituting a common characteristic associating the recent acceleration in growth patterns of China, India and Russia. The aim of this research is to provide an in depth description of the regional inequalities, highlighting similarities and differences of winners and losers regions in the three countries. Our study is based on regional data provided by the three national statistics institutions of the three emerging economies. We provide two different perspectives to look at the persistent divergence across regions. First, we present a static analysis making use of the Theil's T statistic, which allows assessing the contribution of each region to the overall amount of *between*-regions-inequality within the three countries. Second, we examine the dynamics of the divergence process making use of transition probabilities matrices. Our empirical investigation seems to suggest that China and India exhibit some similarities. In both countries more prosperous areas tend to be located along the coasts and highly urbanized, as opposed to backward regions, which tend to be landlocked and prevalently rural. In the case of Russia the most important factor generating inequality is represented by hydrocarbons, which tend to be very concentrated in few regions mainly located in West Siberia.

One more common factor underlining the economic boost of the three countries is the important role played by reforms. China, India and Russia represent striking examples of how policies can be contingent on the economic scenario. This suggests that best strategies to spur the growth rate cannot be predetermined, but rather specific to the context of their application. In addition, the quality of institutions has been found crucial for the duration and sustainability of growth accelerations (Rodrik, 2004 and 2005, Hausmann, Pritchett and Rodrik, 2005 and Jong-A-Pin and De Haan, 2007).

Before moving to the regional dimension, our analysis focuses on the main characteristics of the growth patterns in Russia, China and India, with particular attention to the impact of the reform strategies. We compare the different approaches to liberalization and openness and the timing with which they have been realized. We also look at sectoral changes into the three economies and how they have been affected by the liberalization patterns. Our analysis suggests that China has gone first through a pro-market liberalization and only in a second moment through a pro-business approach to reforms, while India did the opposite, first going through a process of privatization and then opening to the international trade. Russia has instead faced a period of so called big bang reforms, simultaneously privatizing and opening its economy. To this has corresponded a different sector structure evolution of the three emerging economies in that China exhibits a prevalence of manufacture share, India a prevalence of service share and Russia a cumbersome share of the industrial sector as inherited by the Soviet period coupled with a mounting share of services.

The structure of the paper is as follows. Section 2 describes the process of reforms implemented in China, India and Russia since late 1970s and its effect on the rate of growth and the transformations in the structure of the economies. Section 3, after the description of the datasets, illustrates the regional disparities within the three states making use of Theil's T statistics. Section 4 focuses on the income dynamics through the analysis of transition probabilities matrices. Finally, section 5 draws the conclusions.

2. Economic reforms, growth and structural change

2.1 The process of reforms

The first way to compare Russia, India and China is to analyze the main features of the process of reforms that has determined and accompanied the patterns of growth. Reforms have been implemented with differences in terms of gradualism, steps and kind of policy choices.

The first to begin was China (Table 1a), starting from the election of Deng Xiaoping in 1978, after three decades in which Chinese leaders adopted a Soviet-style heavy-oriented development strategy (Lin, Cai and Li, 1996). The basic state policy, commented as "reforming the system" (Naughton, 1995), has focused on the formulation and implementation of overall reform by creating a pricing system, decreasing the role of the state

in resource allocations and opening to the outside world. The first part of Chinese economic reform involved implementing the Household Responsibility System (HRS) in agriculture, by which farmers were able to retain surplus over individual plots of land rather than farming for the collective. By the end of 1984, approximately 98 percent of all farm households were under the HRS and the agriculture output and the household income started to increase. This policy was followed by incentives to rural industrialization through the establishment of the Township and Village Enterprises (TVE's), which were industries owned by townships and villages. Due to the remarkable boom in investment and entrepreneurship generated by such enterprises, the TVE's have been considered as the growth engine of the country until the mid-1990s (Qian, 2003a).

The second phase of Chinese reform during the '80s was aimed at creating market institutions and converting the economy from an administratively driven command economy to a price driven market economy. From 1984, the task of price reform was achieved using the dual-track pricing system in which rural enterprises were allowed to sell over-quota product at market price and such approach was eventually employed also in some industrial goods and in the labour market. The goods allocated at market prices were increased and until by the early-1990s they included almost all products. Moreover, further effort was made in order to give enterprises sufficient autonomy and sufficiently powerful incentives to allow them to respond to market forces.

The main last part of the economic policy during the 1980s regards the role of foreign trade. Under Deng Xiaoping foreign trade was regarded as an important source of investment funds and modern technology and restrictions on commercial flows were relaxed and foreign investment was legalized allowing and encouraging joint ventures with foreign firms. The symbol of trade reforms in China was the creation of Special Economic Zones (SEZs) that stimulated productive exchanges between foreign firms with advanced technology and major Chinese economic networks (Lai, 2006). Since 1980, the government established SEZs in Shenzhen, Zhuai and Shanou in Guangdong province, in Xiamen in Fujan province and in the entire province of Hainan. In 1984 further 14 coastal cities were opened to overseas investment and over time a multilevel diversified pattern of opening and integrating coastal areas with river, border, and inland areas was developed.

However, the transition of China towards a market system was far from complete and in early '90s its economy was a mixed system, or, following the definition by the XIV Congress of the Chinese Communist Party in 1992, a "socialist market economy": the state owned and controlled the largest non-agricultural enterprises and the major industries were still primarily

guided by the central plan. From 1994, the reform policy, "replacing the system", had been guided with more clear targets and, although state ownership was still regarded as a "principal component of the economy", private ownership was considered for the first time a "supplementary component of the economy"; the Fifteenth Party Congress held in September 1997 made a major breakthrough on ownership issues by elevating private ownership to an "important component of the economy" (Qian, 2003)[2]. Privatization of State Owner Enterprises (SOEs) and layoffs of state workers began to emerge on a large scale in 1995 (Cao, Qian, and Weingast, 1999), started initially by local governments as experiments in a few provinces, such as Shandong, Guangdong, and Sichuan and increased during the following decade. By the first years of the new millennium, more than two third of China's GDP is in the private sector. Furthermore, the restructuring of ownership was accompanied by the abolition of the dual-track approach, reforms of fiscal, financial and banking system, and downsizing of the government bureaucracy (see, for example, Qian and Roland 1998 and Dong 1999).

The brief picture of reforms implemented by China has revealed that its growth strategy has been firstly signed by the implementation of "pro-market" policy and then by the adoption of a "pro-business" orientation. Rodrik and Subramanian (2004) originally used such distinction describing the Indian process of reforms during the 1980s and 1990s, even if India preferred to adopt the "pro-business" policy in the first decade (see also Kohli, 2006a and 2006b). Although the process of reforms took place with the Green Revolution in the 1970s, it is the Rajiv Gandhi government in the second half of the 1980s that started to modify the role of central planning system and relax the complex mechanism of the Licence Raj system applied to enterprises for investment and product diversification. Among the main initiatives, it is worth to underline the Monopolies and Restrictive Trade Practices Act (MRTP), which reduced many restrictions on monopolies; the expansion of the Open General Licensing (OGL), that includes the list of commodities for which no formal licence was required for foreign trade; the reduction of the number of items included in the so-called "canalized" imports list, commodities for which the government had monopoly rights for imports. However, high barriers to trade have accompanied all these acts in order to favour incumbent producers and businesses, by protecting them from foreign competition and by promoting the modernisation of existing domestic establishments and the creation of new ones. Therefore, the overall level of trade protection increased during the decade and India was one of the closest economies among developing countries of that period (Das, 2003).

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[2] Private ownership and the rule of law were incorporated into the Chinese Constitution in March 1999.

The Indian reform process switched towards the "pro-market" orientation after the financial and political crisis in 1991. The government guided by prime minister Narasimha Rao and his finance minister Manmohan Singh started to pursue economic liberalization with the aim of removing impediments to markets. Even if the previous initiatives towards privatization and the removal of the system of licences were intensified, high priority was put to the lowering of foreign trade barriers and to the enhancement of international integration. Tariff and non-tariff barriers were reduced over time for most intermediate and capital goods and numerous initiatives were also put in place to attract foreign capital, especially in services. In 2004 the highest tariff rate on import as percentage of value added fell to 25%, from 355% reached at the end of the 1980s (Williamson and Zagha, 2002 and Panagariya, 2004). Furthermore, by the end of the decade banking, insurance, telecommunications and infrastructure, where the Indian state sector was operating under conditions of monopoly, were open to the private sector and to Foreign Direct Investment (FDI). Following the experience of China, special units, in particular in Information Technology (IT) activities[3], were established allowing the share of foreign investment to reach 100%.

The case of Russia is different from both India and China (Table 1c). Even if the Perestroika proposed by Mikhail Gorbachev at the 27th Communist Party congress of 1986 tried to introduce some attempt of change (Gooding, 1992. and Tompson 1993)[4], Russia faced all the reform processes in just few years. In 1992 it liberalized both the trade and the production system. The first government of Boris Yeltsin after the Soviet Union collapse abolished the state orders, eliminated most of restriction on foreign trade, privatized more than 85% of small enterprises and 1/3 of the state enterprises. In two years 70% of medium and large enterprises and 90% of small enterprises were into private hands. However, the rapid implementation of this process of reforms has not produced the expected results in terms of economic performance (Aghion and Blanchard, 1998, Dabrowski et al., 2005 and Sprenger, 2006) mainly due to the distortions in the distribution mechanism of vouchers to 144 million citizens for purchase shares in medium and large enterprises. It is only after the financial crisis in 1998 that Russia started a new pattern of growth. On the one hand, the election of Vladimir Putin in 1999 coincided with a further acceleration in the reforms process with the improvement of the Russian Federalism, the simplification of the tax

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[3] These units can be under a number of possible schemes, including Export Oriented Units (EOUs), Export Processing Zones (EPZs), Special Economic Zones (SEZs), Software Technology Parks (STPs), and Electronics Hardware Technology Parks (EHTPs) (Panagariya, 2004).
[4] The Law on the State Enterprise (Association) introduced autonomy without fiscal responsibility in SOEs. The Law on Cooperatives gave more freedom in creating new firms in the legal form of co-operatives. Finally, the Law on Leasing created of collective leasing.

systems, the reconstruction of the legal, pension and health systems, the regulation of natural monopolies and the tradability of land resources. On the other hand, Putin's policies have tended to attribute to the state bureaucratic apparatus a central role in some key sector of the economic activity, as it is for example the case of hydrocarbons trade. The recovery started in 1999 has been mostly the result of the sharp increase in international hydrocarbons prices. Massive exports of oil and gas have restarted the engine of the Russian economy ensuring a sustained annual average rate of growth over 6% during the period 1999-2004 and even higher in the following years. This hydrocarbons led growth has resulted in huge regional disparities (Buccellato and Mickiewicz, 2007) and a steady increase in the dispersion of GDP per capita across regions with the West Siberian area outperforming the rest of the federation (exception made for Moscow).

The comparison among the processes of reforms has revealed two main characteristics concerning the choices in terms of growth strategies adopted by Russia, China and India. The first regards the orientation and the objects of the strategies: China and India, opted for separating the trade liberalization policy from the privatization reforms. For example, the SEZs were created in early 1980s in China, where the "commercialization" of the SOEs started in the 1990s, while India reduced the role of its central state in the first decade with high protection to foreign competition and lowered trade tariffs only ten years later. Furthermore, they introduced context-specific measures in their strategies, as in the case of TVEs in China, a precise example of socialist market system, or IT units in India, created to sustain and take advantage of the local human capital. Russia, on the other hand, turned to trade liberalization and privatization reforms at the same time, dismantling its past centralized economic and political system in just few years. This also demonstrates that differences in growth strategies regard not only the aims of the reforms but also the type and the quality of the institutions, which followed different patterns of evolution from the old political systems (Goldstein, 1995, Lewis, 1995, McFaul, 2001 and Singh, 2003). The second difference among the three growth strategies is the duration of reforms. India and China can be viewed as appropriate examples of policy gradualism. India achieved only in the last years a degree of openness similar to that of the countries defined as open after more than a decade of trade liberalization policy, while the role of Chinese central state is still heavy on the economy despite the several measures introduced to improve the participation of the private sector. Russia, instead, reached high level of openness and privatization as soon as it started its process of reforms, despite the effects of this strategy produced a negative rate of growth in the first years, a situation never faced by China and India during their growth patterns.

2.2 Growth and structural change

India and China have been able to double their rhythm of growth since the early 1980s, when the average rate of growth of the per-capita income increased to 3.6% and 7.8% respectively (see Figure 1 and Table 2). Such pattern is recorded also in the next decade with a further increase in the Chinese rate, while the beginning of the new millennium has seen acceleration in the per-capita income of both countries with China maintaining its incredible rhythm of 8.5% per year. In practice, with the exception of the financial crisis of Indian economy in 1991, both countries have never faced a deceleration in their rate of growth in the last 25 years: as a result, in 2004 Chinese and Indian per-capita incomes amounted to 7 and 2.4 times of those in 1980. The experience of Russia, instead, can be divided into two phases. From the Soviet Union collapse to 1998, the country faced a drastic economic crisis with a negative growth rate of per-capita income nearly to -3.5% per year. From 1999 to 2004, its economy has taken on a new growth pattern, with an average rhythm of growth around 6%.

The negative experience of Russian economy in the first half of the '90s suggest that the implementation of the reforms in a few years has not generated the expected results, differently from what happened in China and India, where the reforms spread over more than two decades have never arisen periods of long economic crisis. However, China, India and Russia are, at present, among the fastest growth economies in the world. Although all the three countries have been able to grow at a high and sustained rhythm, such result has been accompanied by two main differences in the transformation process from central-planning systems to market-oriented economies. First, elements of diversity in the approach to the international trade emerge from Figure 2. The degree of openness, measured as the sum of exports and imports over GDP, started to increase in India only in early 1990s and doubled to 30% at the end of the decade, During the 1980s the economy was strongly closed and the "pro-business" policy of Rajiv Gandhi was accompanied by a further raising in foreign trade barriers. The evolution of openness in China displays a different pattern: it started to increase in 1983, when it represented the 21% of GDP and the government created the SEZs, and then it accelerated in early 1990s, jumping to nearly 50% in 1993. The Chinese degree of openness then experienced a notable reduction in middle-1990s mainly due to the diminishment of imports from 25% in 1993 to 16% in 1998. However, it accelerated again at the end of the decade and jumped rapidly to more than 65% of GDP in 2004. Russia, instead, which showed the highest degree of openness among the three countries in middle-1990s, increased its trade

in the second half of the decade reaching the value of 70% in 1999 but it suffered a remarkable reduction in the last years reaching 57% in 2004.

The second characteristic that differentiates the three experiences of growth is the process of transformation in the sectoral structure of the economies (Figure 3). Each country seems to have followed a specific pattern of changing over time, countersigned by industry in China, services in India and by both sectors in Russia. In the last three decades, Chinese sectoral structure has been constantly characterized by a predominant presence of the manufacturing sector. In fact, with the only exception of part of the 1960s when agriculture activities increase production, China clearly displays a predominance of the industrial sector over the agriculture and service sectors. However, during the last three decades the pattern of manufacturing sector has experienced different directions: after a steady increase during the 1970s mainly at expenses of the agricultural sector, it experienced a slight decrease during the 1980s replaced by an increasing share of services, to start again experiencing a positive trend during the following decade, when reforms move towards privatization policy. In the 1990s, the pattern of services shows a fall in the first half and a rise in the second half of the decade, while agriculture continues experiencing its prolonged fall reaching a share of approximately 15%. At the end of the period under study, industry accounts for more than 50% of China's GDP.

In India the picture is completely different, with a net predominance of services activities. If indeed the agriculture as in China has continuously decreased in weight, even if it still accounts for more than 20% of GDP, the industry has only slightly increased in the last twenty-five years, with a more emphasized positive trend during the 1980s. At the beginning of the new millennium, industry in India is less than half of that in China. Services start to growth since early 1980s, but its path increases especially during the second half of the 1990s when Indian government accelerated the process of liberalization reforms. The last years see service activities accounting for more than 50% of total production, while manufacturing maintain constant its weight on GDP. The wide gap in industry share between Chinese and Indian economies is the most revealing difference in the growth strategy adopted by the two countries (Bosworth and Collins, 2007).

In the case of Russia, we can only study in detail what happened during the 1990s. Russia entered the transition period with a very heavy production structure inherited from the Soviet period and this is reflected by the high share of manufacturing in total production representing approximately one half of total production (Gregory and Lazarev, 2003). The subsequent fall in its weight mainly during the first half of the 1990s can be easily explained

in light of the rapid deterioration of obsolete capital and a consequent fall in productivity. The corresponding increase in weight of the services sector is induced more by the general fall in output (more pronounced for industry) rather than a consistent growth in his absolute value. The trend starts to reflect a real increase in volume only after 1999, when the rate of growth of Russian economy becomes again positive and on average over 6%. The most striking figure highlighted in Figure 3 concerning Russian economy in 2004 is the low share of agriculture, the weight of industry around 35% and the jump of services to more than 60% of GDP[5].

The evolution in the sectoral structure in the three countries can be read and analyzed by considering the choices in terms of economic reforms. China, India and Russia seem to have implemented different strategies in order to try to achieve a fast and sustained rate of growth, and the timing of the reforms has played a determinant role also for the transformation of the structure of the economies. These policy choices and the transformations they generated suggest that services sector can be viewed as the engine of growth in India and Russia in the present growth patterns, while in China the key role is played by industry. The dependence on service activities is more evident in the case of India, whereas Russian economy can still lean on its high degree of industrialization. Moreover, the comparison between Indian and Chinese experiences indicates that high rates of growth can be achieved and maintained in the long-run also without the process of industrialization and different strategies can be implemented to transform a low-income country into a fast-growing economy.

More interesting, if we put in relation the timing of reforms with the pictures presented in Figure 3, we can easily stress a simple relation between economic reforms and sectoral specialization. The agriculture sector has declined in all the countries and this is the fact in common. But the paces of the other two sectors seem to diverge in the sample. In the case of China, during the 1980s, services activities increased their contribute to GDP, in particular in the first half of the decade when SEZ were created. Furthermore, industry, which faced a decrease in the same decade, started to grow in the 1990s, when more freedom was given to the private sectors, and reached the 50% of GDP at the end of the decade. India, which did the opposite in terms of choices, faced a similar pattern: when it privatized, in the 1980s, manufacturing activities beneficiated form the reforms, while the services sector showed a deeper jump in the second half of 1990s when the pro-market policy was implemented. The case of Russia is more difficult to understand due to the short time series, but it seems that

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[5] The World Bank (2004) states that a consistent part of gas and oil revenues are misattributed to wholesale trade in order to escape taxation and this could bring to an overstatement of the share of service at expenses of the manufacture sector.

services beneficiated the most from the liberalization and trade reforms, with a jump to nearly 60% of GDP at the end of the period: but the fact that Russia, which is the most opened among the three countries, presents also the higher share of services over GDP, strengthen the relation between trade liberalization and service increase.

Previous sections have shown the differences of the three growth patterns in terms of policy choices, growth rate performances and sectoral structure transformations. Next section will investigate whether the effects of these processes have generated convergence among the regional incomes in China, India and Russia, to test if the sustained growth rates have benefited the most the poorest regions.

3. One common factor: the within country regional disparities

Our regional empirical analysis for China, India and Russia is based on data collected by the national statistics offices, which are the National Statistical Bureau, the Central Statistical Organization and the Federal Statistic Service respectively. The datasets present some specific characteristics of which one has to be aware of in order to implement any kind of analysis.

Data for the regional GDP and population for 31 Chinese provinces are available over the period 1980-2005. The data are provided in national currency (Renminbi (RMB) *yuan*) at 1980 prices. The GDP per capita is simply obtained dividing the GDP by the population. Some changes have occurred in the administration of Chinese provinces, in that, for example the current province of Hainan was separated from Guandong in 1985, while the province of Chongqing was annexed by the Sichuan since 1996. For simplicity, we threat all the regions individually for the whole period. Data for the auto-administrative district of Hong Kong are excluded from the study.

For the Indian Federation we consider 22 States including also Goa, Manipur and the Union Territory of Dehli. Many studies on convergence across the Indian States tend to exclude these three regions due to the small dimension. Mizoram and Sikkim are excluded from the sample due the lack of data. Jharkhand, Chattisgarh and Uttaranchal, created out of Bihar, Madhya Pradesh and Uttar Pradesh respectively, are still considered parts of the original states for the years following and the acquisition of administrative independence in the year 2000. However, our quantitative analysis will be mainly descriptive and, hence, not vulnerable to possible biases due to the extension of the territories. As said above, the main

source of the data is the CSO, which provides data over the period 1980-2004. Net State Domestic Product (NSDP) is at factor cost and is based on 1980 constant prices.

More attention deserves the data for the Russian federation. The Federal statistic service provides data since 1992, but due to changes in the federal structure and strong imbalances during the first period of transition from the central planned to the market economy, we decide to consider the period following the August 1998 financial crisis. Hence we end up by including 88 Russian regions for the period 1999-2004. The data also includes the two cities of Moscow and Saint Petersburg and eight autonomous regions. Data for some regions are adjusted when reported to include also the figure of the autonomous regions as part of them. An important example in this sense is represented by the Tyumenskaja Oblast, which includes the two autonomous regions of Jamalo-Neneckij and Chanty-Mansijskij. In order to avoid overestimating the figure for the regional GDP of the Tyumenskaja oblast we subtracted to it the figures for the two administrative autonomous units. We repeat the same procedure whenever the problem is present.

The process of growth in the three giants has been accompanied by a steady process of divergence in level of GDP per capita and standards of living within the three countries. The process of reform and the entrance within the global economy have marked a clear division between winner and loser regions. This has led to the paradox of fastest growing economies with persistent level of poverty among the highest registered all over the world (for example the Indian Federation remains the country with the highest absolute number of people living below the poverty threshold all over the world).

The pattern of divergence among the regions between the three countries has also been found to exhibit a spatial component (see Alessandrini et al. 2008, Buccellato 2007, Aroca et al. 2006). More in particular Indian States and Chinese provinces are often found to be successful in their patterns of growth when situated in coastal areas as opposed to land-locked rural regions which in some cases appear completely trapped to poverty.

In order to conduct a comparative analysis of the regional disparities characterizing the three countries, we make use of the Theil's statistic. The Theil's T statistic is simply computed multiplying three factors: the regional population share (region's population/country's population), the quotient of the regional average income and the national average income and the natural logarithm of the quotient of the regional average income and the national average income. This last factor of the product is crucial in determining the sign of the statistic, which will be positive in the case that the region has an average income over the national average and negative when below the national average. This procedure is

repeated for each year where data are available allowing also for a comparative evolution over time within each of the countries.

The main advantage of the Theil's T index is to allow a graphical representation of the contribution that each region provides to the national distribution of income. However, this procedure does not allow to make direct comparison among the three countries in terms of which of them exhibit the higher level of inequality, but only to make statements about the within countries *between*-regions disparities and their evolution over time. It is also worthwhile to remark that ceteris paribus regions with larger population will have larger Theil elements associated as opposite to regions with small population and/or average income close to the national average which will have small Theil element (as a reference for the Theil's t see Conceisao Galbraith 1998).

The Theil graph referring to China is displayed in Figure 4. Over the period considered six provinces, the three municipalities of Beijing, Tianjin and Shangai and the three provinces of Zhejjiang, Jangsu and Liaoning remain constantly over the national average exhibiting an important contribution to the overall amount of disparities across Chinese Provinces. After the record growth rate registered in the second half of the 80s, also the province of Guandong enters the group of regions located constantly above the national average in level of average GDP per capita. In general our results seems to confirm the ones obtained by Galbraith et al. (2004), who found that more export orientated regions located along the East cost of the country were able to attract more foreign currency and tended to outperform the landlocked provinces. With the gradual increase in the level of openness of Chinese economy, the coastal and richer regions have also proved to be more attractive to foreign investors, and, hence, been able to widen the gap separating them from the backward rural part of the country.

The case of India exhibits some striking similarities with the one of China. Figure 5 shows indeed how also in the case of the Indian Federation States contributing more markedly to income inequality are those with a higher level of urbanization (see the case of the Union Territory of Dehli and the sorrounging area the Haryana State) and the regions located on the coast (West Bengal, Gujarat and Maharashtra). The geographic location in India tends also to coincide with a prevalence of specific sector shares in that approximately half of the total agricultural value added in India is produced in the northern and central states, whereas 40 percent of industrial and service sector output is produced in the coastal states of Maharashtra, Gujarat and Tamil Nadu (Purifield 2006). The State of Punjab, being landlocked and a prevalently rural economy, represents an outlier in this sense. Punjab has been one of the most successful states in the Indian Federation in enjoying the process of innovation

realized with the green revolution, which has taken place in the late 70s. The productivity in the rural sector has been enhanced through the irrigation of last portion of territories coupled with an increase of the arable land, making Punjab one of the faster growing States. Located below the average, we can find the two states of Bihar and Uttar Pradesh with prominent shares in the contribution of disparities among Indian States. This highlights an important fact characterizing the Indian regional distribution of income, where the poorer states tend to be also among the most populated. This is also confirmed by the stylized fact of the Indian paradox for which one of the fastest growing country in the world is also the one with the highest absolute number of poor people living with less than $2 per day.

The case of the Russian federation has some specific characteristics due to the cumbersome share of the hydrocarbons extraction and trade in determining the GDP pattern of growth. The patterns of *between* regions inequality are indeed mainly led by the West Siberian Area. Figure 6 shows how the two autonomous regions of Chanty-Mansijskij and Jamalo Nenetskij, which are both part of the Tyumenskaya oblast, where it concentrates approximately one half of the total amount of hydrocarbons produced in Russia, are constantly over the national average with prominent shares in the overall inequality among Russian regions . More in particular, the Chanty-Mansijskij Autounnomous Okrug represents the main centre of the Russian Oil industry, while Jamalo Nenetskij Autonomous Okrug is the area where the highest share of gas production takes place. The remaining portion of the territory is the 'proper' Tyumenskaya Oblast, mainly consisting of the town Tyumen (the capital) and playing the complementary role of onward hydrocarbons transmission and strategic basis of oil and gas administration offices (Glatter 2003 as cited in Buccellato and Mickievicz 2008). Galbraith *et al.* (2004) argues that the prominent contribution of the Tyumen region to Russia between inequality reflects the advantage of export oriented areas with respect to other regions in attracting strong currency revenues and of urban entities with developed systems of services (like Moscow, which also is found to play a prominent role in enhancing inequality among Russian regions). We instead argue that if for China this mechanism seems at work, in Russia the main engine of divergence is represented by Oil and Gas. One of the poorest areas in the Russian Federation is represented by the Caucasus area. In particular regions like the Republic of Inguscetia and Dagestan, located in the neighbourhoods of Chechnya seems to remain trapped to poverty probably due to the instability brought by the military conflict in the area. However, Dagestan has been enjoying a relatively high pace of growth in the last few years thanks again to the hydrocarbons exports.

4. Income dynamics

In a series of papers Quah (1993, 1996 and 1997) has criticized standard regression approaches to studying convergence processes for being unable to focus on mobility, stratification and polarization in the income distribution. In order to analyze the world income distribution, he proposed the "distribution dynamics" that describe the evolution of the distribution of income and the probabilities that a country can become more or less rich with respect to its initial income conditions. The law of motion that describe this process is the following:

$$F_{t+1} = M * F_t$$

where F_t and F_{t+1} denote the distribution of incomes across countries at time t and $t+1$ respectively, and M encodes information on whether the economies transit subsequently to widely different income levels. Each row of M is a probability mass function describing the distribution over states of the system after one transition given that the system is currently in the state corresponding to that row. The iteration of the process for s years can be easily described by:

$$F_{t+s} = M^s * F_t$$

We make use of transition probabilities to study the dynamics of income distribution of China, India and Russia, in order to understand whether there are signals of income polarization and which country has shown the best performance in terms of income mobility. In each country, we group regions into quartiles on the basis of their initial income distribution in ascending order starting from the I quartile. In the transition matrix, rows represent the distribution at time t, while columns describes the distribution at the end of the process ($t + s$). Each cell (i, j) describes the probabilities that a region belonging to income group i moves to group j at time $t + s$. For instance, the first row measures the probabilities that a region starting from the poorest quartile remains in the same position or transits into the II, III or IV quartile.

Tables 4, 5 and 6 collects the income transition probabilities for China, India and Russia. Tables 4 and 5 reports the results for the entire period and for the 1980s and 1990s in order to understand if the distribution path has changed in the two decades, while for Russia,

due to the lack of regional data, we show the distribution matrix for the last four years as reported in Table 6.

The first of the three tables reveals that China has a high degree of persistence, in particular in the IV richest quartile, where more than 98% of the highest income regions maintain the position between 1980 and 2004. Furthermore, small signals of movements can be noted between I and II quartile and between II and III quartile where 9% and 7% of the regions respectively change the position with respect to 1980. However, the persistence is more evident if we consider the second decade, where nearly the totality of the medium-high and high income regions are stable: between 1980 and 1990 more changes happen in the middle part of the distribution with 11.3% of the samples changing the position (this off-diagonal element records 15.6% in the second half of the decade).

Table 5 shows the transition matrix of India. The diagonal elements are smaller than those of China, indicating less persistence in keeping the position, in particular in the III and IV quartile. Moreover, the first decade shows more mobility with respect to the second one in the lowest quartile and in the middle part of the matrix. Anyway, the 1990s reveal more changes in the upper part of the distribution with 9.3% of the sample shifting from III to IV quartile and vice versa. It is interesting to add that in the first years of the millennium all the regions belonging to the lowest quartile don not show signals of any dynamism (see also Table 6). The last table describe the transition probabilities of Russia for the years 2000-2004. We report also the matrices for China and India for the same span time in order to have a comparison among the three countries. Differently from China and India, Russia does not present any quartile with 100% of persistence. Moreover, it shows changes between I and II and between II and III quartile similar to those of China and it has the lowest value in the high-income group of regions.

A more precise measure of mobility is provided by the indicators M^1 and M^2 (see Shorrocks, 1978) whose higher values imply a larger degree of mobility across income quartiles. The indicator M^1 captures the relative magnitude of the diagonal and off-diagonal elements by using the trace of the transition matrix whereas M^2 is based on its determinant. These indices allow us to compare the income mobility across the three economies for the period 2000-2004 and, in the case of China and India, to analyze its evolution through the years (Table 7). First of all, India displays a higher degree of mobility than China for the whole period, implying that its income distribution across regions has experienced more changes since 1980 with respect to that of China. Second, both countries show higher values of the indicators during the 1980s, when they started their processes of reforms. In the case of

China, the reduction from the 1980s to the 1990s is stronger, indicating that the economic growth process during the 1980s has induced more transformations in the Chinese income distribution than that during the following decade. However, the last ten years see the two indicators growing again implying a rise in the degree of Chinese income mobility. Third, even if India shows higher indices in the all sub-periods between 1980 and 2000, the values of both decrease starting from early '90s and fall in the years 2000-2004 when M^1 and M^2 reach 0.9 and 0.25 respectively from 0.22 and 0.59 of the beginning of the '80s. This last conclusion implies that Indian regions have gained persistence especially in the last years, when, for the first time, the two indices are below the respective Chinese values. Finally, in 2000-2004 Russia shows the highest degree of income mobility, even if M^1 and M^2 are far from the values recorded by India during the '80s. Russian Federation shows therefore a certain degree of dynamism in its income distribution that is higher than those of China and India for the same period.

5. Conclusions

In the last decade China, India and Russia have manifested the intension and the ability to be protagonist in the global economy. Despite the fact of having all shared, even if to different extents, the experience of central planning system, the three giants seem to have adapted at best to the new challenges posed by the accelerated international integration process. All the three economies display impressive rates of growth, even if China and India started the new pattern of rapid and sustained growth two decades before Russia.

Among the three countries the impact of China has been far more incisive (Wolf 2008). For the year 2006 China was the world's largest exporter of merchandized products, behind Germany and the US and 8th in the export of commercial services reaching a share of the 8% in total world exports of goods and 3.3% of world export in commercial services. Smaller but still very impressive is the performance realized by India, whose shares were 1% and 2.7% percent respectively. Moreover, India at the beginning of the new millennium has started to be the world leader in IT exports (Chauvin and Françoise, 2003), confirming the high level of dynamicity of this emerging economy. Russia has enjoyed increasing trend of international hydrocarbons prices and to some extent this reduces the impressiveness of its economic performance. The Russian economy exhibits indeed still a very low degree of diversification and, hence, it is still not clear whither this giant is going.

However, China, India and Russia suffer all enormous disparities among their provinces, states and regions respectively and a high level of persistence in the income distribution, especially in the case of the Chinese and Indian economies. Within all the three countries there is a huge gap between some areas having reached high living standards comparable with the western ones, while some other areas, mainly the rural ones, appear completely trapped to poverty. The persistence in the disparities raises the doubt that the impressive performances of the three giants represent at the moment more a quantitative rather than a qualitative economic development. Furthermore the gap between rich and poor areas can also represent a risk for political stability, in that poorer regions demand more independence from the central state.

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1a. Political events and main economic reforms, China

YEAR	POLITICAL EVENTS	MAIN ECONOMIC REFORMS
1976		1966-1976 Cultural Revolution
1978	Election of Deng Xiaoping	
1979		Creation of HRS (Household Responsibility System), peasants allowed to retain over-quota output
1980		Creation of Special Economic Zones
1981		Beginning of 1980s: creation of TVEs (Township and Village Enterprises)
1983		The People's Bank of China was nominally designated a central bank
1984		1982-1983 elimination of price controls on more 500 small consumer items 1980-1983 fiscal contracting system, local governments allowed to retain over-quota revenues Dual-track system, enterprises were allowed to sell over-quota product at market prices
1989	Tiananmen Square Event	
1990		Two stock exchanges were set up
1991		
1992	Socialist Market Economy declaration	"Commercialization" of SOEs (State Owned Enterprises) Regulations on Transforming the Management Mechanism of State-Run Industrial Enterprises
		Full price marketization
		Abolishment of the "iron rice bowl" (the permanent employment system)
1993		New accounting system
		Tax reform
1994		Abolishment of dual-track exchange rate Separating tax reform, a brand new unified tax system including VAT, and recentralization of tax collection to central government
		Adoption of four major state banks of the international accounting standard
1995		Privatization of small SOEs
		Budget Law Central Bank Law, central bank has the mandate for monetary policy independent from the central government
1999		Private ownership and the rule of law incorporated into the Constitution
2000		
2001	Ascension to WTO	
2004		Constitution amended to guarantee private property rights

1b. Political events and main economic reforms, India

YEAR	POLITICAL EVENTS	MAIN ECONOMIC REFORMS
1975		During the '70s the Green Revolution was implented
1976		Re-introduction of OGL (Open General Licensing, list of goods with no license for import) list with 79 capital items
1978		By the end of '70s, increasing pressures for liberalization policy from industrial lobbies
1980	Re-election of I. Gandhi	
1981		Removal of licensing requirements in 20 industries and some relaxation of import controls
1984	Murder of I. Gandhi	
	Election of R. Gandhi	
1985		Introduction of replenishment licenses to exporters as incentives
		50% of business profits from exports made income tax deductible
		The interest rate on export credit was reduced from 12% to 9%
		47 product groups free from the industrial licensing system
		Price and distribution controls on cement and aluminium abolished
1986		Canalization declined from 67% in 1980 to 27% of total imports
		Duty-free imports of capital goods allowed in selected "thrust" export industries
		28 industry groups broad banded, no license for product differentiation
		Capacity utilization allowed to expand in firms reaching 80% capacity utilization
		Between 1985/1986 relaxation of MRTP (Monopolies and Restrictive Trade Policies)
1987		OGL reaches 1007 capital goods and 620 intermediate goods
1988		100% of business profits from exports made income tax deductible
		OGL reaches 1170 capital goods and 949 intermediate goods
1990		Between 1985/1990 the real exchange rate was depreciated by 30% (nominally 45%)
		OGL reaches 1329 capital goods. Introduction of MODVAT (Modified Value Added Tax) covering all manufacturing sub sectors (excl. Petroleum, textiles and tobacco)
1991	Murder of R. Gandhi	Statement of Industrial Policy
	Election of N. Rao	Public monopoly limited to 8 sectors, all the others opened to private investments
	Finance Minister M. Singh	Relaxation of controls on FDI
		Creation of Special Economic Zones where 100% of FDI allowed in manufacturing sectors
1992		Devaluation of the rupee by 22% against dollar. Introduction of a dual exchange rate: exporters allowed to sell 60% of their exchange in the free market, and 40% to the government at a lower official price
1993		Foreign companies own up to 51% equity in 34 high priority industries
1994		The highest tariff rate on import fell to 85% (it was 355% in 1990)
		National Telecommunications Policy for private and FDI in cellular and telephone services
1996	Win of BJP, first no-left party	The highest tariff rate on import fell to 50%
1997	Instability BJP/Congress	
1998	Election of A.B.Vajpayee (BJP)	
1999		The Insurance Regulatory and Development Authority permits private and FDI to operate in the insurance market
		Liberalization of banking
		NTP defined FDI in internet services
		Infrastructure sectors opened to private and FDI (excl. Railways)
2003		Electricity Bill privatized generation, transmission and distribution of electricity
2004	Election of M.Singh (Congress)	The highest tariff rate on import fell to 25%

1c. Political events and main economic reforms, Russia

YEAR	POLITICAL EVENTS	MAIN ECONOMIC REFORMS
1977	Leonid Brezhnev becomes Chairman of the presidium of the USSR Supreme Soviet or head of state. Chairman of the presidium of the USSR Supreme Soviet or head of state.	
1983	The first successor of Brezhnev became Andropov	
1984	Death of Andropov and election of Chernenko	
1985	Death of Cernenko and election of Gorbachev	
1986	27th party congress of 1986. Perestroyka begins.	
1987		the Law on the State Enterprise (Association): autonomy without fiscal responsibility in SOEs
1988		the Law on Cooperatives: more freedom in creating new firms in the legal form of co-operatives
		the Law on Leasing: creation of collective leasing
1990		the '500 Days Program, but never implemented
1991	Yeltsin elected Russian president	Land reforms
	Golpe failure	
1992		Liberalization and abolition of state orders
		Liberalization of foreign trade through elimination of most foreign exchange restrictions
		Privatization of small enterprises through employee buyouts and public auctions
		Distribution of vouchers (one voucher equal to 10000 rubles) to 144 million citizens for purchase shares in medium and large enterprises
1993		More than 85% of small enterprises and 1/3 of the state enterprises privatized
1994		70% of medium and large enterprises and 90% of small enterprises into private hands
		Further elimination of export restrictions
1995		Fiscal tightening
1996	Re-election of Yeltsin	
1997		Failure of the reforms program of the "young reformers" due to the "war of the oligarchs"
1998		Financial crisis
1999	Election of Putin	
2000		Improvement of the Russian Federalism
		Simplification of the tax system
		Reconstruction of the legal system
		Changes in the pension and health systems
		Regulation of natural monopolies
		Making land resources tradable
2004	Re-election of Putin	

Table 2. GDP per capita average growth rate, 1980-2004, (constant 2000 US $)

	1980-1990	1990-2000	2000-2004
China	7.77	8.64	8.46
India	3.59	3.64	4.11
Russia	-	-3.46	7.23

Source: World Bank Indicators 2006 and authors' calculations

Table 3. The five richest and poorest states in China, India and Russia and ratio between the average per capita income of the richest and the average per capita income of the poorest in brackets.

CHINA					
1980	**1985**	**1990**	**1995**	**2000**	**20004**
Shanghai	Shanghai	Shanghai	Shanghai	Shanghai	Shanghai
Beijing	Beijing	Beijing	Beijing	Beijing	Beijing
Tianjin	Tianjin	Tianjin	Tianjin	Tianjin	Tianjin
Liaoning	Liaoning	Liaoning	Jiangsu	Jiangsu	Jiangsu
Heilong	Jiangsu	Jiangsu	Zhejiang	Zhejiang	Zhejiang
Henan	Henan	Anhui	Jiangxi	Sichuan	Qinghai
Anhui	Sichuan	Sichuan	Sichuan	Qinghai	Sichuan
Guangxi	Yunnan	Yunnan	Yunnan	Guangxi	Guangxi
Yunnan	Guangxi	Guizhou	Guangxi	Yunnan	Yunnan
Guizhou	Guizhou	Guangxi	Guizhou	Guizhou	Guizhou
(5.22)	(4.71)	(4.70)	(5.14)	(5.49)	(5.62)

INDIA					
1980	**1985**	**1990**	**1995**	**2000**	**20004**
Delhi	Delhi	Delhi	Delhi	Delhi	Delhi
Goa	Punjab	Goa	Goa	Goa	Goa
Punjab	Goa	Punjab	Maharashtra	Maharashtra	Maharashtra
Maharashtra	Haryana	Haryana	Punjab	Punjab	Haryana
Haryana	Maharashtra	Maharashtra	Haryana	Haryana	Punjab
Orissa	Meghalaya	Madhya Pr.	Manipur	Madhya Pr.	Orissa
Assam	Madhya Pr.	Uttar Pradesh	Uttar Pradesh	Uttar Pradesh	Madhya Pr.
Uttar Pradesh	Uttar Pradesh	Assam	Orissa	Orissa	Uttar Pradesh
Rajasthan	Rajasthan	Orissa	Assam	Assam	Assam
Bihar	Bihar	Bihar	Bihar	Bihar	Bihar
(2.44)	(2.51)	(2.82)	(3.25)	(3.78)	(3.74)

RUSSIA					
1980	**1985**	**1990**	**1995**	**2000**	**20004**
				Chanty-Mansijskij AO	Neneckij AO
				Neneckij AO	Chanty-Mansijskij AO
				Jamalo-Neneckij AO	Jamalo-Neneckij AO
				G.Moskva	Čukotskij Avtonomnyj Okrug
				Korjakskij AO	G.Moskva
				RespublikaInguscetija	RespublikaAdygeja
				KirovskajaOblast	PenzenskajaOblast
				PenzenskajaOblast	RespublikaDagestan
				RespublikaTyva	KirovskajaOblast
				RespublikaDagestan	RespublikaInguscetija
				(18.88)	(25.76)

Source: authors' calculations based on NSB (China), CSO (India) and *Goskomstat* (Russia).

Table 4. Transition probabilities, China 1980-2004

	1980-2004				1980-1990				1991-2000			
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
I	91.1	8.9	0.0	0.0	91.3	8.8	0.0	0.0	93.1	6.9	0.0	0.0
II	8.9	83.9	7.3	0.0	8.8	80.0	11.3	0.0	6.9	91.7	1.4	0.0
III	0.0	7.3	91.1	1.6	0.0	11.3	85.0	3.8	0.0	1.4	98.6	0.0
IV	0.0	0.0	1.8	98.2	0.0	0.0	4.3	95.7	0.0	0.0	0.0	100.0

Source: authors' calculations based on NBS

Table 5. Transition probabilities, India 1980-2004

	1980-2004				1980-1990				1991-2000			
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
I	88.2	11.8	0.0	0.0	83.3	16.7	0.0	0.0	87.0	13.0	0.0	0.0
II	12.0	78.1	9.9	0.0	16.7	71.6	11.7	0.0	13.0	77.9	9.3	0.0
III	0.0	10.4	84.0	5.6	0.0	11.7	83.3	5.0	0.0	9.3	81.4	9.3
IV	0.0	0.0	6.3	93.7	0.0	0.0	5.0	95.0	0.0	0.0	9.3	90.7

Source: authors' calculations based on CSO

**Table 6.** Transition probabilities, Russia, China and India 2000-2004

	RUSSIA				CHINA				INDIA			
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
I	88.8	11.2	0	0	87.5	12.5	0.0	0.0	100.0	0.0	0.0	0.0
II	11.8	81.6	6.6	0	12.5	81.3	6.2	0.0	0.0	90.9	9.1	0.0
III	0	6.6	88.2	5.2	0.0	6.2	93.8	0.0	0.0	12.5	87.5	0.0
IV	0	0	5.3	94.7	0.0	0.0	0.0	100.0	0.0	0.0	4.3	95.7

Source: authors' calculations based on NSB (China), CSO (India) and *Goskomstat* (Russia).

Table 7. Indicators of income mobility

|		1980-2004	1980-1990	1991-2000	1980-1985	1986-1990	1991-1995	1996-2000	2000-2004
CHINA	M^1	0.12	0.16	0.06	0.15	0.17	0.04	0.08	0.13
	M^2	0.33	0.43	0.16	0.40	0.45	0.13	0.24	0.35
INDIA	M^1	0.19	0.22	0.21	0.22	0.25	0.22	0.19	0.09
	M^2	0.48	0.56	0.52	0.59	0.60	0.55	0.52	0.25
RUSSIA	M^1	-	-	-	-	-	-	-	0.16
	M^2	-	-	-	-	-	-	-	0.41

Source: authors' calculations based on NSB (China), CSO (India) and *Goskomstat* (Russia).

Note:
M^1 = (K - trace (transition matrix)/(K-1)
M^2 = 1 - det (transition matrix)

Figure 1. Economic performance, China, India and Russia, 1980-2004 (GDP per capita, constant 2000 US $)
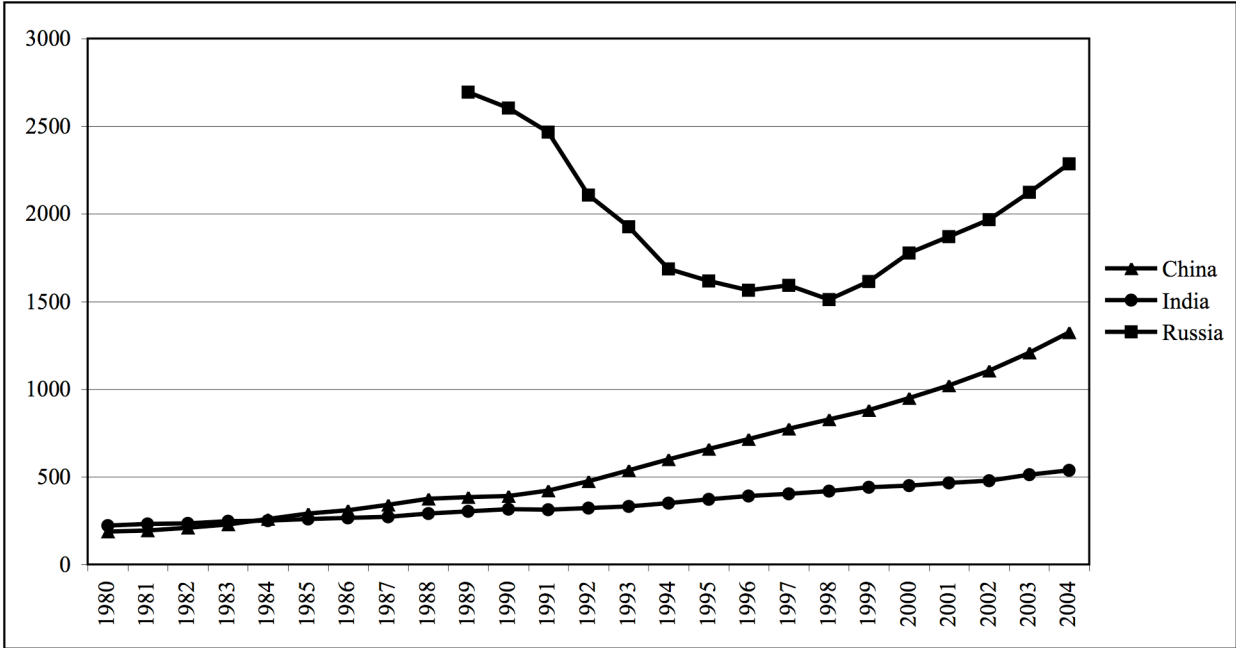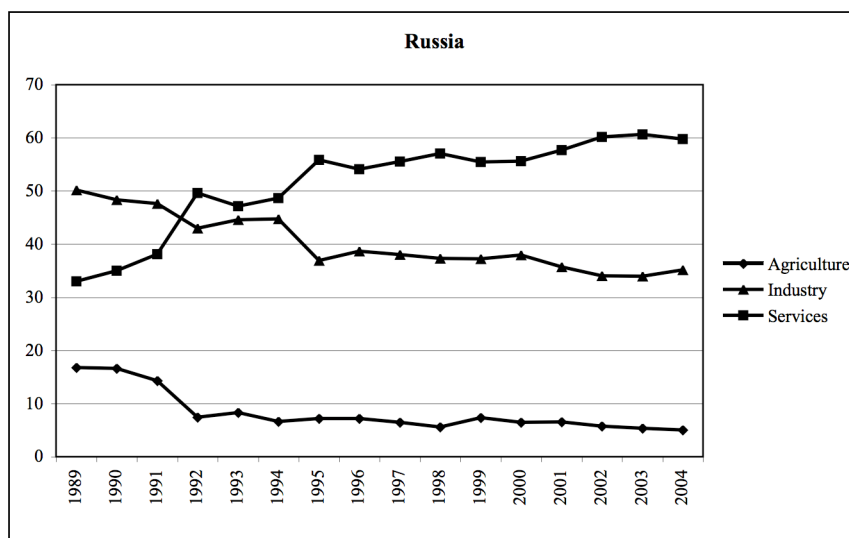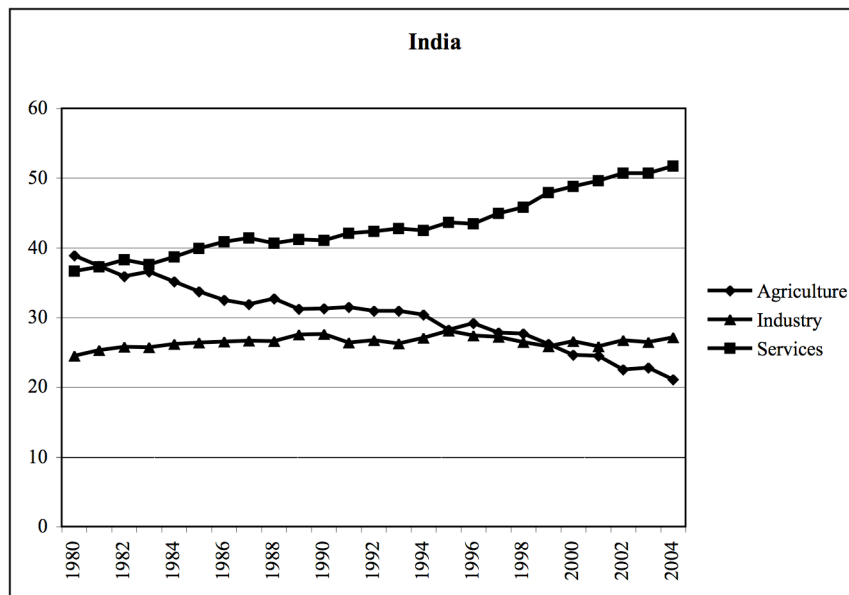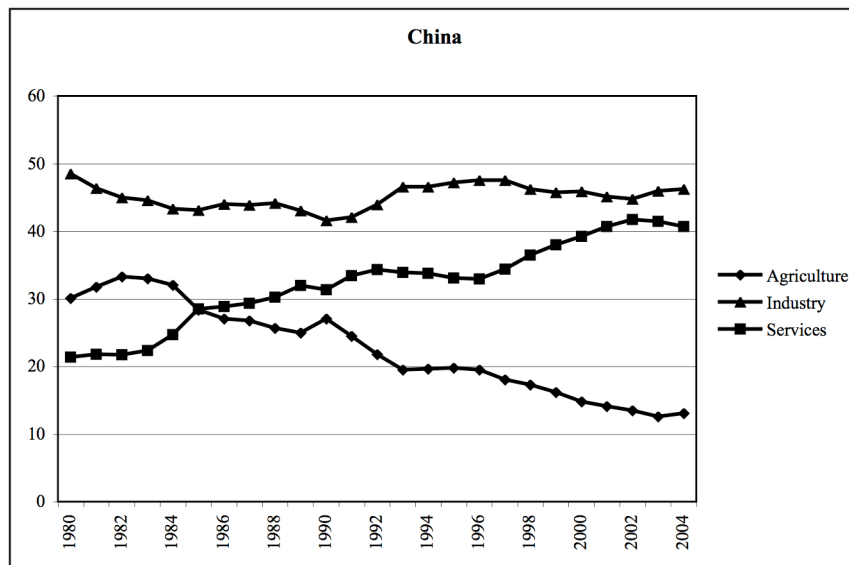

Source: World Development Indicators 2006

Figure 2. Degree of openness as exports plus imports over GDP
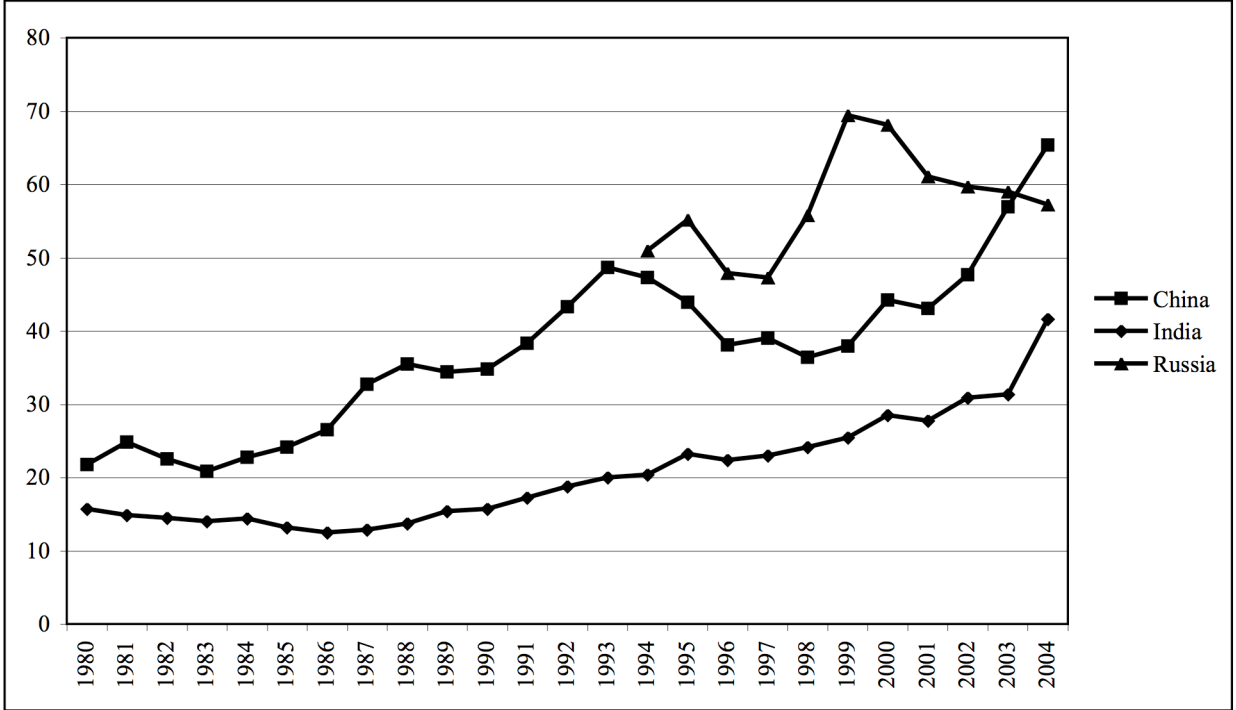
Source: World Bank Indicators 2006 and authors' calculations.
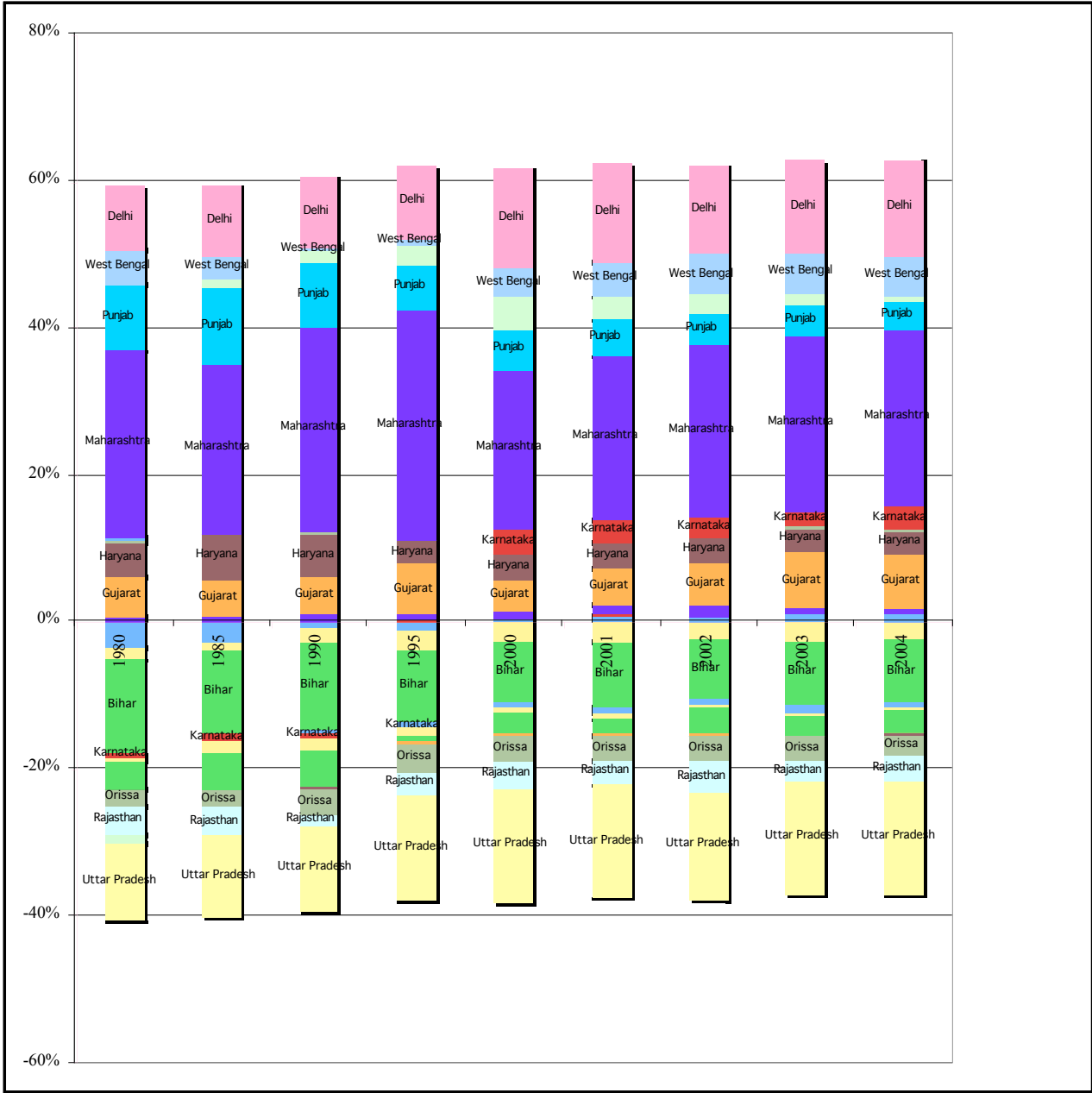
Figure 3. Sectors evolution

China

India

Russia

Source: World Development Indicators 2006

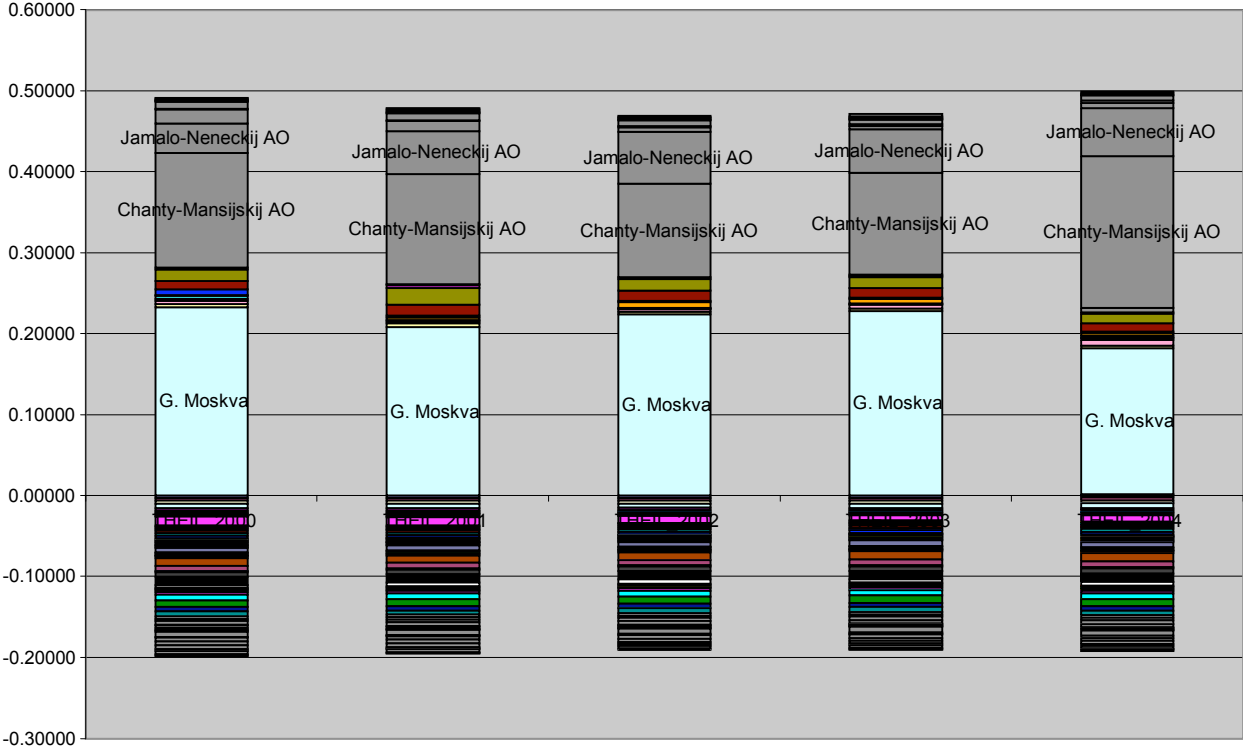**Figure 4. Theil's Statistic for China 1980-2005**
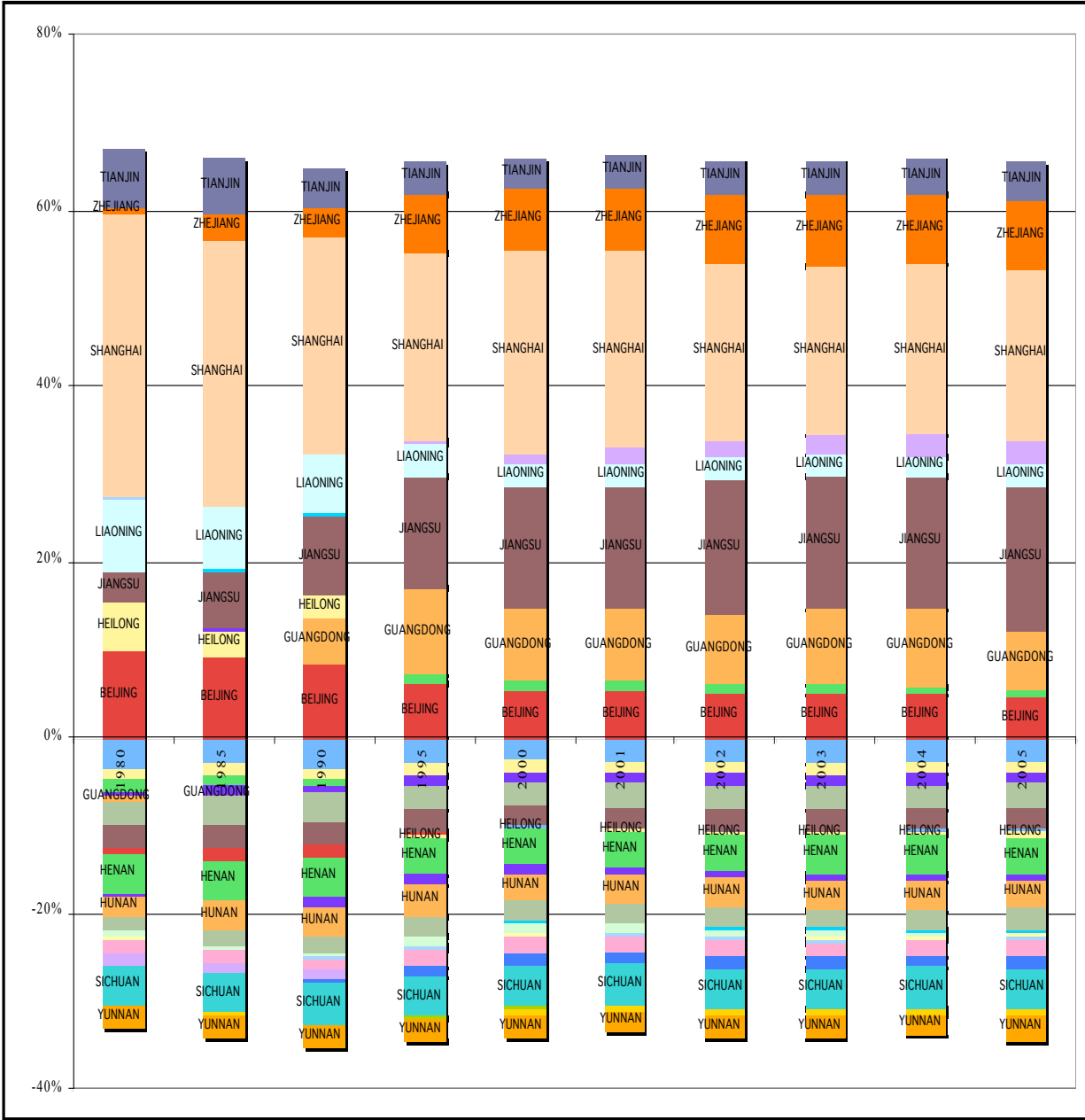
Source: Compiled by the authors based on data from NBS

Figure 5. Theil's Statistic India: 1980-2004.

Source: Compiled by the authors based on data from CSO.

Figure 6. Theil's Statistic Russia 2000-2004.

Source: Compiled by the authors based on data from *Goskomstat*.

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