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What determines regional inequality in China?
— A survey of the literature and official data
The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Bank of Finland.
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Abstract

After a slight convergence of income between Chinese regions after the start of economic reforms in the late 1970s, regional income inequality has been on the rise again since the beginning of the 1990s. This paper gives an overview of the features of regional inequality in China and identifies the main reasons for the surge in inequality by reviewing existing literature on the topic and evaluating official statistical data.

**Key words:** China, economic structure, regional inequality, regional policy
1 Introduction

When China’s government launched its economic reforms in the late 1970s, new policies were often tried out in selected parts of the country and, after having been shown to be successful, were applied to the whole country. Especially the strategy of opening the economy internationally was very successful in the coastal regions, where it was tried out first, and created several economic ‘hot spots’ that showed impressive growth. Certainly officials hoped that the new ‘hot spots’ would quickly drag the whole economy onto a growth path and that the income gap between regions after a certain time of widening would narrow (Golley 2002). This spillover of growth seems to have worked out quite well in adjoining areas. But vast regions in the Centre and West of China are still underdeveloped and show little signs of catching up with the booming coastal regions.

The effect of inequality on economic growth is not clear at all. Various empirical and theoretical studies cannot agree, whether rising inequality affects growth negatively or positively. While, for example, Alesina and Rodrik (1994) find a negative effect of inequality on growth, Forbes (2000) states that the effect is positive and Barro (1999) and Banerjee and Duflo (2003) find mixed results. Based on a sample of transition countries that might be more comparable to China than data from other country samples, Sukiasyan (2003) states that inequality has a strong negative impact on growth. This might be supported by the suggestion of Kim and Pirttilä (2003) that rising income inequality reduces the public support for market reforms and, as politicians have to take public opinion into consideration, slows down reforms. This in the longer run leads to lower growth.

Although the direction of the impact of inequality on economic growth is not unequivocal, it seems obvious that high economic inequality is not a desirable outcome, if social peace and justice should be maintained.

In the past few years quite a lot of research on regional inequality in China has been done. Therefore this paper will not add to the vast range of econometric work, but try to describe the development and current situation of income differences in China and to establish the main reasons for regional income inequality. A short review of the evolution of inequality since the start of economic reforms in China in the late 1970s and a description of the present situation will constitute the first part of this paper. It will be followed by a discussion of the possible reasons for the rise and persistence of unequal economic conditions between regions. Finally some conclusions on the importance of the various reasons will be drawn.
2 Regional Inequality in Recent Years

Regional inequality in China can be mainly divided into two categories: differences in income between urban and rural areas and differences between groups of provinces, mainly the coastal provinces and the inland. In international comparison, China has a Gini coefficient that is similar to that of Russia and some East Asian countries. A number of transition countries have lower levels of inequality, but Chinese income differences have not yet reached South American levels (Table 1). The worrisome fact lies not so much in the current value of the Gini coefficient, but in its steep rise. In 1998, the value for China was still 40.3 and rose to 45.4 in only four years.

Table 1. Population Figures in 10 000 Persons in 2002

<table>
<thead>
<tr>
<th>Metropolises</th>
<th>4055</th>
<th>Centre and West</th>
<th>72775</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>1423</td>
<td>Shanxi</td>
<td>3294</td>
</tr>
<tr>
<td>Tianjin</td>
<td>1007</td>
<td>Anhui</td>
<td>6338</td>
</tr>
<tr>
<td>Shanghai</td>
<td>1625</td>
<td>Jiangxi</td>
<td>4222</td>
</tr>
<tr>
<td>Coas</td>
<td>39973</td>
<td>Hubei</td>
<td>5988</td>
</tr>
<tr>
<td>Hebei</td>
<td>6735</td>
<td>Hunan</td>
<td>6629</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>7381</td>
<td>Guangxi</td>
<td>4822</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>4647</td>
<td>Inner Mongolia</td>
<td>2379</td>
</tr>
<tr>
<td>Fujian</td>
<td>3466</td>
<td>Chongqing</td>
<td>3107</td>
</tr>
<tr>
<td>Shandong</td>
<td>9082</td>
<td>Sichuan</td>
<td>8673</td>
</tr>
<tr>
<td>Guangdong</td>
<td>7859</td>
<td>Guizhou</td>
<td>3837</td>
</tr>
<tr>
<td>Hainan</td>
<td>803</td>
<td>Yunnan</td>
<td>4333</td>
</tr>
<tr>
<td>Northeast</td>
<td>10715</td>
<td>Shaanxi</td>
<td>3674</td>
</tr>
<tr>
<td>Liaoning</td>
<td>4203</td>
<td>Gansu</td>
<td>2593</td>
</tr>
<tr>
<td>Jilin</td>
<td>2699</td>
<td>Qinghai</td>
<td>529</td>
</tr>
<tr>
<td>Heilongjiang</td>
<td>3813</td>
<td>Ningxia</td>
<td>572</td>
</tr>
</tbody>
</table>

Source: National Bureau of Statistics of China
The rural-urban divide is responsible for over 50% of total spatial income inequality in China. According to a study by the Academy of Social Sciences of China, the country had the largest rural-urban inequality in incomes in the world. The difference in income between rural and urban areas had increased from 2.8 times in 1995 to 3.1 times in 2002. These figures would become even more dramatic, if the numerous advantages for urban residents in the form of partly free housing and social services were taken into account.

Generally inequality among Chinese citizens decreased somewhat after the beginning of the market-oriented reforms in 1979. This was mainly due to the agricultural reforms that increased the responsibility and freedom of individual farmers, e.g. by allowing them to sell production that exceeded the targeted amount, on the free market. These measures increased peasants' incomes and thereby reduced inequality between rural and urban residents (Kanbur & Zhang 2001). The effect of the agricultural reforms, however, seems to have worn off after a certain time and inequality was again on the rise in the beginning of the 1990s. Since then the difference in income between coastal and inland areas has had a rising share in total inequality. Especially rural areas in the coastal regions situated in close proximity to booming coastal cities have profited since the earlier 1990s. This reduced inequality in the coastal areas but increased the gap between coastal and inland incomes (Jian et al. 1996). According to Kanbur and Zhang, between 1983 and 1995 rural-urban inequality remained nearly constant, while coastal-inland inequality rose by 23%. Differences in income between provinces accounted for 40% of total income inequality in 2000 (OECD 2001).

As Graph 1 shows, in 2002 the ten richest provinces or cities with provincial status in per capita terms were all located on the coast or in the traditional industrial area in the Northeast of China. The per capita GDP in Shanghai, the richest area, exceeded the per capita GDP in Guizhou, the poorest area, by almost eleven times. However, the proximity to the coast is not always the decisive factor. For example, Anhui, a province situated next to Shanghai, is only ranked 25th in the GDP per capita statistics. Guangxi, ranked third to last, lies next to Guangdong, which has managed a rapid spurt from extreme poverty to the top of income rankings and now holds fifth place.

Table 2. Gini Coefficients of Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Gini Coefficient</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>45.4</td>
<td>2002</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>45.6</td>
<td>2000</td>
</tr>
<tr>
<td>Belarus</td>
<td>30.4</td>
<td>2000</td>
</tr>
<tr>
<td>Estonia</td>
<td>37.4</td>
<td>1998</td>
</tr>
<tr>
<td>Brazil</td>
<td>60.7</td>
<td>1998</td>
</tr>
<tr>
<td>India</td>
<td>37.8</td>
<td>1997</td>
</tr>
<tr>
<td>Democratic Republic of Korea</td>
<td>31.6</td>
<td>1998</td>
</tr>
<tr>
<td>Thailand</td>
<td>43.2</td>
<td>2000</td>
</tr>
</tbody>
</table>


1 The Gini coefficient measures the distribution of income. A value of 0 means absolute equality, a value of 1 absolute inequality.
In the following we are going to take a look at provincial growth rates and their correlation with income levels to see how the income gap between provinces is probably going to develop in the future. Growth rates haven’t differed very much in different parts of the country in recent years. However, growth rates in the Northeastern, Central and Western provinces lagged behind the Coastal provinces and the metropolises by about one percentage point in 2002.

At first sight, this difference might not be very significant. But as Graph 1 shows, the Central and Western provinces already lag heavily behind the regions in the East. If the regional income gap should be closed, the Central and Western regions would have to grow much faster than the richer regions. As Graph 2 shows, this is not the case: no clear trend of correlation between lower levels of GDP per capita and higher growth rates can be seen. Even if most of the poorer regions are growing only slightly slower than richer regions, income differences are being aggravated quickly.
All of these observations about the yawning differences in income between regions naturally lead to the question why income levels vary so much among regions and why the gap seems to be persisting and even widening instead of narrowing. The following sections will try to summarise and evaluate some factors that could have influenced regional income levels in China.

3 Main Reasons for Regional Inequality

When discussing the reasons for the persistent disparities between the Chinese regions, one has to keep in mind that none of these reasons stands on its own, but all are closely interconnected and dependent on one another. The human capital endowment of a region and its economic structure could, for example, influence FDI flows, which again might affect the pace of market reforms, and so on.

As China is divided into 31 administrative units, the provinces and cities in the following will be grouped into major regions, according to their economic structure, wealth and geographical location. The literature on regional inequality uses a wide range of different groupings of Chinese regions, dividing them into two to nine groups. Here, following the suggestion of the Territorial Development Service of the OECD, Chinese regions are divided into four groups to give a better overview of their differences:

1. The metropolises: Beijing, Tianjin and Shanghai
2. The coastal provinces: Shangdong, Fujian, Guangdong, Zhejiang, Jinagsu, Hainan and Hebei
3. The Northeastern provinces: Heilongjiang, Jilin and Lianoning
4. The Central and Western provinces: Anhui, Hubei, Hunan, Henan, Jianxi, Shanxi, Shaanxi, Inner Mongolia, Xinjiang, Tibet, Qinghai, Ningxia, Gansu, Sichuan, Yunnan, Guizhou, Chongqing and Guangxi.
Although the Central and Western provinces differ in their economic structure, they do not so much in per capita income. As they face similar problems, they are grouped together here (OECD 2001).

3.1 Economic Structure

Some researchers have pointed out the influence of economic geography for shaping regional development in China (Démurger et al. 2002, OECD 2001 a, Jian et al. 1996 and others). In fact, China's regions are very differently endowed with resources, which should be no surprise considering the country's vast extent. Industry has developed to a differing degree and the relative distance to the coast, and to international markets, has shaped economic development.

1 The metropolises

These three cities are the richest parts of China. They have experienced high growth during the reform period. All of them are located close to the coast, which gives them an additional advantage. The economies of the three city provinces are typically urban, with the primary industry accounting for only 2-4% of GDP in 2002. At the same time, the shares of the service sector in GDP are the highest of all Chinese provinces, lying between 47% (Tianjin) and 62% (Beijing) (National Bureau of Statistics 2003).

2 The coastal provinces

The coastal provinces have experienced the fastest growth in the post-reform period. Most of the reforms of the Open-Door policy were targeted at this part of the country or first tried out there. This gave the coastal provinces a clear advantage versus the inland provinces and emphasized the geographical advantage of proximity to the coast even more. Other reasons for the economic success of the coastal regions can be found in the deeper pools of management and technical expertise, generally better linkages between industrial enterprises and local economies and a better developed infrastructure (OECD 2001 a, Démurger et al. 2002). Especially the southern coastal area was somewhat neglected in the command economy period and therefore developed an industrial pattern based mostly on light, textile and processing industries. As these provinces have a clear comparative advantage in light industry vis-à-vis the rest of the country as well as foreign countries, industrial agglomeration in a couple of light industry branches has happened in this area (Golley 2002).

3 The Northeastern provinces

The Northeast, which was industrialized during the Japanese occupation since 1905, has constituted the industrial heartland of China since 1949. This leading position was further supported in the communist period till the beginning of the market reforms and even today there are some signs of preferential treatment. Most of its industry, though, consists of state-owned enterprises in mining and heavy industry. The majority of these enterprises are highly unprofitable and in urgent need of restructuring. Already today the three Northeastern provinces have to cope with a higher than average unemployment rate due to the closure or downsizing of firms, a
problem which is expected to be aggravated in the coming years (OECD 2001 a, Démurger et al. 2002). The share of the population engaged in agriculture is well below the national average.

4 The Central and Western provinces

The Northwest of China still has a very weak industrial base despite the fact that state enterprises were massively relocated to this part of the country beginning in the 1960s due to security considerations and an attempt to make regions self-sufficient. Industrial enterprises engage mostly in mining the region's abundant natural resources and heavy industry on the basis of these resources (OECD 2001 a). Most of the industrial enterprises are state-owned and very unproductive as they are located far away from suppliers as well as demand (Bao et al. 2002). Agriculture is generally difficult in this part of China; only cotton is grown on a larger scale. In addition, these provinces suffer from isolation from the other provinces as the transport and communication infrastructure is insufficient (Démurger et al. 2002).

The Southwestern provinces are mostly agricultural; industry is very underdeveloped. Even township and village enterprises (TVE) that contribute a lot to economic growth in rural areas of other regions are not very common. As in the Northwest, geographical remoteness and bad infrastructure hinder development (OECD 2001).

The Central provinces are the most agricultural and densely populated regions (Démurger et al. 2002).

As Table 3 shows, some regions have a higher share of state-owned enterprises (SOE) in industrial output than others. Especially in the Northeastern, Western and Central provinces, SOEs are quite dominant. This differing degree of state ownership might have an influence on regional GDP growth. A lot of SOEs are loss-making and hard to reform, because of outdated products and production technology and a heavy debt burden (Jian et al. 1996). As Graph 3 shows, there indeed is a negative correlation between the share of SOEs in industrial output and the GDP growth rate. However as the scattering around the trend line is quite big, a large share of SOEs in a region’s industrial output doesn’t automatically seem to hamper growth. For example, Tibet, Qinghai and Inner Mongolia experienced high growth though they had a high share of SOEs in industry, while Xianjiang and Yunnan grew the slowest, having a similar share of SOEs.

Table 3 shows that the share of township and village enterprises (TVE) in employment also differs greatly among regions. As part of the agricultural reforms starting in 1979, municipalities were granted the right to establish TVEs that engaged in different kinds of business and helped to absorb part of rural surplus labour (Jian et al. 1996). Since then the TVEs have been growing strongly in some regions. Most of them have been privatised by now and those able to survive competition have proven to be highly profitable. Especially in the coastal provinces, TVEs in suburban regions often profit from subcontracting by urban firms in search of cheaper labour (Xiwen & Jun 2003). Thereby they have helped to spread benefits from FDI, foreign trade and higher growth in urban areas more evenly. The share of TVE in employment could be seen as a proxy for the degree of individual entrepreneurship as well as for the chances for possible high

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2 Share of employment figures are used to give an impression of the TVEs' importance for local production as output figures for this group of enterprises were not available.
growth in future. As Graph 4 shows, the correlation between the share of TVEs in employment and GDP growth is indeed positive. But again the scattering is quite large, so that it seems that a large share of TVEs is neither a guarantee nor a prerequisite for high growth. While, for example, Yunnan and Xinjiang did grow the slowest, having a low share of TVEs in employment (which would confirm the theory that the share of TVEs in employment is positively related to growth), Tibet, Qinhai and Inner Mongolia had similar low shares, but showed much higher growth in 2002. Growth in the Central provinces Hubei and Hunan was under average, though they had a much higher share of TVE in employment than the majority of provinces.

Table 3. Average Share of SOEs and TVEs 2002

<table>
<thead>
<tr>
<th></th>
<th>Share of SOE in Industrial Output</th>
<th>Share of TVEs in Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolises</td>
<td>45,5</td>
<td>23,3</td>
</tr>
<tr>
<td>Coast</td>
<td>32,2</td>
<td>27,3</td>
</tr>
<tr>
<td>Northeast</td>
<td>73,3</td>
<td>18,1</td>
</tr>
<tr>
<td>Centre and West</td>
<td>67,5</td>
<td>15,5</td>
</tr>
</tbody>
</table>

Note: 1) Shares are non-weighted averages of the province groups
2) Share of employment figures are given for TVEs, as output figures were not available.
Source: National Bureau of Statistics

Graph 3. Correlation between SOE Share in Industry and GDP Growth in 2002

Source: National Bureau of Statistics
The short characterisation above of the groups of Chinese provinces and even the correlation between the prevalence of different ownership types and growth rates gives already a hint that there might be path dependency at work in Chinese regions. Market reforms up to now have had different outcomes in different parts of China. But starting positions at the beginning of the reforms were all but equal either. Nevertheless, some regions have managed to free themselves from historical backwardness and profited greatly from the changes economic reform offered, as is evident in the following. History, for example in the form of inherited economic structure, may matter but not necessarily.

3.2 'Preferential' Policies

Economic reforms, started in 1978, concentrated on two key areas: reforming the unprofitable agricultural sector and opening the economy internationally step by step. Neither of these policies was intended to reduce regional inequality within China, but rather to make China as a whole catch up with the West (OECD 2001). Nonetheless they had a great impact on the income gap between regions.

As mentioned before, agricultural reforms that gave peasants more responsibilities and created alternative earnings possibilities in rural areas till the mid-eighties reduced income differences between regions (Jian et al. 1996).

The second package of reforms addressed the opening of the country. In the beginning of the 1980s special economic zones (SEZ) were introduced by decision of the State Council. The first five zones were all located in coastal provinces (three in Guangdong province, one in Fujian and Hainan island). As these zones could offer preferential tax treatment and other privileges and had a better infrastructure than other regions, they soon attracted the largest amounts of FDI flowing into China and showed extraordinary high growth (OECD 2001). Step by step these zones were extended to the...
whole coast and to some interior parts. Only in the beginning of the 1990s was the so-called Open Door Policy applied to the whole country.

The Open Door Policy' is often labeled 'preferential'. Démurger et al. suggest that a more appropriate term for these policies might be 'deregulation' policies as the reforms were intended to remove obstacles to the marketization and internationalization of the economy. Some measures, such as the devaluation of the currency, had an effect on the whole economy. Others, such as the abolishment of duties on imports of intermediaries, the permission to collaborate with foreign firms, more liberal rules for hiring and firing, massive investment in infrastructure and tax breaks to attract foreign investors, were at least in the beginning limited to a few regions. This strategy of trying out reforms in a certain area and extending them to other parts of the country only when their success had been proven was already employed by the Chinese leadership in the case of the agricultural reforms in 1978. The policy as a whole might be denied the label 'preferential' especially because it did not include steady flows of subsidies over a longer time span, but only massive state investment in the beginning (Démurger 2002).

Even if these reforms were not actually intended to prefer some regions over others, the effect was quite 'preferential', because the lead in liberalization that the coastal provinces had taken, helped to highlight other advantages of the coastal regions, such as their proximity to foreign markets.

### 3.3 Differences in Investment

One way in which convergence between regions could occur, is through the flow of mobile production factors between regions. According to growth theory, capital should move to the least developed parts of China, because capital is still scarce there and the return to investment higher than in the developed coastal regions. As Table 3 shows, the investment-to-GDP ratio in the Central and Western regions is indeed higher than that of the Coastal provinces. But there are suspicions among some researchers that credit allocation by state-owned banks is not so much a result of market forces, but is very much affected by the lobbying of SOE managers, command from the government and even corruption. Capital tends to flow to existing industrial agglomerations and especially unprofitable SOEs rather than developing regions (Jian et al. 1996). This kind of investment seems not to have been very profitable, as it was not mirrored by equally higher growth figures (Chen & Fleisher 1996). One might suspect that the high share of SOEs in some of the regions with high investment ratios (as shown in Tables 3 and 4) and the stagnant restructuring of these state-owned firms has led to the build-up of inventories rather than to growth in enterprise profits (Dayal-Gulati and Husain 2000).

On the other hand, it is sometimes reported that in times of ongoing reforms of the financial sector, banks seem to become more reluctant to grant loans to enterprises in regions where the share of bad loans has been traditionally high, as has been the case in the Central and Western regions (Yang and Wei 1996 as cited in Chen and Fleisher 1996). Banks and investors might switch their engagement to more 'secure' regions. An indicator for this might be the high investment-to-GDP ratio of the metropolises. It has even been recorded that capital from Western regions has been flowing to the coast for a couple of years (Fu 2004).

It becomes evident that the actual distribution of investment across Chinese regions is not clear at all. The effects of the distribution seem to be even less certain.
Table 4. Investment in Fixed Assets/GDP in 2002

<table>
<thead>
<tr>
<th>Region</th>
<th>Investment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolises</td>
<td>45.1</td>
</tr>
<tr>
<td>Coast</td>
<td>34.1</td>
</tr>
<tr>
<td>Northeast</td>
<td>30.1</td>
</tr>
<tr>
<td>Centre and West</td>
<td>36.6</td>
</tr>
</tbody>
</table>

Source: National Bureau of Statistics

As regards Foreign Direct Investment (FDI), the picture of the disadvantaged position of the inland regions becomes clearer. As Table 5 shows, over 80% of all FDI flows into the ten regions located on the coast. The Central and Western regions receive a meagre 12% of all FDI.

The main reason for this concentration of FDI on the Coast is probably not higher demand due to higher incomes. Most of the FDI in China has flowed into export-oriented industries that are located in greater proximity to foreign markets, i.e., on the Chinese coast (Huggonier 2001). In the beginning of the 1980s special economic zones (SEZs) were introduced by the decision of the State Council. The first five zones were all located in coastal provinces (three in Guangdong province, one in Fujian and Hainan island). As these zones could offer preferential tax treatment and other privileges and had a better infrastructure than other regions, they soon attracted the largest amounts of FDI flowing into China and showed extraordinary high growth (OECD 2001). Other regions were granted the right to establish SEZs only later. This led to these 'latecomers' being disadvantaged in comparison to the pioneering SEZs as the latter were already established and renowned and had grown strong without the competition of a multitude of SEZs, mushrooming after the general permission to establish such zones.

As can be seen in Graph 5, some of the regions really seem to have profited from high FDI inflows. But some regions that experienced strong growth haven’t actually gotten much FDI. The regions that managed to translate high FDI into high growth rates were all situated near the coast (Tianjin, Jiangsu, Guangdong). This seems to suggest that especially FDI in provinces having a high share of export-oriented industry has been very productive.
Graph 5. Correlation between FDI p.c. and GDP Growth in 2002

Note: For Tibet, no data on FDI flows were available
Source: National Bureau of Statistics

Table 5. Share of Regions in Total FDI Flows in 2002

<table>
<thead>
<tr>
<th>Region</th>
<th>% of Total FDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolises</td>
<td>14.4</td>
</tr>
<tr>
<td>Coast</td>
<td>65.7</td>
</tr>
<tr>
<td>Northeast</td>
<td>7.6</td>
</tr>
<tr>
<td>Centre and West</td>
<td>12.2</td>
</tr>
</tbody>
</table>

Source: National Bureau of Statistics

3.4 Foreign Trade

Chinese growth in the past two decades has been partly driven by high export growth rates (Fu 2004). In a study on the linkages between wages and openness to trade, Lin finds that 24% of the differences in wages among the coastal provinces and 13% of the differences among interior provinces can be attributed to differences in the province's access to export markets and possibilities for imports of intermediates. 20% of the divergence of wages in provinces from the national average can be attributed to these causes. (Lin 2003)

These results show that the possibility to engage in international trade is a precondition for a province to get a share of the growing incomes. But as Table 6 and Graph 6 show, external trade is very unevenly distributed between provinces. The bulk of China's trade is concentrated in the metropolises and the coastal provinces that have immediate access to cheap waterway transportation and are located nearer to main markets for Chinese exports, such as Japan, Korea or the US (Lin 2003). The more or less land-locked Northeast and the Centre and West account together for only 12.6% of exports.

As land transport costs are much higher than for waterway transport, naturally trade intensity diminishes with increasing distance from the coast as transport costs increase. Henderson et al. report, for example, from a worldwide study that, compared to the median
coastal economy, trading costs for the medium landlocked economy are 50% higher (Henderson et al. 2001). Although this is thought to be mainly of relevance for landlocked African countries, it might have some relevance for China as well. Though a state border does not separate the interior provinces from the coast, enormous distances to the coast, poor infrastructure and trade barriers between provinces might have trade-impeding effects similar to those of real borders. Processing trade, which makes up a large share of Chinese trade, is affected extremely by transport costs, because intermediate imports have to be brought to the processing site and the whole production has to be transported back to the coast for re-export. Because of this high transport intensity, processing firms are mostly situated in areas on the coast.

Graph 7 shows a positive trend for the correlation between regional export/GDP ratios and GDP growth rates. The higher the export ratio, the higher the GDP growth rates. But as already seen in other scatter plots, the scattering, especially for the segment of lower export rates, is quite strong.

As Graph 8 shows, exports in the coastal region are mainly by foreign-funded enterprises. The share of processing trade in total trade is high as firms take advantage of the cheap labour force and the possibility to import intermediates for re-export, tax-free. As these firms process mostly imported raw materials or intermediates, this kind of trade does not foster backward linkages to other industries or regions. Therefore positive effects of FDI and trade have mostly been limited to the direct environment of exporting firms (Fu 2004).

A study on the exploitation of comparative advantage by provinces conducted by Yue and Hua shows that only the coastal provinces seem to export goods for the production of which they have a comparative advantage due to their factor endowments. Their exports consist mostly of labour-intensive products. The range of export products of inland provinces is mostly wider. They seem to export mostly goods that are produced using scarce production factors (for example, chemicals that are technology- and capital-intensive). Therefore one might conclude that trade in the coastal provinces is more successful as it is driven by market forces, whereas trade in the interior provinces is inefficient (Yue and Hua 2002).

After all, location on the coast does not seem an automatic guarantee of trade openness. The ratio of exports to GDP varies considerably between coastal provinces, ranging from 5.6% in Hebei to 83% in Guangdong. Especially Guangdong seems to have profited strongly from its location next to Hong Kong. The role of such spillovers will be discussed in a later section.

Table 6. Share of Regions in Total Exports in 2002

<table>
<thead>
<tr>
<th>Region</th>
<th>% of Total Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolises</td>
<td>15.5</td>
</tr>
<tr>
<td>Coast</td>
<td>72.0</td>
</tr>
<tr>
<td>Northeast</td>
<td>5.0</td>
</tr>
<tr>
<td>Centre and West</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Source: National Bureau of Statistics
Graph 6. Export to GDP Ratio in 2002

source: National Bureau of Statistics

Graph 7. Correlation between Export/GDP Ratio and GDP Growth in 2002

Source: National Bureau of Statistics
3.5 Human Capital and Migration

As with the movement of capital, mobility of the working force should help to equalise income in different regions. Labour should move from the regions where it is abundant to the regions where it is scarce and thereby equalise the marginal product it earns. So much for the basic theory. In China there are certain conditions impeding this prediction of theory from coming true. One simple reason might be, that labour is so abundant especially in rural areas, but also in the areas where SOEs dominate, that it would take a long time for emigration to make it scarce enough to be felt in rising wages. Un- or underemployment in rural areas is estimated to range between 20-35% of the rural working force (Wu 2003). In addition the growth rate of the labour force in the non-coastal provinces is much higher than that in coastal provinces (Chen and Fleisher 1996).

Another reason that has impeded interregional migration as well as migration from rural to urban areas is the household registration system that used to limit residence to the place of birth. Though this system has been liberalised in recent years and masses of workers have migrated without the necessary permissions, the number of permissions and certificates needed and the disadvantaged position of illegal migrants in cities still restrict migration (Chen and Han 2003; Hertel and Zhai 2004).

Most of the migration in China happens between rural areas and nearby cities and is often only temporary. A survey done by the Chinese Academy of Social Sciences for the Ministry of Agriculture reports that in 2002 only 35.3% of all migrants from Western regions crossed province borders, 46% of whom migrated to the coastal provinces. Although one might question these figures, as a lot of unreported migration is going on,
they suggest that migration might influence mostly rural-urban income inequality, but its impact on income differences between provinces might be limited.

Migration has positive as well as negative effects on emigration and immigration provinces. Remittances sent home from migrant workers (usually 20-50% of income according to Fu 2004) make up a substantial part of rural incomes (according to the Financial Times of 26.4.2004, more than 40% of rural income). Via these remittances, people in poorer areas take a direct share of higher income in cities and coastal provinces. On the other hand, typical migrants have a higher level of education and are younger than the average population. Therefore emigration means for some provinces a loss of young and qualified people. In some inland areas a shortage of skilled workers is already observable (Fu 2004). Official statistics (as displayed in Graph 9), though, show no significant differences in education levels between the coastal regions and the Central and Western regions. Illiteracy as well as college and university education are at similar levels. The industrialised Northeastern region even displays a lower level of illiteracy and a slightly higher percentage of people with tertiary education than the coastal provinces. Only the metropolises stand out, having a much higher percentage of middle-level or highly educated people. One might suppose that illiteracy and low education levels are most frequent in rural areas and therefore agricultural provinces are most affected. Scatter plots show that neither a well-educated workforce is significantly positively correlated with GDP growth nor is illiteracy negatively correlated with growth rates. Higher illiteracy is paradoxically even correlated with higher GDP growth rates.

Graph 9. Level of Education in Regions in 2002

Source: National Bureau of Statistics

Emigration provinces might also gain from returning migrants coming back more skilled than before. But as there are no significant cultural barriers to the integration of migrants, as in the case of migration abroad, and restrictions for registration are being relaxed, migrants to other provinces aren't very likely to return to their source provinces (Bhalla et
al. 2003). The impact of skill transfer from the coast to the inland is therefore likely to be very limited. The same holds true for the foundation of new enterprises by returning migrants using knowledge and funds acquired during temporary migration (Fu 2004).

In the immigration provinces on the coast, migrants seem to serve as a low-skill and low-cost complement to resident workers as well as to capital and help to sustain high growth rates, as the capital/labour ratio is not diminishing.

All in all, migration is likely to have an effect on income distribution not by equalising factor endowments between regions, but by indirect effects through remittances sent home, deterioration of the skill level in source areas, and the further push of the coastal economy based on the abundance of cheap labour.

3.6 Concentration and Spillover Effects

Usually agglomeration effects are expected to be characteristic of the first stages of economic development as clustering of different stages of production as well as of competing firms brings positive spillovers. Concentration is thought to happen in locations that by chance have at least a slight advantage over other locations (Golley 2002). Then, step-by-step, forces of dispersion set in and the economy becomes more deconcentrated. In China this advantage clearly consists in the geographical advantage of the coastal areas. As the above analysis of regional differences has shown, in China dispersion effects have not yet set in to a larger extent.

Golley finds from an analysis of the location of manufacturing industry in Chinese provinces, that nearly all branches of industry have become more agglomerated during the reform period and that agglomeration happened at a differing pace in provinces. The Southeastern coastal provinces (Guangdong, Zhejiang, Jiangsu, Fujian and Shandong) host most agglomerated sectors. But spreading manufacturing seems to have happened, for example, to the inland province of Anhui from neighbouring Shandong, Jiangsu, Shanghai and Zhejiang. These provinces gained shares in manufacturing output at the expense of Shanghai, as a first step of deconcentration. Also for Hebei, Henan and Hubei rising shares of manufacturing output are reported for the last years. However, the spread of industry has not been even into the interior direction. The provinces of Guangxi and Hainan have not profited very much, though they are both neighbouring on booming Guangdong (Golley 2002). Clearly spillover from growth centres diminishes with rising distance, with the Western provinces being excluded almost entirely (Yao and Zhang 2002).

Several studies find that regional economies are still quite segregated, limiting the extent of factor movements and trade. Industry is generally poorly interconnected between provinces, as the pre-reform policy of the Chinese government focused on the self-reliance of provinces. Labour movements are not only constrained by the household registration system, but also by non-transferable pension and social insurance records. Gong et al. report that even regional governments engage in the protectionism of goods markets.

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3 This effect was first mentioned by Myrdal, who called it the backwash effect. The location of many firms in a certain area makes it advantageous for producers of intermediate goods to move to these locations as well. The agglomeration of the production of intermediates in turn attracts more producers using these intermediates.

4 Forces of dispersion include, for example, negative externalities from congestion, the supply of immobile factors in certain locations and the degree of dispersion of demand for output (Henderson et al. 2000).
Though the trend towards protectionism is declining, they state that it increased the inward orientation of provinces and caused serious losses to firms (Gong, et al. 2003).

FDI, which is often seen as a vehicle for technological spillover, is quite concentrated on the coast. In principle, once technology has crossed the Chinese border, it could spread also to more distant regions. But some sources claim that this isn’t the case. Technology is mostly controlled by foreign-owned enterprises that have, as discussed earlier, often too few links to the local economy as they engage in processing only imported intermediates. Therefore the spillover of technology even to the coastal economy is low and even lower from there to the Western and Central regions (Fu 2004). On the other hand, some researchers claim that a backwash effect is actually observable in the coastal provinces, where the moving in of foreign firms has increased demand for intermediates, which has been mainly satisfied by township and village enterprises. The agglomeration of such rural enterprises in the proximity of urban centres has drawn other TVEs to these locations as well. Thereby growth spilled over from urban to rural coastal areas (Démurger et al. 2002). However this supply effect seems not to have come even to the Central provinces yet.

The possible effects of migration on human capital spillover have been discussed already earlier. Human capital is mostly seen to flee from underdeveloped regions. As migration to the coast is mostly permanent, knowledge and skills acquired by migrants are not returning to their source provinces.

As another reason why spillovers of knowledge, technology and eventually growth are so limited in China, some authors claim that some of the trickle-down effects are especially effective in cities, of which particularly the West has less than the coast and the Centre.

Sadly some regions in the Centre and the West might even be so backward and the development gap between them and the coastal economy so large that new knowledge and technology just couldn't be applied right away (Brun et al. 2002).

### 3.7 Fiscal redistribution

One channel through which regional income differences can be altered is redistribution via the fiscal system. Here the issue of fiscal centralization or decentralization is important. The central government has the possibility to redistribute income or to invest in weaker regions only if it gets hold of enough fiscal resources.

With the beginning of the market reforms in China, the fiscal system was decentralised. Formerly almost its entire fiscal revenue had gone to the central government, which also decided on the spending. The decentralisation led to a fast and sharp decline in the central government's share of revenue in total government revenue. In a first reform of the fiscal system in the 1980s, lump-sum payments to the central government were introduced. Local governments could keep their revenues after submitting to the central government a lump sum, which was agreed on in negotiations between the centre and individual regions. Regions should be encouraged to increase the collection of revenues as all additional funds collected flow into their pockets. However, this system did not lead to an increase in taxes collected. Regions tried to hide increased sources as they feared higher demands by the central government in subsequent negotiations.

As part of the 1994 tax reforms, a system of fixed sharing was introduced. It established which taxes were to be collected by the central government and which the
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provincial governments could levy. Revenues from the newly introduced value added tax (VAT) were to be shared between the central (75%) and local governments (25%). Local governments were denied the right to levy additional taxes besides the ones agreed with the central government (Fan 1999).

As Graph 10 shows, this reform led to a sharp decline in the share of local governments’ revenue in total revenue. On the one hand, this gave the central government more opportunities to redistribute resources between provinces, as its share in revenues increased to around 50%. Transfers from the centre to local governments were reported to have risen from 1.5 % of GDP in 1993 to 4% in 1995 (Ahmad et al. 2002). On the other hand, regional governments' share in expenditure remained on pre-reform levels. This increased the pressure on local government to raise revenue from other sources and considerable so-called off-off budgets turned up5. In some regions revenues and transfers from the central governments have reportedly been too low to cover even basic spending needs and the population was heavily burdened by over-taxation mostly in the form of additional fees and charges levied by the local authorities. In some rural areas the education system is mostly financed by fees, which strongly affects the chances of the poor for gaining an education (Chen and Han 2003). A rural tax reform extended to all provinces in 2004 aims at reducing the number of fees and charges in order to lower the heavy tax burden on farmers.

Graph 10. Share of Local Governments in Total Government Revenue and Expenditure in 1989-2002

Transfers from other levels of government as a share of total local revenue decreased from around 43% 1995 to 35% in 1999 (IMF Government Finance Statistics Yearbook 2002). This indicates that the ability of the central government to redistribute fiscal resources among regions might have diminished. Another worrying issue is that the major part of the redistribution is via the so-called 'revenue returned', which provides provinces with 30% of

5 Off-budgets are already part of the official statistics, including funds, e.g., from fund-raising and profits from SOEs.
the increase in VAT and excise taxes over the 1993 base collected by them. This system is designed to be regressive, returning more money to richer provinces, as they are also the main leviers of VAT (Ahmad et al. 2002).

Graph 11 shows that the ability to extract government revenue varies significantly across provinces and revenue/GDP ratios vary considerably. Altogether, revenue/GDP ratios are quite low in international comparison.

Astonishingly, all provinces seem to run budget deficits, which might be covered by central government transfers as local governments are not allowed to issue debt. However, deficits and the need for transfers seem to be highest in poorer regions in the Centre and in the West of China, where expenditures are often twice their own revenues. Zhang and Zou also report that the extent of decentralisation of public spending varies significantly among provinces. Poorer provinces display a much lower ratio of local to central spending (Zhang and Zou 1998).

As Graph 12 shows, revenue per capita is significantly lower in the Central and Western provinces than in the rest of the regions. Also the ratio of expenditure to GDP varies considerably, making some provinces, especially the metropolises and the coastal provinces, but also some Western provinces, better able to conduct public investment than others. This might be, for example, of significance in scarcely populated regions in the Centre and West, where low per capita expenditure translates into low overall spending, but the need for investment in infrastructure is still quite high, because of the territories' size.

Graph 11. Local Government Revenue and Expenditure as a Share of GDP in 2002

Source: National Bureau of Statistics
Another method of redistribution is the central government's subsidies to loss-making SOEs. As the share of SOEs in output varies greatly between regions, some provinces get an extra transfer via funds that cover the losses of their enterprises. As Graph 13 shows, however, these transfers have been diminishing in recent years, certainly affecting the population of some regions, as the subsidies not only secure employment, but are also used to cover pension and other social security obligations of bankrupt enterprises.
The budget of the central government also contains an entry for help to poor regions, but compared to the need it is negligibly small.

The probably geographically uneven distribution of bad loans is sometimes also seen as an implicit means of redistribution. In the case of a recapitalization of state-owned banks to lower the share of non-performing loans in total loans, this would lead to implicit transfers by the central government to those regions where most of the defaulting debtors are located. It is perceived that these are mostly the regions with a high share of unprofitable SOEs (Ahmad et al. 2002).

In a study on the effects of the decentralisation of fiscal spending till the mid 1990s, Zhang and Zou find that central spending on administration and development has a significantly positive effect on growth, while local spending on the same issues has a significantly negative effect. They suggest that decentralisation is harmful to provincial growth, because the centre lacks the means to invest in national priorities such as transport and energy infrastructure, telecommunications, etc. (Zhang and Zou 1998). This view is ascertained by reports that coordination between regions is mostly lacking. Regions seem to be increasingly turning their view inwards. This results in the double-construction of infrastructure (e.g. highways with no connection over provincial borders), fiscal competition between regions, living on the cost of neighbouring provinces (especially with regard to resources and the environment) and barriers to trade and market access erected by provincial governments (Lin 2003).

Overall fiscal decentralisation seems to have increased income disparities between provinces, leaving the poorer with fewer possibilities for catching up (Démurger et al. 2002).
4 Summary of Main Reasons and Outlook

As the above analysis has shown, there is no single reason for the large income differences between Chinese provinces. Rather a multitude of causes for the inequalities can be detected.

Differences in investment, especially in FDI, education levels, migration and foreign trade seem to have played a role in the development of the income gap between Chinese regions. However, as the mostly vague results from the scatter plots have shown, the connection between the differences in trade, investment, human capital etc. and GDP growth are all but unequivocal. These differences don’t seem to have been the main causes, but already the results of some underlying factors. Such factors can be detected in three main areas: geography and path dependency, government policies favouring certain regions and missing links for spillover between regions.

Examples of these underlying factors are the geographical advantage of the coastal provinces in trade and FDI and the legacy of a distorted industrial structure with a clustering of heavy industry in some of the Western regions (Yang 2002). The intended or unintended favouratism of the central government towards the coastal regions was visible in the pioneering role of this area at the beginning of the economic reforms in the late 1970s and certainly fostered the widening of the income gap. Lacking channels for growth spillover, e.g., transport and communication networks, but also a redistributing fiscal system, have prevented the gains from development in the coastal provinces from spreading to other parts of the country.

The Chinese government seems to have identified the main issues in the area of regional inequality, as government programmes like the 'Go-West' strategy, show. According to the Tenth Five-Year Plan for 2001 to 2005, some of the major goals of the Western Development Strategy are intensive investment in transportation and communication infrastructure, raising education and qualification levels, improvements in the infrastructure of cities and towns, the establishment of corporate governance in SOEs and partial privatisation of SOEs, raising the share of these regions in trade and FDI, guaranteeing adequate living conditions for the population and preventing the East-West income gap from widening further.

However, it is unclear how the income gap will develop in the future as a reaction to the necessary reforms remaining. The restructuring of the SOEs will cause massive layoffs. This will affect regions quite differently according to their share of SOEs in the provincial economy. China’s WTO accession is expected to worsen the situation in agricultural regions even more.
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