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Structural transformation, inequality, and inclusive growth in China

Yanan Li and Chunbing Xing*

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Abstract: In this paper, we analyse the relationship between China's structural transformation and the inclusiveness of its economic growth. China's economy has undergone significant structural changes since it initiated the economic reforms in 1978. Economic activities have shifted from the low-productivity agricultural sector to the high-productivity industrial sector and, more recently, the tertiary sector, with a large portion of the labour force moving from rural to urban areas, from inland to coastal regions, and from the public to the private sectors. These changes have only been able to happen because of major reforms to the land system, the *Hukou* system, the ownership of state-owned enterprises, and trade policies. Despite its great success in poverty reduction, China has witnessed rapidly increasing income inequality which only began to decline in the late 2000s. We analyse the political economy that determined the inclusiveness of the structural transformation. As the economy further transitions into services, the tension between structural transformation and its inclusiveness will depend more on the government's ability to reform the current social security policies and pay more attention to disadvantaged groups.

Key words: structural transformation, inequality, education, migration, poverty reduction, China

JEL classification: I32, O14, O15, P23

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*Beijing Normal University, Beijing, China; emails: yananli@bnu.edu.cn and xingchb@bnu.edu.cn.

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Katajanokanlaituri 6 B, 00160 Helsinki, Finland

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1 Introduction

Economic growth is often accompanied by significant structural transformation, the pattern of which, to a large extent, determines its inclusiveness. For example, some developing countries that have experienced tertiarization without fully developed industrialization (i.e. premature tertiarization) tend to have high levels of inequality and poor performance in poverty reduction (Rodrik 2016; Felipe et al. 2018). In contrast, the decrease in inequality and the rising living standards of a growing middle class in some industrialized countries are often attributed to a growing manufacturing sector. China is an important case of a country which has experienced record high economic growth and significant structural transformation over the past four decades. Its aggregate economy increased fivefold between 1978 and 2016, and its gross domestic product (GDP) per capita increased by 21 times. Behind this lie significant structural changes, rising income inequality, and great success in poverty reduction. Examining the interlinkages between these aspects is our major task in this paper, which provides valuable lessons for other developing countries and will be important for China's policy making when its growth slows down.

First, we document China's structural transformation across several dimensions. We show a significant decline in the low-productivity primary, or agricultural, sector and sizeable increases in the secondary and tertiary sectors. Meanwhile, the Chinese economy has become more export oriented, urban concentrated, and skill biased. These changes are supported by increased productivity in rural China, restructuring of ownership in urban areas, urbanization (rural-urban migration), and China's entry into the World Trade Organization (WTO).

We then show the trends in employment, inequality, and inclusiveness. China's economic growth is largely inclusive, with impressive success in poverty reduction due to increased productivity in rural and urban areas, relaxation of the restrictions on labour mobility, and increased opportunities for education. These changes have increased job opportunities for rural residents with low levels of education and have ensured that more people can benefit from a modernized economy. We also show that income inequality first increased significantly during the structural transformation and then seems to have plateaued since the late 2000s. However, we do not have convincing evidence that China's inequality will move to the downward segment of the Kuznetsian curve soon. We discuss related public policies during this period and analyse the political economy of structural transformation, inequality, and poverty reduction.

We break down China's structural transformation process after 1978 into three sub-periods by relating it to some major economic reforms (events). Its structural transformation was first made possible by the reforms in rural areas over the sub-period from 1978 to 1991. Following the 'household responsibility' reform, productivity in rural areas increased significantly, labour mobility increased, and a large portion of agricultural labour began to be redirected into industry (Zhu 2012). The second sub-period features the privatization of state-owned enterprises (SOEs) in urban China from 1992 to 2001. The third sub-period, 2002–10, features trade liberalization and the rise of non-state sectors (especially manufacturing employment). Finally, we predict the path of structural transformation and inequality in the future, given the rise of robots, the service economy, and public policies.

2 Economic history: structural transformation and inclusive growth prior to 1978

Structural transformation in this paper refers to resource reallocation across different sectors (e.g. the three broad sectors of agriculture, manufacturing, and services). As a dualist transitional economy, China's structural transformation is also characterized by the restructuring of ownership, integration into the world economy, and urbanization. China initiated economic reforms in 1978, which was a watershed year in its economic development since the founding of the People's Republic of China in 1949. The transformation process is somewhat different in the pre- and post-reform periods.

In the pre-reform period of 1952 to 1977, the annual growth rate of GDP was around 6 per cent, lower than that in the reform period. There were also large fluctuations, with high-growth years often followed by negative growth. Following the Great Leap Forward movement which produced high growth in the late 1950s, China's GDP declined by over 30 per cent during the great famine of 1960–62. It rebounded in ensuing years, and then declined by 9.6 per cent in the first two years of the Cultural Revolution (from 1966 to 1968). Some structural transformation also took place. From 1952 to 1977, the agricultural share of GDP declined from 51 per cent to 29 per cent, the share of secondary industry increased from 21 per cent to 47 per cent, and the change in the tertiary share was the lowest. Despite significant changes in GDP composition, the changes in the employment shares were less pronounced. Primary sector employment still accounted for 75 per cent of the workforce in 1977, down from 84 per cent in 1952, while secondary sector employment doubled (from 7 per cent to 14 per cent), and that of the tertiary sector remained almost unchanged.

By 1978, China was a poor country with a mainly rural population and 77 per cent of its workforce in rural areas. The rural and urban societies were segregated by the *Hukou* (or household registration) system which had been established in the late 1950s, under which one's social status was categorized by both socio-economic eligibility (agricultural and non-agricultural) and registered residential location (local and non-local) (Chan and Buckingham 2008).¹

In urban areas, the economy was dominated by the public sector and private enterprises were forbidden. Almost all workers worked in the state or collectively owned enterprises (COEs) or were employed by the government. They were allocated to 'work units' by the authorities and their compensation was determined by the state. With no risk of unemployment, the job was actually an 'iron rice bowl' for urban workers. Despite their low wages, the workers were heavily subsidized in food, housing, health care, etc. Meanwhile, the wage differentials were relatively small.

There was, however, a sharp rural-urban gap, with the most rural population living in poverty. The major inputs in rural production, including land, were collectively owned under the commune system. Rural workers earned working points, but the system could not provide sufficient incentives for farmers. Furthermore, the prices of agricultural products were kept low to subsidize heavy industry in urban areas. As a result, the income and consumption levels of rural households were far below those of urban households. In 1978, the per capita disposable income in urban areas was 2.6 times the per capita net income in rural areas, which suggests that the returns to rural-urban migration were high. To migrate permanently under the *Hukou* system, people needed to change their registration location and it was only through certain channels (e.g. higher education,

¹ The first classification determined entitlement to state-subsidized food grain and other prerogatives. The second classification defines individuals' rights for many activities in a specific locality. Individuals' *Hukou* status (locality and agricultural or non-agricultural socio-economic categories) is determined by birth, following their parents.

military service, etc.) that rural residents could convert their *Hukou* status from rural to urban. However, the process and the number of any such moves were tightly controlled by the government. The relaxation of the *Hukou* system only happened after the economic reforms began in 1978.

3 Trends in China's structural transformation after 1978

In this section, we discuss China's structural transformation during the reform period. During this period, China witnessed world-record economic growth. From 1978 to 2016, the Chinese economy grew by 32 times, with an annual growth rate of over 9 per cent. China not only continued to transform from an agricultural to an industrialized economy, it also transitioned from a planned economy to a socialist market economy. Major reforms were first carried out in rural areas, which were followed by major reform measures in urban areas. We divide the reform period into three sub-periods (1978–91, 1992–2001, and 2002–present) to facilitate our discussions.

3.1 Employment growth

Before we examine its structural transformation or the sectoral allocation of economic activities, it is necessary to have a look at the demographic transition and total employment growth that has accompanied China's unprecedented economic growth and rapid structural transformation. By 1978, China had been the most populous country in the world, with nearly one billion people, and most of them resided in rural regions. This provided a sizeable demographic dividend in the reform periods. China's population continued to increase during the reform period but at a much lower pace partly due to the strict family planning policy.

Labour force participation was high partially because most of the workers were in low-productivity agriculture. However, labour force participation has been declining since 1990. This trend seems to be driven by female labour force participation, which decreased from 80 per cent in 1990 to 70 per cent in 2010; more pronouncedly, the female employment-to-population ratio declined by 20 percentage points, from 80 per cent in 1990 to 60 per cent in 2015.²

As shown in Table 2, the size of the working-age population grew by 215 million, or 28.4 per cent, between 1990 and 2010. The growth rate in employment varied significantly in different periods. After relatively high growth in the 1980s and 1990s, it gradually slowed down entering the 2000s, provoking a debate that China had reached the Lewis turning point and the era of unlimited labour supply had been over in the mid-2000s (Zhang et al. 2011). Specifically, employment maintained an annual growth rate of 1 per cent from 1990 to 2000, followed by 0.5 per cent annual growth from 2000 to 2010 (Figure 1). China's large surplus of workers and elastic labour supply has no doubt significantly contributed to its high economic growth and economic transition.

3.2 Trends of sectoral value added and employment shares

Using the Groningen Growth and Development Centre's 10-Sector Database, the two graphs in Figure 2 show that labour and resources rapidly shifted away from the agriculture to the non-agricultural sector from 1978. In the period from 1978 to 1991, agriculture's share of total

²The declining trend of female labour force participation in China does not fit with the previous literature, which found a U-shape relationship between structural transformation and female labour force participation. Most developing countries today do not follow this pattern of U-shape relationship (Gaddis and Klasen 2014).

employment fell from 70.5 per cent to 59.7 per cent. Most of the reallocated workers did not move to urban centres. Instead, they went to work in rural industrial enterprises, called township and village enterprises (TVEs), which were set up by township and village-level governments (Zhu 2012). While the manufacturing share of employment increased dramatically during this period, labour productivity was relatively steady (relative to US manufacturing productivity). Thus, the structural transformation was characterized by ‘primary industrialization’ (Kim and Sumner 2019). In addition to manufacturing, non-business services (e.g. wholesale and retail, transport, public administration, education, and so on) also expanded and promoted the process of transformation from agriculture to non-agriculture. The non-business services employment share increased significantly from 11.3 per cent in 1978 to 18.7 per cent in 1991, as shown in Figure 2b.

The 1990s followed a different structural transformation path to that of the 1980s. This period saw a slightly declining manufacturing employment share but a rapid increase in the share of manufacturing value added. Although industrialization was still at an early stage, this transformation characteristic coincides with so-called ‘advanced industrialization’ (Kim and Sumner 2019). As shown in Figure 2a, the value-added share of manufacturing went up from 24.3 per cent to 34.5 per cent during the period from 1991 to 2000, and the manufacturing employment share decreased from 15.0 per cent to 14.5 per cent. The different trends of employment and value-added shares were probably driven by the restructuring of SOEs, which increased labour productivity but led to mass lay-offs.

Agricultural labour continued to shift into the non-agricultural sectors in the early 1990s and decelerated thereafter. Until 2003, the agricultural employment share remained at around 50 per cent. In terms of value-added shares, however, the manufacturing sector surpassed agriculture from 1994. With declining agriculture employment and slow growth in manufacturing employment, the share of employment in non-business services increased from 17.9 per cent to 26.4 per cent in the 1990s.

China’s structural transformation entered a new era in 2002, following China’s entering the WTO. Driven by rapidly growing exports, the Chinese economy experienced a manufacturing boom and shifted a substantial amount of agricultural labour to the manufacturing sector. In contrast to the earlier period, the manufacturing shares of both employment and value added increased steadily. Specifically, the employment share grew by 4.7 percentage points (from 13.5 per cent in 2002 to 19.2 per cent in 2010) and the value-added share rose by 1.4 percentage points (from 35.1 per cent in 2002 to 36.5 per cent in 2010). Thus, the economy experienced an ‘upgrading industrialization’ during this period (Kim and Sumner 2019). Still, the manufacturing employment share outgrew the value-added share, highlighting the labour-intensive nature of China’s manufacturing sector in the 2000s. Non-business sectors further developed during this period. The services sector’s share of employment increased from 27.5 per cent to 33.2 per cent from 2002 to 2010, and the value-added share went up by 1.7 percentage points (29.7 to 31.4 per cent).

As the Groningen Growth and Development Centre’s 10-Sector Database only has data until 2010, we provide information about more recent sectoral employment shares using data from China Statistical Yearbooks. As shown in Figure 3, the broad manufacturing employment shares have followed a declining trend since 2013, while service employment shares continue to have a growing trend.

3.3 Structural transformation and labour productivity

Having observed the structural transformation trend from 1978, a closely related question is whether the transformation is growth enhancing or growth reducing. As argued by McMillan et al. (2014), Asian countries have experienced productivity-enhancing structural change, which is in

contrast to the productivity-reducing structural change in Latin America and Africa. They further attribute the growth-enhancing effects of structural transformation in Asia to the fact that the labour has transferred from low to high labour-productivity sectors.

To empirically examine whether this holds true for China, we split labour productivity growth in each period into within- and between-sector growth. As shown in Figure 4, the annual labour productivity growth from 1978 to 2010 was, on average, 7.6 per cent, of which 2.3 percentage points were driven by between-sector reallocation. This suggests that the result of labour transferring from the lower-productivity agricultural sector to higher-productivity modern sectors was **productivity-enhancing** structural transformation in China. If we look at each economic period, the growth-enhancing structural transformation contributed significantly to the total productivity growth in both the 1980s and 2000s, whereas structural transformation in the 1990s made a minor contribution to total labour productivity growth. The 1990s period was different because, as we discussed earlier, it went through the privatization of SOEs and did not see a large increase in manufacturing employment. This finding is also consistent with the growth model proposed by Song et al. (2011) who found that about 70 per cent of the total factor productivity growth in manufacturing between 1998 and 2005 was driven by factor reallocation from less efficient (SOE) firms to the more efficient (private) ones.

We plot changes in labour productivity against employment shares for each period in Figure 5. Figure 5a shows that only the business sector recorded a simultaneous rise in relative productivity and employment growth during the first period. Construction and non-business services also showed an increase in their employment shares, but their relative productivity decreased. The manufacturing sector showed a large increase in the employment share, but no increases in productivity compared to other sectors. In the second and third periods, no economic sector experienced a simultaneous rise in relative productivity and employment share (Figure 5b and Figure 5c). In the second period, the most striking changes occurred in the manufacturing sectors (Figure 5b). As we discussed earlier, employment shares slightly declined despite a rise in relative labour productivity. The same pattern also occurred in the mining sector, which saw a rise in labour productivity but a declining employment share. In the most recent period, manufacturing and non-business services produced a large number of jobs, and employment shares further increased but they did not see an increase in productivity. Notably, in all three periods, the non-business sector remained the largest job provider in China, and it grew rapidly over time. This pattern is in sharp contrast to many countries in Latin America and South Asia, where the expanded services sector had large added values but limited capacity for creating jobs.

In summary, over the past four decades, China's economy has experienced rapid structural transformation away from agriculture towards manufacturing and services. The contribution of manufacturing and services to the total value-added growth rate has been above 74 per cent since 1990 Figure 6. The economic development has exhibited clear trends in upgrading industrialization and tertiarization. Since 2015, the size of agricultural employment has become smaller than the other two sectors, making China a 'structurally developed' country, according to the definition by (Baymul and Sen 2020).

3.4 Urbanization

As shown above, China has experienced a rapid structural transformation away from agriculture towards manufacturing and services in the past four decades. The economic development has also exhibited upgrading industrialization and tertiarization. An integral feature of structural change in China is the rapid urbanization that has taken place over the past four decades. The urban percentage of the total population in China went up from 20.9 per cent in 1982 to 36.2 per cent in 2000, 49.7 per cent in 2010, and 58.72 per cent in 2017. This means more than 600 million people

either migrated from rural to urban areas or were reclassified as urban residents due to city expansion over the period from 1982 to 2017.³ The large flow of rural residents into urban areas provided a sufficient labour force (at a competitive cost) for the economy during the economic transition period.

China's urbanization process has its unique feature due to the household registration system (*Hukou*). Despite the seemingly high urbanization rate, there are a large number of rural-urban migrant workers who temporarily live in urban areas and do not have urban household registration (*Hukou*). According to the National Bureau of Statistics, the number of rural-urban migrant workers increased from under 50 million in the late 1990s to 172 million in 2017. It is a pressing issue for China to make sure that the large migrant population integrates well into urban society. Failure to do so will slow down the structural transformation, as suggested by many studies (Ngai et al. 2016; Tombe and Zhu 2019).

Within urban areas, rural-urban migrants are not evenly distributed across regions. Some large cities in coastal regions have been attracting migrants more than small or medium-sized cities. Consequently, coastal cities that were originally large are becoming even larger.

3.5 Beyond the industrial perspective

The structural transformation we have documented did not happen automatically. Instead, it was invariably the consequence of, and thereby also shaped by, major economic reforms and institutional changes, including the abolition of the commune system in the rural areas, the ownership restructuring in urban China, China's entry into WTO, and *Hukou* reform. Accordingly, the transformation was also accompanied by significant changes in the ownership composition, regional reallocation of economic activities, export shares, and the educational composition of the labour force. For example, massive rural-urban migration was only possible after China radically reformed the urban ownership structure and the relaxation of the *Hukou* system, and the fact that a large population moving from the hinterland to coastal regions was due to the regionally uneven exposure to international trade. Besides, the industrial upgrading would barely be possible without a skill upgrading of the labour force, which occurred thanks to the compulsory education law in the 1980s and the higher education expansion in the late 1990s through the 2000s. The interplay of these forces is crucial in determining the inclusiveness of China's economic growth, and we will discuss the political economy of these policies in detail after we document the inclusiveness of China's growth.

4 Inclusive growth? Declining poverty and rising inequality

4.1 China's great achievement in poverty reduction

China's structural transformation (and growth) has been largely inclusive in terms of the impressive success in poverty reduction. China experienced a relatively long period of a boom in low-cost manufacturing, which provided substantial labour-intensive employment opportunities. Thus, rural residents, rural-urban migrant workers, and other disadvantaged groups such as the youth, elders, and females were all able to benefit from the structural transformation.

³ Natural growth in the population played a minor role because urban residents had a low fertility rate under the one-child policy.

As shown in Figure 7, the headcount poverty ratio by the international standard (\$1.90 a day, 2011 PPP) decreased from 88 per cent in 1981 to 41 per cent in 1999, and further to 0.7 per cent in 2015. Accordingly, by this standard, the size of the poor population decreased from 750 million in 1990 to 10 million in 2015. However, if we use the World Bank's new poverty standard of \$3.2, then the poverty rate in 2015 would be 7 per cent.

If we further raise the poverty line to \$10 a day, an interesting pattern appears. Almost all the population (98–100 per cent) in China were living on \$10 or less a day before 1999. The share dropped markedly in the new century and fell from 98 per cent in 1999 to 80 per cent in 2010, and then to 60 per cent in 2015. Although living standards have improved tremendously in the past two decades, the majority of the population in China is still relatively poor.

The relationship between structural transformation and poverty is widely discussed in the literature. The relationship depends primarily on the path of structural change that a country has followed. Some studies have found that the growth of unskilled labour-intensive sectors (agriculture, construction, and manufacturing) contributes more to poverty alleviation than the growth of other industries (Loayza and Raddatz 2010). Similarly, Baymul and Sen (2019) observed that the structural transformation–poverty relationship depends on whether the structural transformation is from agriculture to manufacturing or from agriculture to services. If it is the latter, then such structural transformation is less pro-poor and inequality increases. This path is described as ‘premature de-industrialization’ by Rodrik (2016). He points out that many developing countries are at the stage of de-industrialization and are losing substantial low-skilled employment, which creates higher income inequality and potential social instability.

The absence of premature de-industrialization seems to explain the inclusiveness of growth during structural transformation in China. As discussed earlier, China has experienced upgrading industrialization with a steadily increasing share of manufacturing employment. As most of the expanding industries were labour-intensive in the manufacturing boom period, they created a large number of jobs for the unskilled, and thus reduced poverty. In addition to a manufacturing boom, other factors contributing to the success of poverty reduction include agricultural productivity growth, relaxation of migration restrictions and the political economy, which will be discussed in Section 5.

4.2 Income and wage inequality

While China has performed exceedingly well in poverty reduction, its economic growth has been far from inclusive in relative terms: the disadvantaged groups have lagged while others have enjoyed faster growth in income and wealth. China's income inequality during the 1950s–1970s was low by historical and international standards. Since the beginning of the market reform process, however, income inequality has increased markedly. In this section, we present evidence on the trend of income inequality from different perspectives and discuss its relationship with structural transformation.

Overall income inequality

Evaluating inclusiveness in relative scales is more challenging as it requires complete information on the income distribution, which is demanding due to missing high-income observations or misreporting. First, we obtain the Gini coefficients of income inequality from the official source, the National Bureau of Statistics (NBS) of China. The NBS only released national Gini coefficients after 2003. Fortunately, Ravallion and Chen (2007) estimate Gini coefficients for China based on household surveys in both rural and urban areas conducted by the NBS between 1980 and 2001. We combine these two sources and treat them as an official source (Figure 8).

China's Gini coefficient was mostly below 30 in the early 1980s, close to the most egalitarian Nordic countries (Piketty et al. 2019). Then the most significant increase took place between the mid-1980s and the mid-2000s, concurrent with the rapid structural transformation. According to Ravallion and Chen (2007), China's Gini index increased from 31 in 1981 to 45 in 2001. The statistics released by NBS suggest that the Gini coefficient kept increasing in the following years and reached 49.1 by 2008. In the following decade, the inequality first declined to 46.2 in 2015 and then increased to 46.8 in the most recent years.

Combining the previous discussions on structural transformation, we discuss the Kuznetsian tension between growth-enhancing structural transformation and rising inequality for each economic period. In the early 1980s, income inequality was relatively stable, despite a fast shift of labour from the agriculture to the non-agricultural sectors. After 1984, however, the Kuznetsian tension started to appear. The gross Gini coefficient rose from 25 in 1984 to 36 in 1990, probably driven by the privatization of state sectors and the burgeoning of private enterprises.

The second period, the 1990s, witnessed a further increase in income inequality. The structural transformation in this period was not growth enhancing. Thus, the Kuznetsian tension was weak but in an adverse sense. The many business opportunities brought by the restructuring of the SOEs caused inequality to rise. Concurrent with the increasing inequality was a shrinking share of manufacturing employment with an increasing share of manufacturing value added (see Figures 9 and 10), a higher share of non-business service employment with a stagnant value-added share (see Figures 11 and 12). Income inequality between the coastal and inland areas, and between rural and urban areas, increased.

The Kuznetsian tension became stronger in the early 2000s, following China's accession to the WTO. Inequality increased between 2003 and 2007, with an increasing share of manufacturing employment and value added (see Figures 9 and 10). The Gini income coefficient reached a record high of 48 in 2007. As we discuss in the following, the benefits from exports were heterogeneous across regions, hence generating vast spatial inequality during the manufacturing boom.

Since the late 2000s, inequality has shown a declining trend and the Kuznetsian tension seems to have weakened benignly. This trend has been documented in a couple of studies. Luo et al. (2018), using the CHIP data, found that the Gini coefficient declined from 49.0 in 2007 to 43.3 in 2013, after a continual increase between 1988 and 2007. Kanbur et al. (2017), using the CFPS data, found that the Gini coefficient decreased from 53.3 in 2010 to 49.5 in 2014, and concluded that China's income inequality has turned around and started to decline.⁴ The decline reflects the success of numerous welfare policies targeting the low-income population during this period. As explained by Kanbur et al. (2017), the possible drivers of this turnaround are urbanization, transfer and regulation regimes, and tightening rural labour markets.

However, none of the previous studies have covered the most recent years, i.e. after 2015. In fact, according to the official data from NBS, Gini coefficients slightly rebounded after 2016. Therefore, it seems too early to conclude that China is already on the downward segment of the Kuznets curve.

⁴ Despite these uplifting findings, some opposite opinions exist. For instance, Xie and Zhou (2014) show that the Gini coefficients were increasing to very high levels during 2005–12 and forecast an alarmingly increasing trend of inequality down the road. However, their inequality observations come from multiple data sources, some of which are incomparable, hence the increasing trend might be spurious. For example, the CFPS data tend to have higher inequality than CHIP data, and the former are more recent than the latter. It is hard to judge how much of the increase was real and how much was a result of sampling differences.

Income shares

Income share and income growth along the income distribution provide more intuitive ways of presenting inequality. The documented trend of inequality in these ways is consistent with that based on Gini coefficients. For instance, using the CHIP data for 1988, 1995, 2002, 2007, and 2013, Luo et al. (2018) calculated the annual income growth at each percentile of the income distribution for the periods 1988–95, 1995–2002, 2002–07, and 2007–13. In all the first three periods, the growth of income at high percentiles were higher than those of low percentiles. The 2007–13 period was unique in that the growth at the high percentile was significantly lower than at low percentiles, suggesting a declining inequality.

Likewise, Piketty et al. (2019) also found a significant increase in the share of income that went to the top income earners from 1978 to 2006. They found that inequality then stabilized—the share of national income earned by the top 10 per cent of the population increased from 27 per cent in 1978 to 41 per cent in 2006, while the share earned by the bottom 50 per cent dropped from 27 per cent to 15 per cent. They combined the tax data and survey data (including CHIP) to tackle the problem of missing high-income observations. Further, Kanbur et al. (2017), using the CHIP and CFPS data, found that the income share that went to the top 10 per cent of the population increased from slightly above 25 per cent in 1995 to over 40 per cent in 2010, but declined subsequently, supporting their conclusion of a turnaround by the Gini standard.

Regional and rural-urban gap

An essential dimension of income inequality in China is the rural-urban income gap. As shown in Figure 13, the income gap between urban and rural China grew during most of the reform periods. The mid-1980s witnessed the lowest gap—urban households earned, on average, twice as much income as rural households, but by 2018, the income ratio had become 2.7:1. Despite the overall trend of an increasing rural-urban income gap, there were some sub-periods when the gap declined. For instance, between 1978 and 1983, the gap reduced sharply due to agricultural reforms (see Section 5) and a rapid increase in rural income. The gap also declined during the 1990s when the urban sector was struggling with low efficiency and SOE reforms. The most recent decline has occurred since the late 2000s when several preferential policies (such as the abolition of agricultural tax) were implemented in rural areas.

The significant and varying rural-urban gap played a vital role in shaping the national income inequality. Luo et al. (2018) calculated the contribution of this gap to China's income inequality measured as GE(1).⁵ They found that in 1988 its contribution amounted to over 35 per cent. Strikingly, in 2007, around half of the national inequality was due to the rural-urban gap, but then it declined to about 30 per cent in 2013.

In addition to the rural-urban gap, income levels also varied considerably across provinces, the coastal provinces usually being more prosperous than the middle and western regions. According to Luo et al. (2018), regional income inequality contributed 9 per cent to overall inequality in 1988 when they divided China into three regions, namely coastal, middle, and western China. The contribution increased to 15 per cent in 2007 and then declined to 8 per cent in 2013. When they considered the income gap across provinces, the results showed a similar trend but with higher contributions: the contribution first increased from 27 per cent in 1988 to 33 per cent in 2002 and then decreased to 13 per cent in 2013. One shortcoming of the CHIP data is that the survey does

⁵ The generalized entropy (GE) indices are inequality measures that can be completely decomposed into between-group inequality and within-group inequality.

not cover all provinces. Kanbur et al. (2017), using consumption data for all provinces, found similar results.

Wage inequality and returns to education

When the urbanization rate increases, income inequality within urban China plays an increasingly vital role in shaping national income inequality. As wages are the primary component of income in urban areas, we examine wage inequality in this subsection.

Using CHIP data between 1988 and 2013, Luo et al. (2018) showed that wage income had become the most critical component of household income, and its share increased from 30 per cent in 1988 to 42 per cent in 2002 and to slightly below 60 per cent in 2007 and 2013. Li et al. (2018) examined wage inequality in more detail, using CHIP data for 1995, 2002, 2007, and 2013 and focusing on urban areas. They found that the Gini coefficient of wages increased monotonically from 29 in 1988 to 38 in 2013. Using other statistics such as the percentile wage gaps to measure inequality indicated a similar pattern.

To evaluate the contributions of different factors, Li et al. (2018) first run regressions of wage equations and then, based on the regression results, decomposed the Gini coefficients into the contributions of education, gender, experience, region, industry, occupation, and residuals. The most significant finding was that education's contribution increased remarkably between 1995 and 2013. The education gap explained 5 per cent of the wage inequality in 1995, far below the contribution of seniority (11 per cent) and region (17 per cent). By 2013, it had become the largest contributor except for residuals, explaining 14 per cent of the wage inequality. Regional (provincial) and ownership wage gaps became the second and third contributors in 2013, which explained 8 per cent and 6 per cent of the wage inequality.

Consistent with this finding, Li et al. (2018) documented the behaviour of the returns to education, i.e. the wage gap between educated and less-educated workers. They found that the returns to education increased significantly between 1995 and 2013. In 1995, one more year of schooling caused a 5 per cent wage increase, controlling for experience, gender, and province; and in 2013, the association increased to 11 per cent. College education had also become more rewarding: workers with college degrees earned 30 per cent more than high school graduates did in 1995, and by 2013, the former group earned over 90 per cent more than the latter.⁶ High returns to education provide sufficient incentives for a household to make human capital investments. However, despite the sharply increased supply of college graduates after the higher education expansion, the returns to college have not shown a consistent trend of declining. Given significant wage gaps between educated and less-educated workers, the education policies will play an essential role in shaping wage and income inequality in the future, which we discuss in the following sections.

⁶ Li et al. (2018) and Xing and Li (2012) also indicated that the wage gaps within educated and less educated groups increased.

5 Policies that shaped structural transformation and inclusive growth during 1978–2016

Three underlying forces—technological change, institutional reforms, and globalization have shaped the trends of structural transformation and the inclusiveness of growth in China. For the first two periods of economic development, i.e. the 1980s and 1990s, the focus was on economic efficiency. Concurrent with the rapid structural transformation were rising income inequality and reduced poverty incidence. Since early 2000s, the Chinese government has paid more attention to social equity and has aimed to achieve inclusive growth. We discuss the policies that shape structural transformation, inequality, and inclusive growth for each period.

5.1 Rural reforms

The **first** economic period, 1978–91, can be summed up by Deng Xiaoping’s famous quote: ‘let some people get rich first’ (Naughton 1993). The Chinese government implemented a series of reforms to get structural transformation started.

The first policy was the abolition of the commune system and the establishment of the Household Responsibility System. The attempt to change first occurred on a small scale in Anhui province in 1978, with their participants (all farmers) taking the immense risk of being punished for deviating from orthodox. The new arrangement allowed rural households to have land use rights and to claim residuals after paying tax. Despite the political challenges in the early phase, this practice later won the recognition of the authority and was named the Household Responsibility System, which gained considerable success. By providing incentives for rural residents to invest in their allocated land and utilize new kinds of technology and fertilizer, it increased agricultural productivity growth and alleviated China’s subsistence food constraints, which in turn created surplus labour for later development in the non-agriculture sector. McMillan et al. (1989) showed that over 75 per cent of the measured productivity increase in China’s agriculture after 1978 was due to the Household Responsibility System and the remainder to price increases. This reform signified a significant transition in China’s economic model and opened a new era for the country’s agricultural economy and rural development.

The second concurrent policy was allowing the entry of non-state-owned enterprises, such as collective and small-scale individual businesses. TVEs then flourished and expanded remarkably from the late 1980s, absorbing a great amount of surplus rural labour. In the early years of the reform period, the relocation of labour from agriculture to non-agriculture was mainly within rural areas. According to Zhu (2012), from 1978 to 1984, more than 49 million workers (19 per cent of the total work force) reallocated out of the agricultural sector, and most of them went to work in the rural industrial enterprises set up by township and village-level governments (TVEs).

In terms of inclusive growth policies, the Chinese government implemented an education policy that had long-run effects—the Compulsory School Law in 1986. It stipulated that all children over seven years had to enter primary school and complete the nine years of free schooling. This far-reaching policy improved the average education of the rural population and of females. Human capital accumulation laid the foundation for the manufacturing boom in the 2000s. The *Hukou* system also witnessed relaxation in the mid-1980s so that rural residents could find employment in urban areas without changing *Hukou* status, but, until the end of this period, strict control of migration remained.

5.2 Privatization: growth in private enterprises

The **second** stage of structural transformation, between the early 1990s and 2001, featured the restructuring of ownership of SOEs (or privatization) in urban areas. Before the economic reforms in 1978, SOEs accounted for 80 per cent of the total urban employment and more than 75 per cent of industrial output (Zhu 2012), and such dominance had led to the low efficiency of the urban economy and had limited the occurrence of large-scale rural-urban migration. The situation persisted into the early 1990s, despite efforts to reform the urban sector.⁷ The 14th Congress of the Chinese Communist Party (CCCP) in 1992 set up the goal of China's economic reform as establishing the socialist market economy, which meant that the role of non-public ownerships was officially recognized. Starting from 1992, the government took a series of measures to implement the ownership reform and to expand the market economy. The labour force started to be reallocated from the state or collectively owned enterprises to the private sectors from then, but still at a low pace. The 15th CCCP held in 1997 accelerated the process by further legalizing the development of private enterprises and by initiating a massive restructuring of the SOEs. Between 1995 and 2001, the state sector's share of total employment declined from 17 per cent to 12 per cent (Zhu 2012). With a reduction in legal barriers, private enterprises grew remarkably. Meanwhile, the SOE reforms also necessitated a large body of laid-off or unemployed workers (Appleton et al. 2004).

We plot the employment shares in enterprises of different ownerships in urban areas in Figure 14. Clearly, at the beginning of the 1980s, almost all workers worked in the publicly owned enterprises including SOEs and COEs. From the early 1990s, private enterprises increased in relative shares. As a result of the ownership restructuring reform, there was a sharp decline in employment in the public sectors after 1997 and it persisted into the 2010s. With the reduction of legal barriers and ideological concerns, private enterprises grew rapidly in urban areas. By 2016, it accounted for almost two-thirds of the total employment in urban areas. The increased importance of the private sector in urban economy was essential for the structural transformation and the inclusiveness of economic transition.

First, ownership reform had a far-reaching impact on urban inequality because the income levels differed across enterprises of different ownerships and wage inequality was higher in the private than in the public sector. As increasing numbers of the labour force found employment in the private sector, wage inequality increased significantly. Whalley and Xing (2016) quantified this impact using the CHIP data. They found that ownership restructuring caused 40 per cent and 65 per cent of the increases in wage inequality measured as variance of log wages for the period of 1995–2002 and 2002–07, respectively. However, the results are sensitive to the inequality measure, and the corresponding contributions would be 16 per cent and 18 per cent if they used Gini coefficients.

Second, the SOE reforms caused unemployment and employment pressure for urban workers, which explains the low wage growth during this period and the narrowing of the rural-urban income gap. However, the reform made room for private enterprises and for rural-urban migration, which started to increase, especially in the late 1990s. In this period, there was also huge growth in agricultural labour productivity, pushing surplus labour away from agriculture. Government interventions in the agricultural sector were significantly reduced, and market liberalization provided farmers with strong incentives to adopt new technologies. As a result, the annual growth rate of total factor productivity in agriculture reached 5.10 per cent between 1988

⁷ The main reformed areas include empowering the decision making of SOEs, increasing employment flexibility of enterprises, and encouraging the development of non-SOEs in urban areas (Cai et al. 2009).

and 1998 (Zhu 2012). Agriculture's share of total employment reduced from 60 per cent in 1990 to 50 per cent in 2000 (see Figure 2b or Figure 3). According to Cao and Birchenall (2013), agricultural total factor productivity growth accounted for the majority of the output and employment redistribution toward non-agriculture (from 1989 to 2009).

A major policy, which had the dual role of promoting structural transformation and inclusive growth, was the expansion of higher education in 1999. This policy was first implemented to postpone the entrance of youths into the labour market to extenuate the employment pressure caused by the SOE reform and the impact of the Asian financial crisis. Chinese households embraced this policy enthusiastically, and the expansion persisted into the 2010s, changing the Chinese labour market tremendously. We will discuss the further expansion later in more detail.

5.3 Globalization: growth in the export sector

The **third** stage of structural transformation, 2001–10, featured trade liberalization. This period started with China's entrance into the WTO. From then, trade shares in total GDP increased steadily until 2008 (Figure 15). Taken together with rising manufacturing employment in the mid-2000s, this clearly shows that export growth was a key driver for shifting the labour force away from agriculture and moving to modern sectors (Erten and Leight 2019). The crucial role of trade and globalization in the process of structural transformation has also been documented in a variety of other contexts, e.g. in South Korea during the last 50 years and the United Kingdom in the nineteenth century.

The Chinese government has made continuous efforts to open the door to foreign businesses and to embrace globalization since 1978. Wan et al. (2007) gave a brief description of China's journey to globalization in terms of trade and tourism, foreign direct investment (FDI), and movement of people, etc. After joining the WTO, China further reduced the tariff rates for more than 5,000 products in 2002. The reduced tariff barrier was accompanied by substantial trade deregulation, a narrowing of the scope of quota limits, and increasing inflow of FDI.

Figure 15 reports the trade activity trend as a share of GDP in China. The most significant feature of the trade activity is that China's entry into the WTO was a watershed in its globalization process (Branstetter and Lardy 2006). Throughout the 1990s, the share of imports and exports in GDP both stayed between 15 per cent and 20 per cent. After China's entry into the WTO, both export and import shares increased sharply in a relatively short period of time. The export share in GDP quickly rose to 36.6 per cent in 2006 from 20 per cent in 2001, and the import share rose to 29.9 per cent in 2006. The rapid growth in exports created substantial job opportunities and led to the movement of the large rural labour force out of the agricultural sector (Erten and Leight 2019).

The composition of exports has also been changing over time. As shown in Figure 16, the share of manufacturing goods in export products was 75.7 per cent in 1991, which increased to 88.6 per cent in 2001 and to 93.6 per cent in 2010. There is no doubt that China became the world's factory in the early 2000s. However, more recent findings suggest that China's export products are becoming more sophisticated, increasingly moving away from agriculture and textiles to machinery, electronics, and assembly (Amiti and Freund 2010).

Another feature of China's trade is the unevenness of regional exposure to globalization. As illustrated in Table 1, most of the trade activities were concentrated in the coastal regions. The share of exports in GDP was much higher in coastal provinces such as Beijing, Fujian, Guangdong, Jiangsu, Shanghai, Tianjin, and Zhejiang. In central and western provinces, export shares were

much lower, seldom more than 10 per cent. Import shares showed similar patterns. In addition, growth in trade activities was also higher in coastal provinces than in non-coastal provinces. Take Jiangsu as an example. Its export/GDP ratio was 30 per cent in 2002, and the ratio more than doubled in 2007, reaching 61 per cent. The differential in exposure to globalization led to different patterns of structural changes and urbanization.

During the rapid economic growth period, local government officials, driven by promotion incentives, were actively engaged in competition over GDP growth (Yu, et al. 2016). They competed for foreign or domestic capital investment by offering incentives such as low tax rates and unregulated labour markets. This resulted in a large loss of efficiency. Due to a lack of labour protection policies, the majority of rural migrant workers in urban manufacturing firms were living in poor environments and receiving low pay. And more broadly, the large rural and disadvantaged population groups had been left behind and forgotten. Social inequality was increasingly becoming a salient issue.

In the late 2000s, the Chinese government was concerned more about the widening wealth and income gaps and adopted more egalitarian and populist policies. These welfare policies covered education, labour protection, medical insurance, and pensions, among others. First, education expansion, particularly that in higher education, continued. Second, in the labour market, the government enacted and strengthened the enforcement of the Labour Contract Law in 2007 and frequently increased minimum wages. Third, China had achieved universal health care coverage and significantly increased old-age pension coverage by the late-2000s. Lastly, the government strengthened the poverty eradication policies and implemented the ‘poverty-alleviation with precision (*JingZhunFuPin*) programme’, which aims to eradicate absolute poverty by 2020.

5.4 *Hukou* reform and rural-urban migration

The *Hukou* system has been a fundamental institutional arrangement in China, and its reform, far from being once and for all, continued in the whole reform period. In the early phase of the 1978–91 period, the *Hukou* was restrictive so that surplus rural labour could not move to cities where the employment pressure was already high. The government started to relax the *Hukou* restriction from the mid-1980s, when the demand for surplus rural labour increased in urban areas due to the increased autonomy of SOEs and the emergence of the private economy. However, as the economy was suffering the lowest growth since 1978, the relaxation trend reversed in the late-1980s (see Cai et al. 2009). Then, the 1992–2001 period (or, roughly speaking, the 1990s) witnessed a series of reforms of the *Hukou* system when the government realized that it would be unachievable to block migration in a socialist market economy. The government started to emphasize the management of rural-urban migration (who were allowed to move without changing their *Hukou* status), and the number of migrants increased.

The most significant increase in the number of migrants happened after China’s entry into the WTO in 2002, the third period in our analysis. As stated earlier, the regional gap increased significantly in the following years, encouraging a large number of rural residents to migrate. These migrants have often been seen as one of the significant comparative advantages of the Chinese economy. The cheap labour of migrants proved crucial for the development of the receiving regions, which explains why they were allowed access to cities. On the other hand, as urban income was essential for raising the rural living standard, the government of sending regions encouraged migration. As a consequence, rural-urban migration reduced rural poverty significantly. However, changing *Hukou* status remained difficult, and migrants without local *Hukou* status were not entitled to many local benefits and were vulnerable to expulsion.

Figure 17 shows that by 2008, the number of rural migrant workers had reached 140 million and increased steadily to 172 million in 2017. However, as early as 2003, there was growing concern that China might be running out of surplus labour, and that this would threaten the competitiveness of the country's export sector and the sustainability of its high economic growth (Knight et al. 2011; Zhang et al. 2011). Li and Xing (2019) presented a range of summary statistics on migrant workers that indicated a decline in their growth rate. The number of migrant workers increased by 1.9 per cent in 2008 and by 5.4 per cent in 2009. In subsequent years, growth rates declined, falling to 1.3 per cent in 2015. When we consider two groups of migrants separately—those who move outside townships and those who move within them—the number of migrants who work outside a township has long grown significantly less than the number of migrants who stay within a township (see Figure 17). Between 2014 and 2015, the growth rate in the number of out-of-township migrants was only 0.5 per cent. Correspondingly, the share of inter-provincial migrants (those who move to a province other than the province of their *Hukou* registration) declined from 51 per cent in 2009 to 46 per cent in 2015. The central provinces witnessed the largest decline (8 percentage points) in the share of people leaving their province of origin, followed by the western provinces. This evidence indicates that rural workers from inland cities have become reluctant to move to coastal cities.

Over the last ten years, the typical demographics of migrant workers have also changed significantly, as shown in Figure 18. The age of the average migrant worker has increased significantly, from 34 in 2008 to 38.6 in 2015. Over the same period, the share of migrant workers aged 16 to 20 decreased from 11 per cent to 4 per cent, and the share of those aged above 40 increased from 30 per cent to 44 per cent. Today, migrant workers are still generally less educated than the urban labour force, but their education levels have increased rapidly. By 2015, a quarter of rural-to-urban migrants had at least a high school degree, and 8.3 per cent of them had a college degree.

5.5 Higher education expansion and the increase in educated workers

China has increased its supply of educated labour in response to the rising demand for skilled labour. From 1990 to 2015, China's GDP grew at an annual rate of 10 per cent, and private and public expenditures on education grew even more rapidly. In the mid-1990s, government expenditures on education amounted to less than 2.5 per cent of GDP. By 2011, they had reached 4 per cent of GDP. As a result of the rising expenditure on education by both the Chinese government and individual households, the average education level of the Chinese labour force has increased rapidly.

Figure 19 shows the number of new college students and college graduates each year between 1978 and 2017. During this period and especially in the most recent decade, the number of graduates with tertiary degrees increased tremendously. In 1990, 0.6 million students graduated from higher education institutions (HEIs). In 2017, the number of HEI graduates reached over 7 million.

Figure 20 shows, by age group, the share of college-educated graduates in the labour force by age groups in 2000, 2010, and 2015. In all years, the younger generations attained higher educational levels than the older ones. In 2000, for example, around 3 per cent of those aged 60 to 64 had a college degree. This was the case for around 10 per cent of those aged 20 to 24. The educational level was significantly higher and the average difference in educational attainment between generations was even more pronounced in 2015. According to data from the 2015 '1 per cent population survey' (National Bureau of Statistics, 2016a), in that year over 50 per cent of those aged 20 to 24 had a college degree.

The rapid higher education expansion transformed China's higher education from elite education to mass education. When globalization and technological change increased the demand for skilled workers in the following years, students of different socio-economic backgrounds were able to benefit from economic growth. More importantly, the college expansion policy also advanced rural-urban mobility because rural residents with a college degree could change their *Hukou* status to urban *Hukou*. Therefore, this policy promoted inclusive growth.

6 Future trajectories of structural transformation and inclusive growth in China

Based on the recent socio-economic policies undertaken by the Chinese government and the economic and political environments facing China, we next predict the future trajectory of the relationship between structural transformation and inclusive growth.

6.1 Structural transformation

As China's overall growth rate declines, the economy is becoming more advanced and will continue to transform structurally. First, the declining trend of agricultural employment will continue. The share of agricultural employment decreased from 34 per cent to 27 per cent from 2011 to 2017 and has become smaller than employment in the services sector since 2011. There is no doubt that labour will keep shifting away from agriculture and rural areas.

Second, economic growth will be more reliant on domestic consumption than on exports. After two decades of rapid growth, China's exports are facing more protectionism, uncertainty, and market saturation. On the production side, China is also losing its comparative advantage in labour costs, which is being adversely affected by rising land and housing prices in coastal regions. Because export goods are mainly manufactured products, the decrease in the relative importance of exports will reduce the share of the manufacturing industry in the economy. As reflected in Figure 3, manufacturing employment shares have gradually declined since 2012.

Third, automation and the use of robots are rising in all industries, especially in the manufacturing sectors (Cheng et al. 2019). Automation is releasing a large amount of unskilled and medium-skilled labour, which will transfer into the services sector. Consequently, the services sector will outgrow the manufacturing sector in terms of their shares of value and employment, which is signalled by the rapidly growing gig economy in recent years. For instance, the online retail, logistics, and food delivery, and ride-hailing services (DiDi) have created an enormous amount of employment. As more service jobs are usually associated with a higher urbanization rate, the growing services sector will push the urbanization rate to a higher level in the coming years.

6.2 Inclusive growth

As we discussed earlier, inequality seems to have plateaued and started declining from the late 2000s. Whether this downward trend will continue or reverse in the future will depend on the interaction of the different forces that shape structural transformation.

First, the rise of the service economy and a lower dependency on trade have different impacts on inequality. On the one hand, the rise of the service economy creates numerous job opportunities for workers at both ends of the skill spectrum. According to a model proposed by Buera and Kaboski (2012), as the service sector grows, consumption demand will shift toward skill-intensive output, hence high-skilled labour. This will lead to a higher skill premium and higher income inequality. On the other hand, the concurrent change of a lower dependency on exports may push

inequality downward. Many studies have shown that a higher exposure to and reliance on trade leads to higher inequality.

Second, due to the ‘poverty reduction with precision’ campaign, absolute poverty is very likely to be eradicated in the new era, but relative poverty will remain. Achieving upgrading structural transformation and inclusive growth during the process of upgrading structural transformation also strongly depends on the education and migration opportunities of the rural population. A recent study suggests the decline in the cost of migration (and trade) accounted for 36 per cent of the aggregate labour productivity growth between 2000 and 2005 in China (Tombe and Zhu 2019). Today, *Hukou* is still strictly applied in many large cities. Many rural-urban migrant workers have to leave their family members at home, among whom are millions of ‘left-behind’ children. Given the still high migration costs facing the rural population, there are still large potential gains to be had from further reducing the *Hukou* barrier. Rural-urban migration also poses challenges to the education of the next generation. The cognitive abilities of the left-behind children are significantly and adversely affected by the absence of their parents (Zhang et al. 2014). Addressing such issues related to migration is crucial for inclusive growth and upgrading structural transformations.

7 Conclusions

China has achieved tremendous economic development since its reform and opening-up policy in 1978. The economy has transformed from an agricultural to an industrialized economy and is now further shifting toward a service economy. We have documented the transition process for each period, highlighting the macro drivers of the economic transition and government policies. To summarize, the transition started in 1978, following the introduction of the Household Responsibility System, which greatly increased agricultural productivity, and the *Hukou* reform, which relaxed rural-urban migration restrictions. The second transition period, from the early 1990s until 2001, featured the privatization of SOEs. The third period, from China’s entry into the WTO in 2001 until 2010, was a critical period for the country to achieve upgrading structural transformation from an agricultural to an industrialized economy. Driven by growth in exports, globalization, and cheap labour costs, China enjoyed a manufacturing boom during this stage, along with higher urbanization rates and the expansion of higher education. Since the 2010s, the economy has entered a new era of declining manufacturing and exports and a growing services sector.

China has also achieved great success in reducing poverty rates in the whole reform period. However, income inequality has increased dramatically. Between the early 1980s and early 2000s, the income and wealth gaps were widening. Since the late 2000s, inequality seems to have plateaued, first showing a slight decline and then rebounding slightly. Therefore, it still seems early to conclude that China’s development is an exemplar of the Kuznets hypothesis.

In the future, as the economy further transitions into a service economy, the tension between economic transition and inclusive growth will become stronger. Unless China keeps reforming the existing social security policies and public finance system, and pays more attention to disadvantaged groups, social inequality will probably worsen and inclusive growth will be an illusion.

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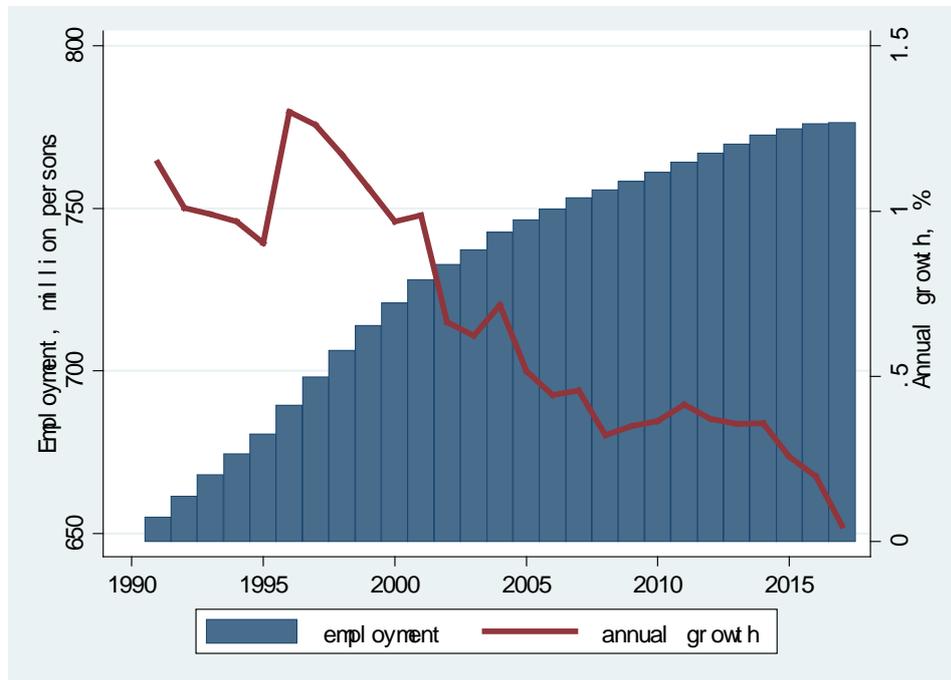
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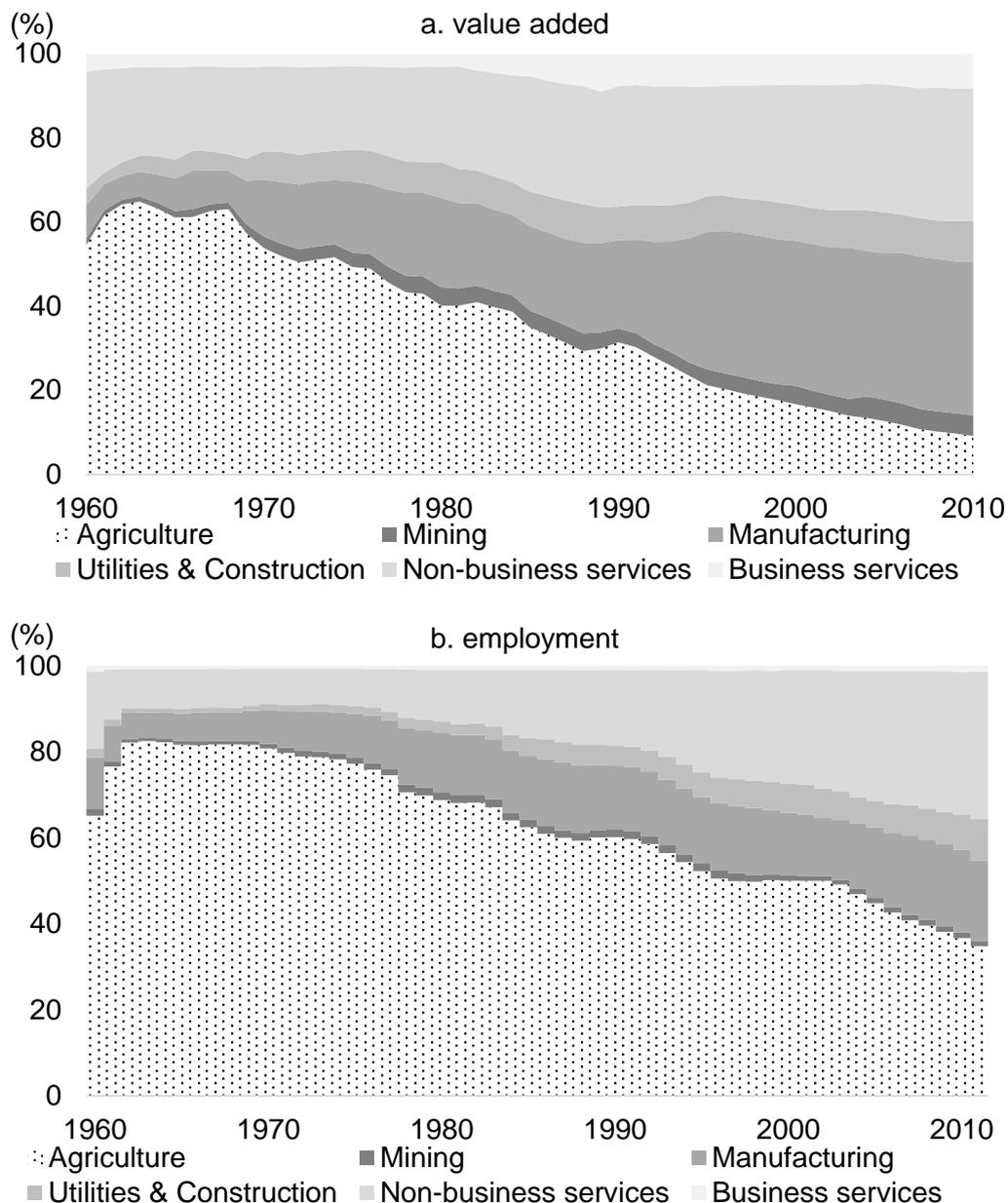
Figures and tables

Figure 1: Employment trends, 1990–2017



Source: authors' calculations based on statistics from China Statistical Yearbook (NBS 2018a).

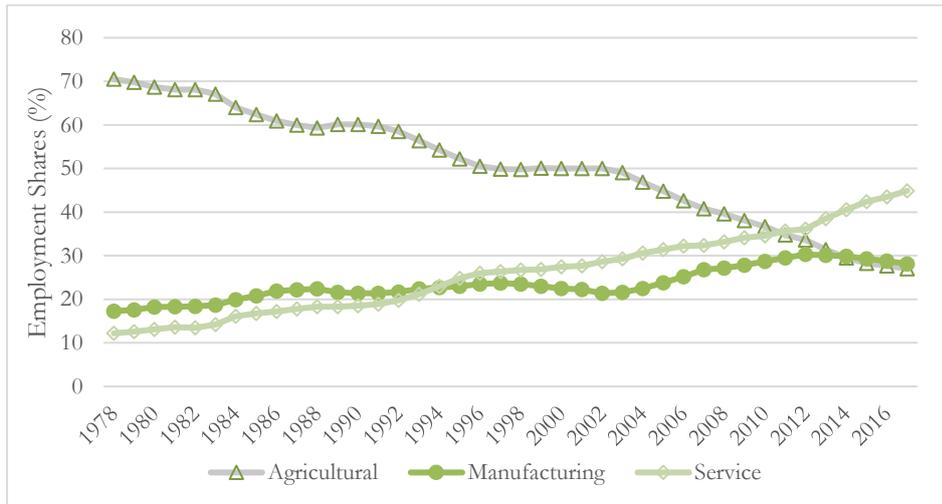
Figure 2: Value added and employment shares by industry in China, 1960–2010



Note: business services: financial intermediation, renting, business activities; Non-business services: (a) wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants; (b) transport, storage, communications; (c) public administration, defence, education, health, social work; and (d) other community, social and personal service activities, activities of private households. This note applies to Figures 2 and 6.

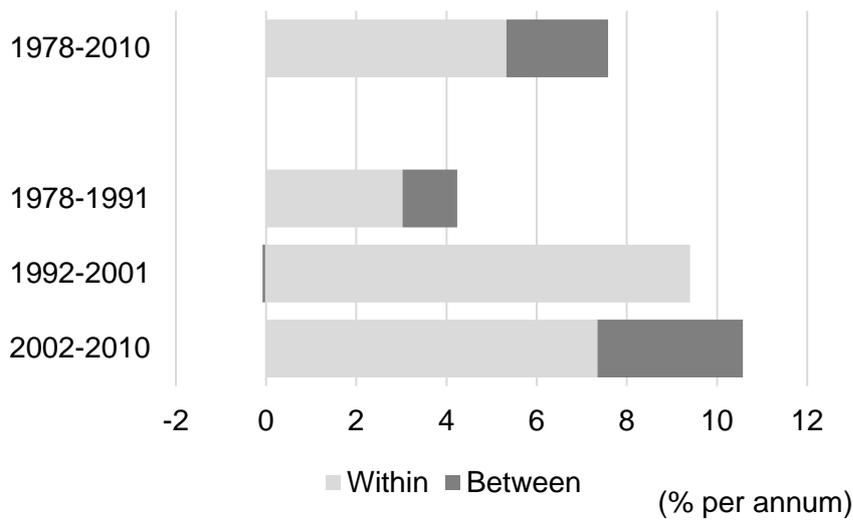
Source: authors' illustration based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015).

Figure 3: Sectoral employment shares, 1978–2017



Source: authors' illustration based on China Statistical Yearbook (NBS 2018a).

Figure 4: Decomposition of labour productivity growth, China, 1978–2010



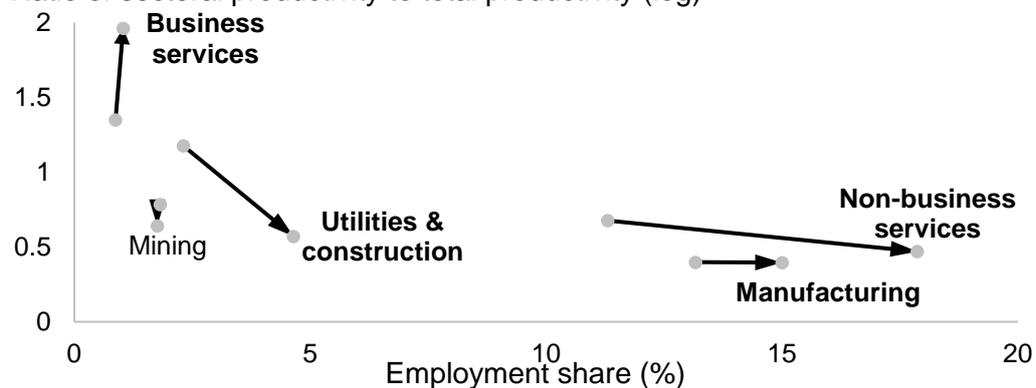
Note: decomposition uses the methodology of McMillan and Rodrik (2011).

Source: authors' illustration based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015).

Figure 5: Changes in labour productivity and employment share, China, 1978–2010

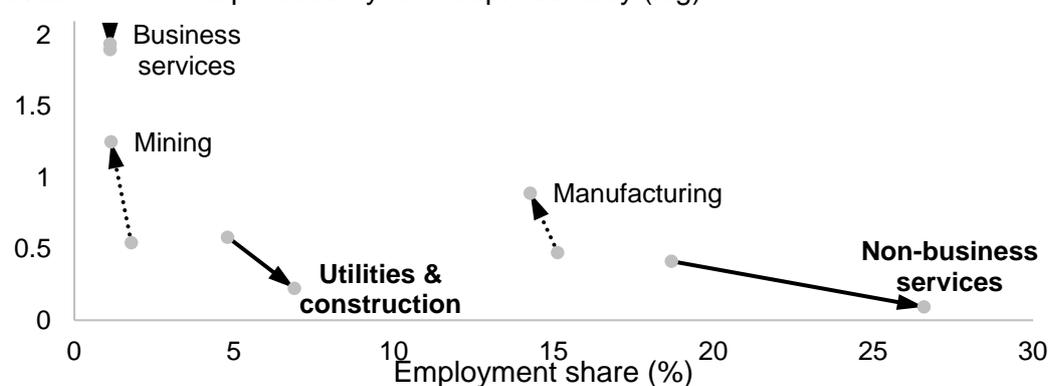
a. 1978–1991

Ratio of sectoral productivity to total productivity (log)



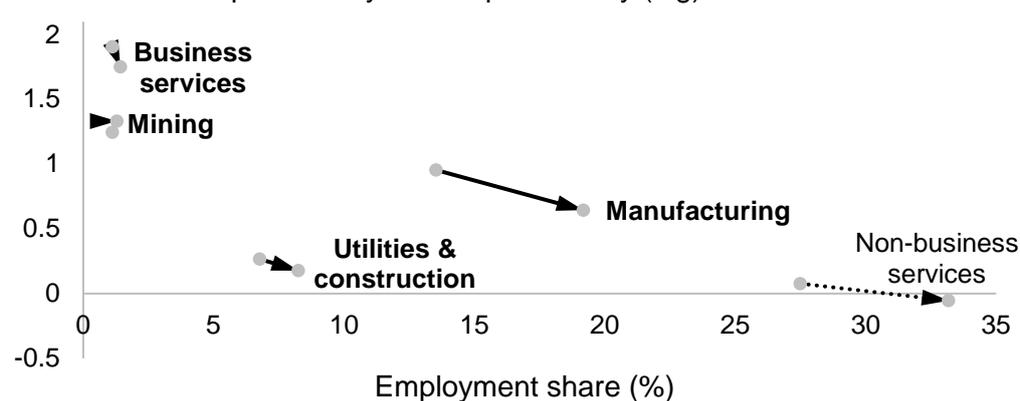
b. 1992–2001

Ratio of sectoral productivity to total productivity (log)



c. 2002–2010

Ratio of sectoral productivity to total productivity (log)

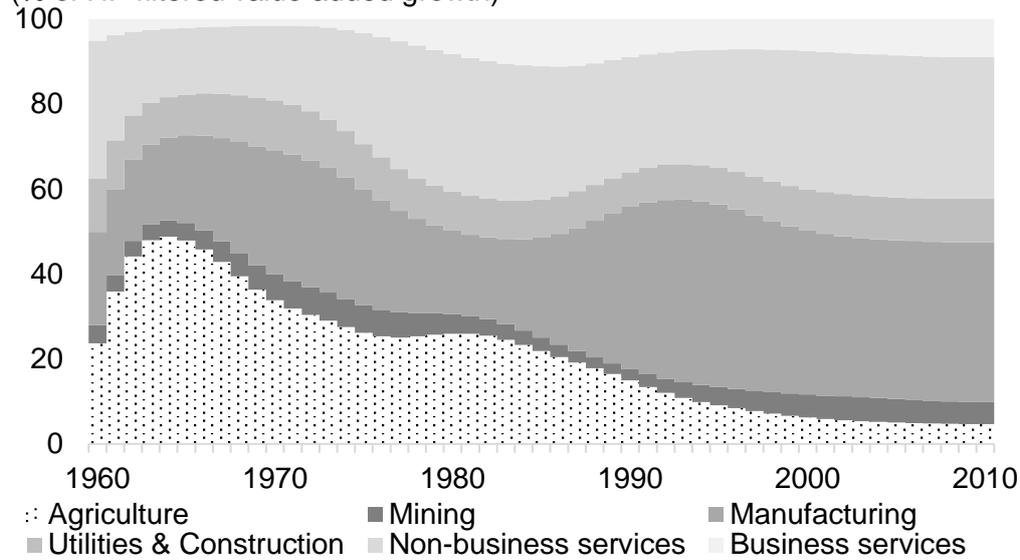


Note: sectors with higher than economy-wide average labour productivity that experienced an increase in employment share are in bold.

Source: authors' illustration based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015).

Figure 6: Growth decomposition by sector, China, 1960–2010

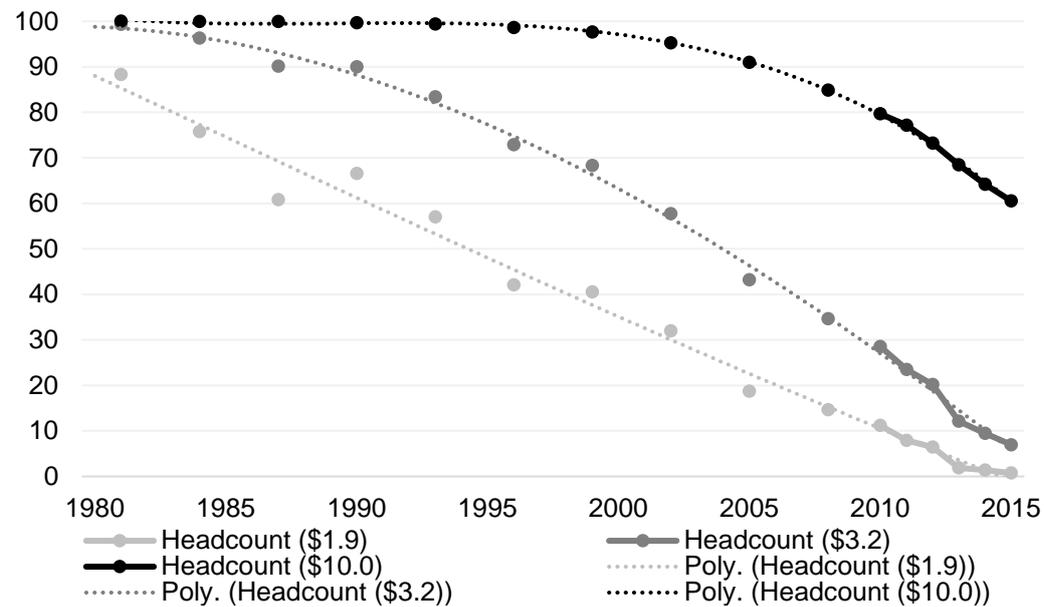
(% of HP filtered value added growth)



Source: authors' illustration based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015).

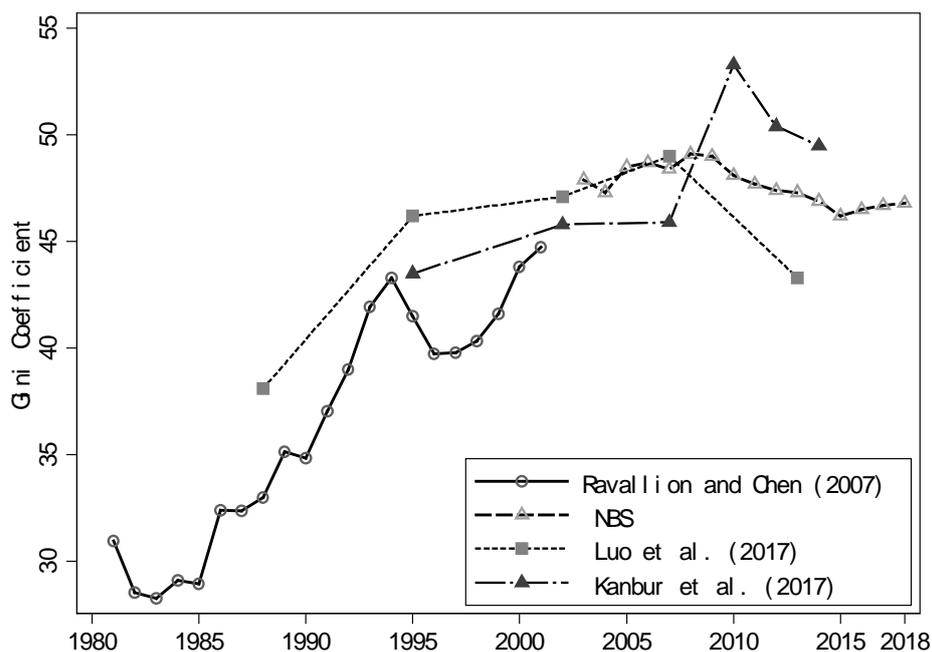
Figure 7: Poverty rates in China, 1981–2015

(%)



Source: authors' illustration based on Povcalnet Version March 2019 (World Bank 2019b).

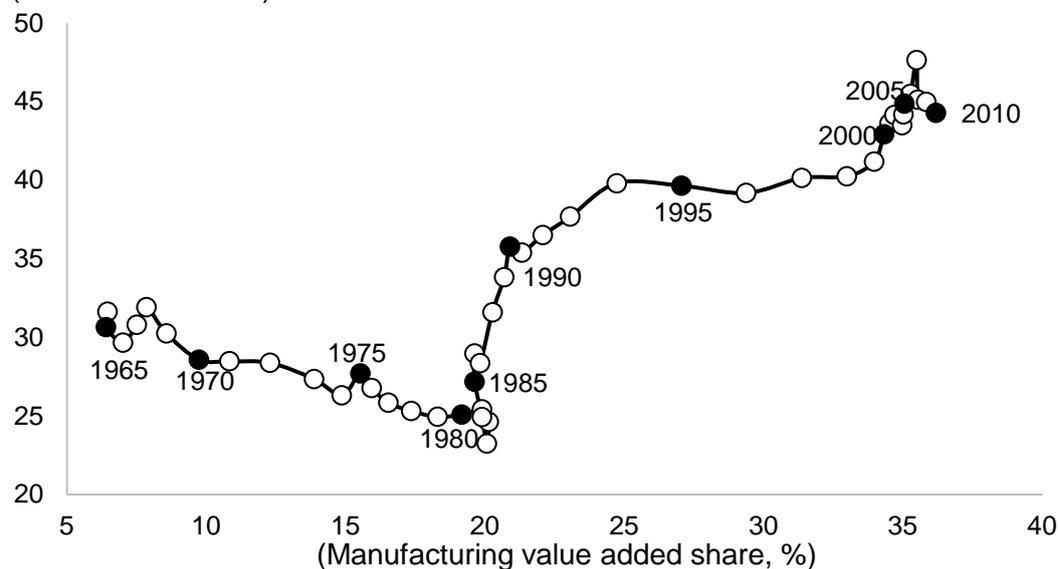
Figure 8: China's Gini coefficient of income, 1981–2018



Source: Ravallion and Chen (2007), Luo et al. (2018), Kanbur et al. (2017), and NBS (2019b).

Figure 9: Gross income Gini and manufacturing value added share, China, 1964–2010

(Gross income Gini)

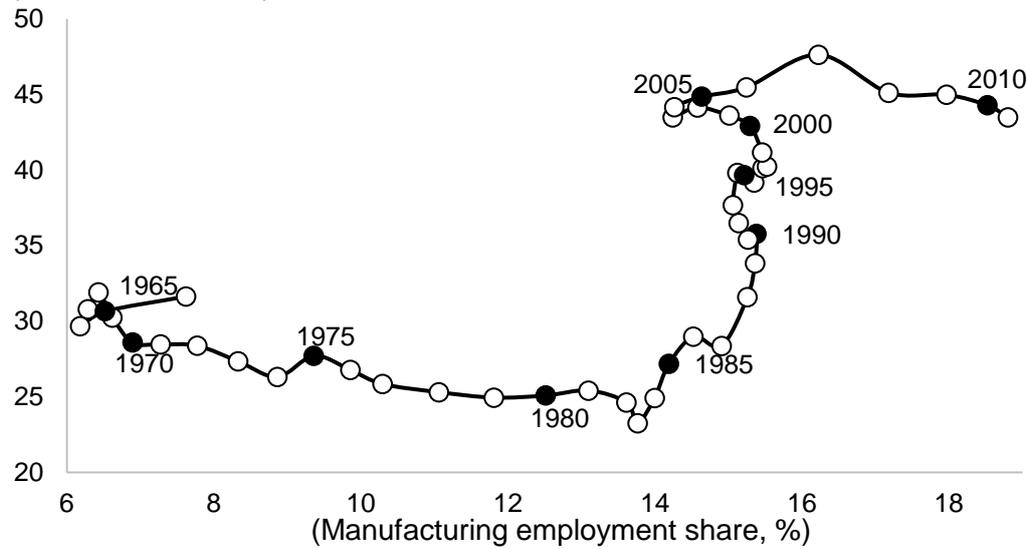


Notes: (i) the missing Gini coefficients were calculated using linear interpolation. (ii) Manufacturing value added and employment shares are five-year moving averages. For example, the data for 1975 is an average of data for 1971–1975. See Figures 2 for the original data. These notes apply to Figures 9, 10, 11 and 12.

Source: authors' calculations based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015) and UNU-WIDER's World Income Inequality Database (WIID).

Figure 10: Gross income Gini and manufacturing employment share, China, 1964–2011

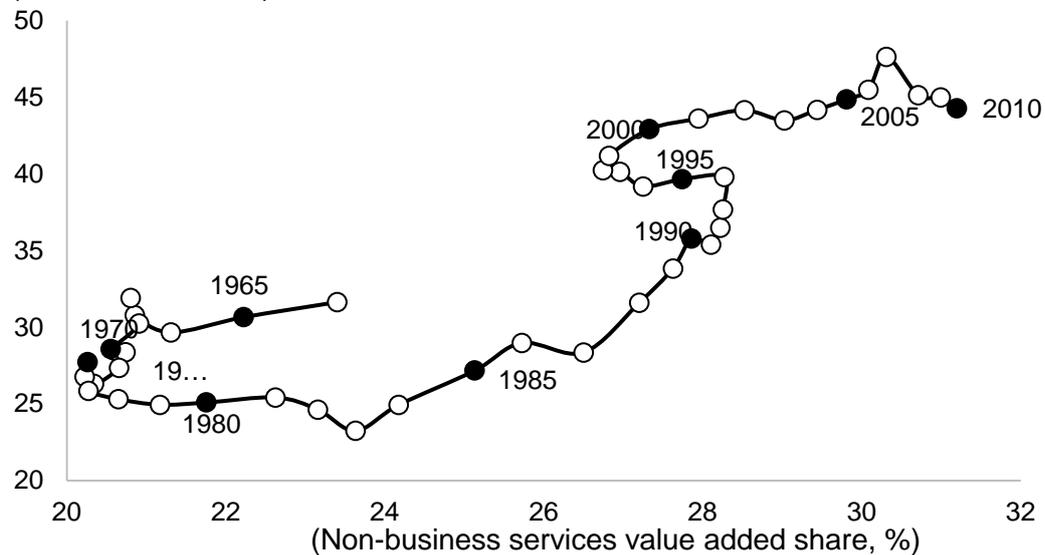
(Gross income Gini)



Source: authors' calculations based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015) and WIID (UNU-WIDER).

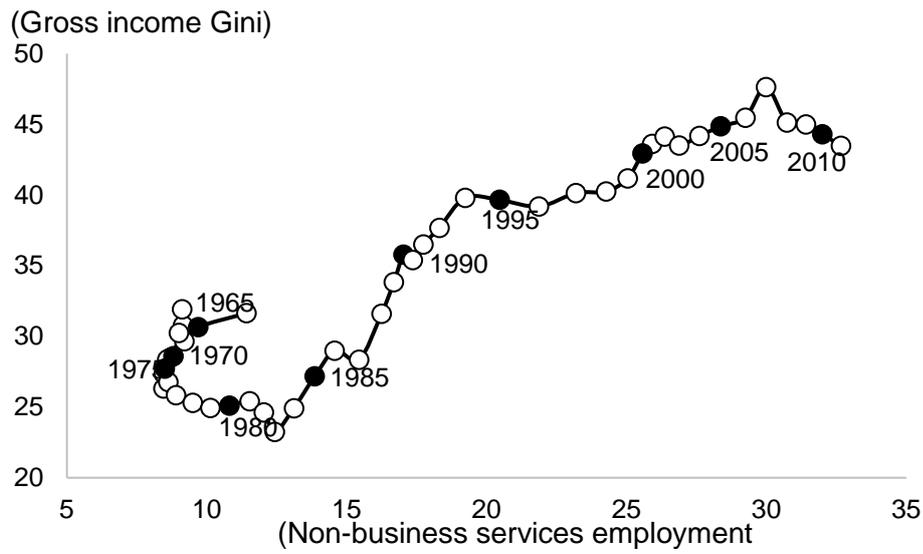
Figure 11: Gross income Gini and non-business services value added share, China, 1964–2010

(Gross income Gini)



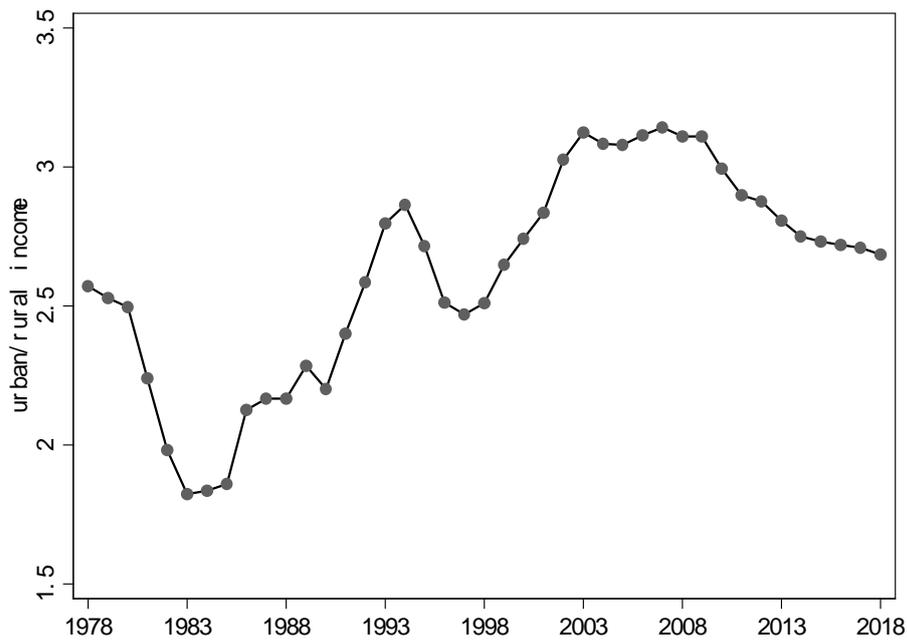
Source: authors' calculations based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015) and WIID (UNU-WIDER).

Figure 12: Gross income Gini and non-business services employment share, China, 1964–2011



Source: authors' calculations based on GGDC 10-Sector Database Version 2015 (Timmer et al. 2015) and WIID (UNU-WIDER).

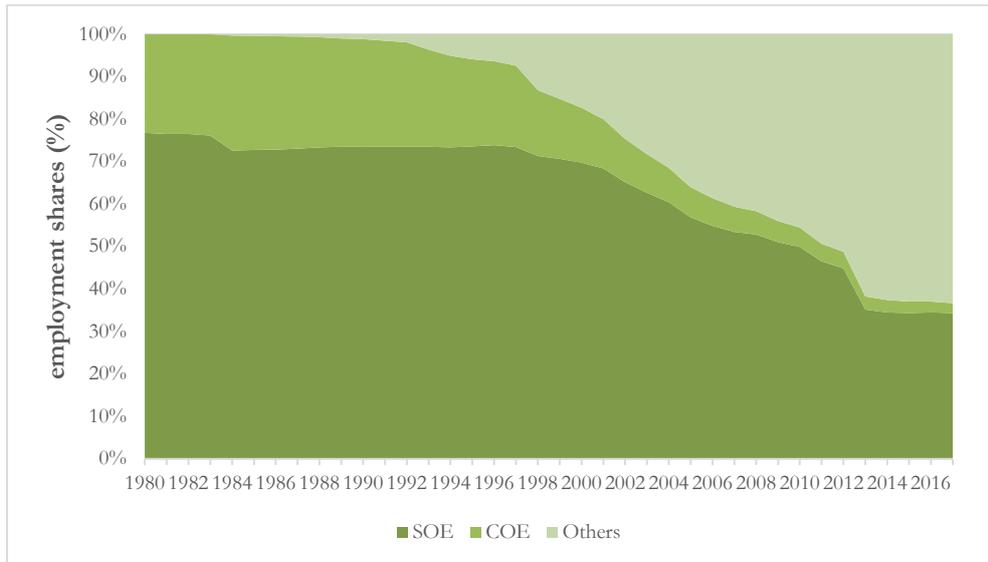
Figure 13: Rural-urban inequality in China, 1978–2018



Note: the vertical axis is the ratio of per capita disposable income in urban areas divided by per capita disposable income in rural areas.

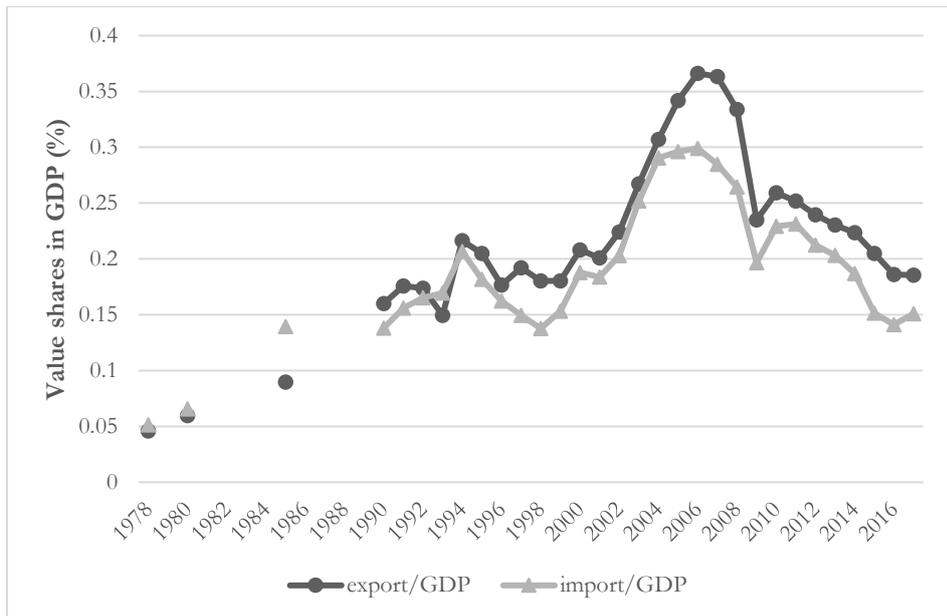
Source: authors' illustration based on China Statistical Yearbooks (NBS 2013, 2019a).

Figure 14: Employment shares in different ownerships in urban China



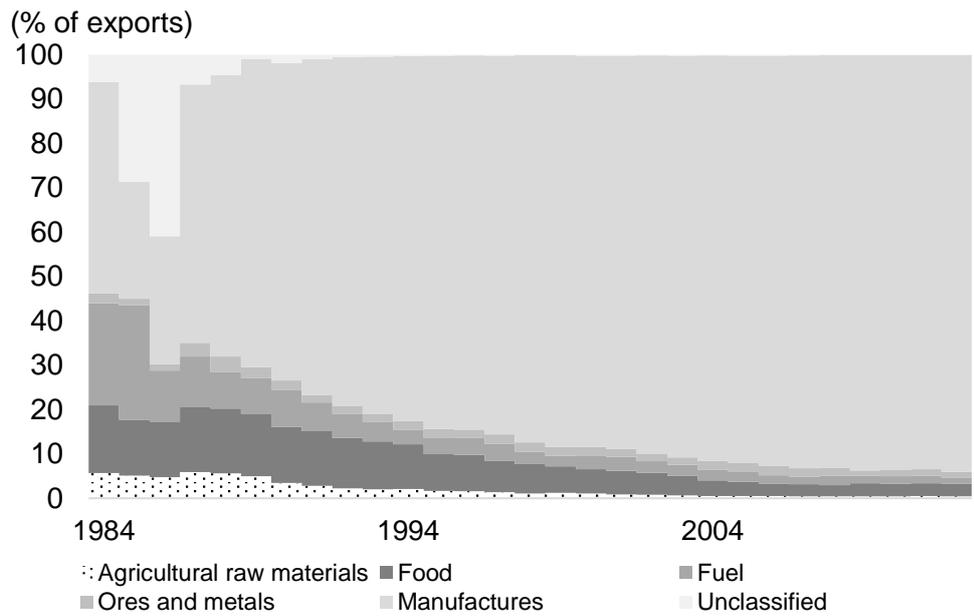
Source: authors' illustration based on China Statistical Yearbook (NBS 2018a).

Figure 15: The total value of exports and imports relative to GDP



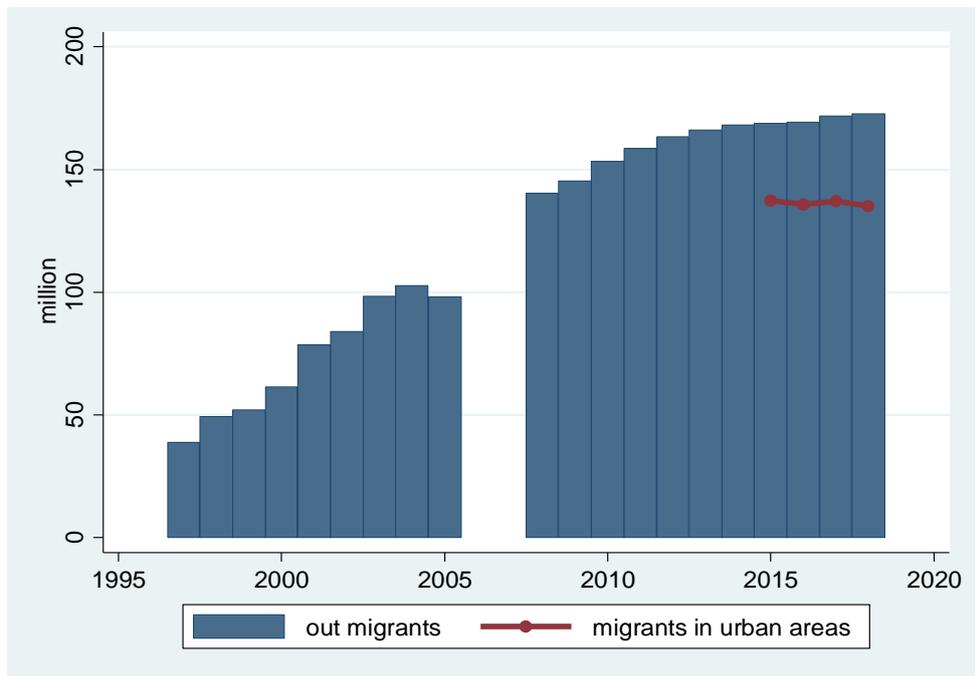
Source: authors' illustration based on China Statistical Yearbook (NBS 2018a).

Figure 16: Export composition, China, 1984–2012



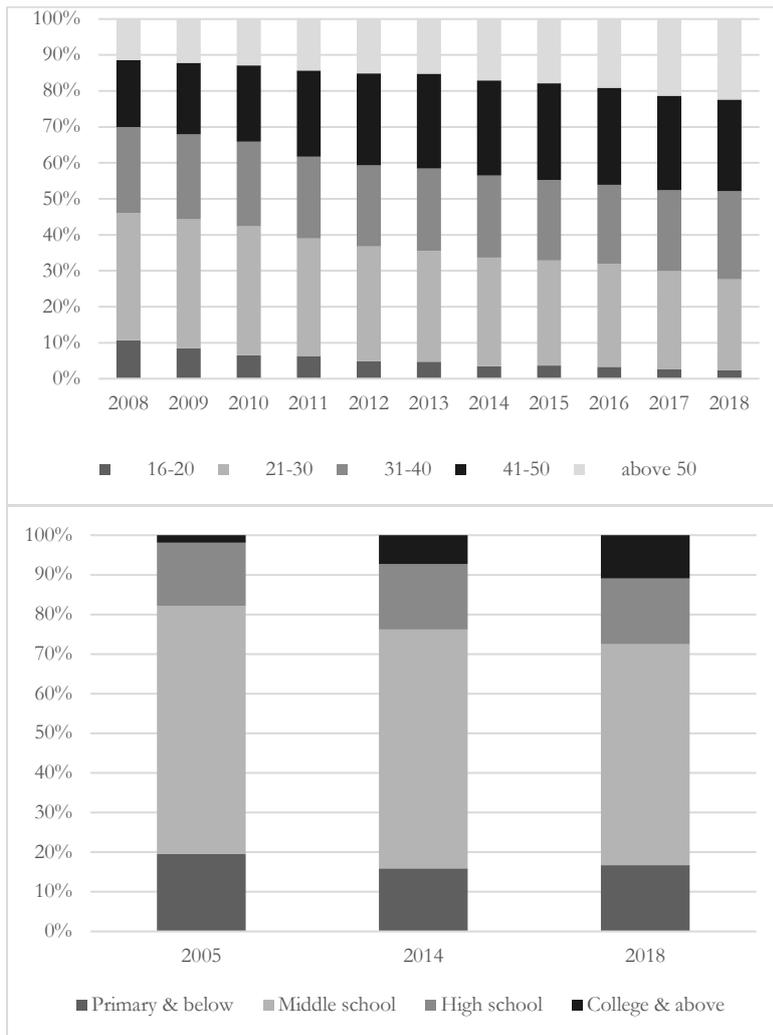
Source: authors' illustration based on World Development Indicators Version June 2019 (World Bank 2019a).

Figure 17: Number of rural-urban migrants



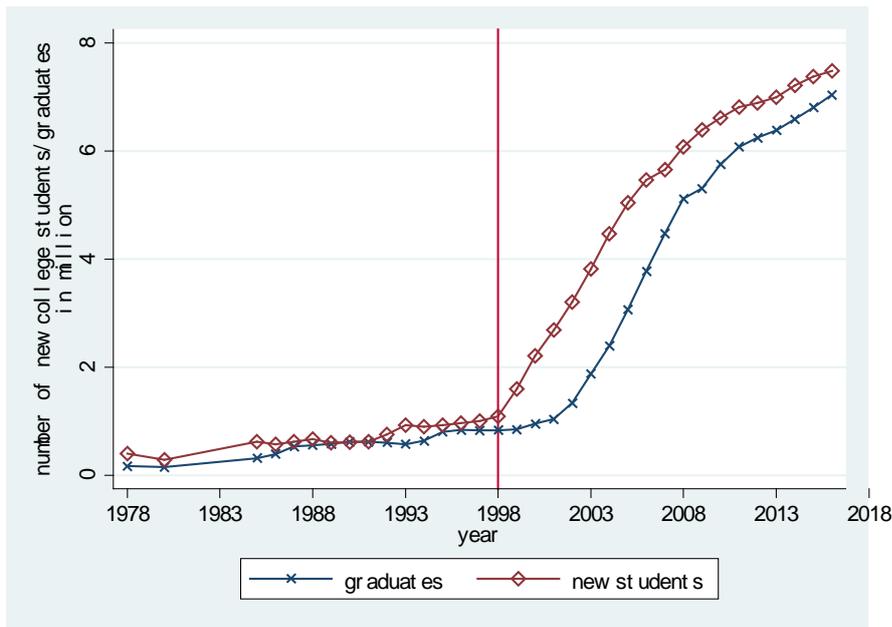
Source: authors' calculations based on statistics from Cai and Wang (2007) and Migrants Monitoring Survey Reports released by NBS (2008b, 2009, 2010, 2011, 2012b, 2013, 2014, 2015, 2016b, 2017, 2018b).

Figure 18: Age and education structure of rural migrants



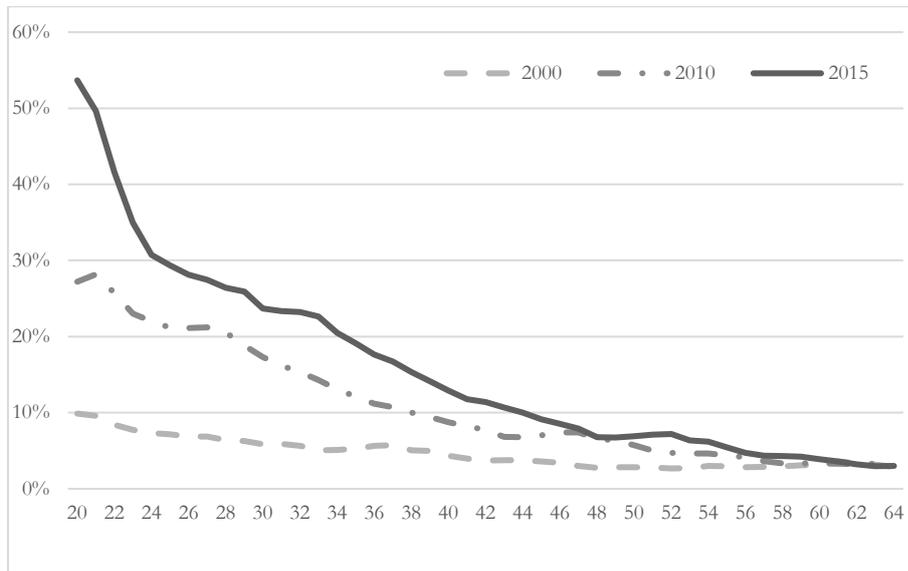
Source: authors' calculations based on a random sample of the 2005 1% population survey and Migrants Monitoring Survey Reports released by NBS (2008b, 2009, 2010, 2011, 2012b, 2013, 2014, 2015, 2016b, 2017, 2018b)

Figure 19: Number of new college students and college graduates



Source: authors' calculations based on statistics from China Statistical Yearbook (NBS 2018a).

Figure 20: Share of population with tertiary degrees



Source: authors' calculations based on statistics from NBS (2002, 2012a, 2016a).

Table 1: Exports and imports as a share of GDP by province in selected years

	Exports/GDP			Imports/GDP		
	1995	2002	2007	1995	2002	2007
Beijing	0.61	0.32	0.40	1.60	1.03	1.17
Fujian	0.31	0.31	0.41	0.25	0.19	0.20
Guangdong	0.80	0.73	0.92	0.67	0.63	0.66
Hainan	0.21	0.11	0.11	0.33	0.14	0.34
Hebei	0.08	0.06	0.09	0.03	0.03	0.05
Jiangsu	0.16	0.30	0.61	0.11	0.25	0.43
Liaoning	0.25	0.19	0.24	0.15	0.14	0.17
Shangdong	0.14	0.17	0.22	0.10	0.10	0.14
Shanghai	0.44	0.49	0.90	0.39	0.62	0.87
Tianjin	0.37	0.47	0.58	0.36	0.45	0.51
Zhejiang	0.18	0.31	0.52	0.09	0.13	0.20
AnHui	0.06	0.06	0.09	0.03	0.04	0.07
Gansu	0.05	0.04	0.05	0.04	0.02	0.11
Guangxi	0.09	0.05	0.07	0.08	0.03	0.05
Guizhou	0.06	0.03	0.04	0.03	0.02	0.02
Henan	0.04	0.03	0.04	0.02	0.01	0.02
Heilongjiang	0.05	0.04	0.13	0.05	0.05	0.05
Hubei	0.05	0.04	0.07	0.07	0.04	0.06
Hunan	0.06	0.04	0.05	0.02	0.02	0.03
Jilin	0.08	0.07	0.06	0.11	0.07	0.09
Jiangxi	0.07	0.04	0.08	0.02	0.02	0.06
InnerMongolia	0.05	0.03	0.04	0.05	0.07	0.06
Ningxia	0.08	0.08	0.10	0.03	0.03	0.05
Qinghai	0.07	0.04	0.04	0.01	0.01	0.02
Shanxi	0.09	0.07	0.09	0.02	0.03	0.07
Shaanxi	0.11	0.05	0.00	0.03	0.03	0.00
Sichuan	0.08	0.05	0.06	0.04	0.03	0.04
Tibet	0.01	0.04	0.07	0.31	0.03	0.01
Xinjiang	0.06	0.07	0.25	0.06	0.07	0.05
Yunnan	0.09	0.05	0.08	0.06	0.03	0.07
Chongqing	-	0.05	0.08	-	0.03	0.05

Source: authors' construction based on statistics from China Statistical Yearbook (NBS 2008a).

Table 2: Labour force participation rate and employment–population ratio

	1990	2000	2010	2015
Population	759.1	796.3	974.5	990.3
Total labour force (million)	650.0	667.1	711.7	
Labour force participation rate	0.85	0.83	0.77	
Labour force participation rate (female)	0.80	0.78	0.70	
Employment-to-population ratio	0.85	0.81	0.71	0.69
Employment-to-population ratio (female)	0.80	0.75	0.68	0.60
Share of labour force employed	0.99	0.96	0.97	
Unemployment rate	0.01	0.04	0.03	

Note: age range: 16–64 years old.

Source: authors' calculations using census data for 1990 and 2000. The statistics for 2010 and 2015 were calculated using the aggregate information from National Bureau of Statistics (NBS 2012a, 2016a).