International Labour Office
Geneva

Employment Policy Department

EMPLOYMENT
Working Paper No. 195

2015

The great employment transformation in China

Nomaan Majid

Employment and Labour Market Policies Branch

International
Labour
Office
Geneva

Employment Policy Department
EMPLOYMENT

2015

Working Paper No. 195

The Great Employment Transformation in China

Nomaan Majid

Employment and
Labour Market
Policies Branch

First published 2015

ILO Cataloguing in Publication Data

Majid, Nomaan

The great employment transformation in China / Nomaan Majid ; International Labour Office, Employment Policy Department, Employment and Labour Market Policies Branch. - Geneva: ILO, 2015
(Employment working paper; No. 195)

ISSN 1999-2939 (print); ISSN 1999-2947 (web pdf)

International Labour Office. Employment Policy Dept.

employment / economic growth / productivity / labour force / structural change / dual economy / wages / China

13.01.3

Printed by the ILO Geneva, Switzerland

Preface

The primary goal of the ILO is to work with member States towards achieving full and productive employment and decent work for all. This goal is elaborated in the ILO Declaration 2008 on *Social Justice for a Fair Globalization*,[1] which has been widely adopted by the international community. Comprehensive and integrated perspectives to achieve this goal are embedded in the Employment Policy Convention of 1964 (No. 122), the *Global Employment Agenda* (2003) and – in response to the 2008 global economic crisis – the *Global Jobs Pact* (2009) and the conclusions of the *Recurrent Discussion Reports on Employment* (2010 and 2014).

The Employment Policy Department (EMPLOYMENT) is engaged in global advocacy and in supporting member States in placing more and better jobs at the center of economic and social policies and growth and development strategies. Policy research and knowledge generation and dissemination are essential components of the Employment Policy Department's activities. The resulting publications include books, country policy reviews, policy and research briefs, and working papers.[2]

The *Employment Policy Working Paper* series is designed to disseminate the main findings of research on a broad range of topics undertaken by the branches of the Department. The working papers are intended to encourage the exchange of ideas and to stimulate debate. The views expressed within them are the responsibility of the authors and do not necessarily represent those of the ILO.

Azita Berar Awad
Director
Employment Policy Department

[1] See http://www.ilo.org/global/about-the-ilo/mission-and-objectives/WCMS_099766/lang--en/index.htm

[1] See http://www.ilo.org/employment

Foreword

The aim of this paper is to make an assessment of the employment situation in China at an aggregate level that is (a) supported by existing macro data related to output and labour; and (b) that is consistent with the historical information on the policy shifts that have taken place in China. The paper focuses on the employment situation in China from 1990, although as a preamble it starts with a discussion of the pre 1990 periods. It shows that given the available aggregate measures of employment, it is difficult to say much about the employment situation that accompanied growth in China in the last 25 years; although indirect evidence on income and poverty suggests that there were definite improvements. It then constructs measures of regular and non-regular employment for the Chinese economy since 1990, and examines the relationship of these measures with other indicators of the labour market and output growth. Essentially the improvement in the employment situation on which we had partial views before can be established at the aggregate level. More importantly it is with the use of these variables that particular adverse situations that occurred with respect to labour in the past can be identified and explained.

The author presents a comprehensive picture of employment at an aggregate level by analysing sectoral productivity and labour migrant flows along with trends in the new categories of employment. China has certainly improved her employment situation in the last 25 years. However, it still has a large population that is in non-regular work in both rural and urban areas. It has a growing open unemployment problem which is mostly urban. The author argues that the employment challenge for China's policy makers in today's context of relatively lower growth rates is to strive to increase the overall share of regular employment in total employment in such a way that (a) the open urban unemployment problem is meaningfully contained and then reduced; and (b) the process of labour transfer out of agriculture to non-agriculture is still freely permitted.

Iyanatul Islam
Chief
Employment and Labour Market Policies Branch

Employment Policy Department

Acknowledgements

The author is grateful to Wang Zi for careful data compilation of Chinese statistics from published documents for various years and from official websites. Pedro Oluwaseun provided statistical assistance for productivity decompositions. Thanks are due to Rong Zhang and Vicky Leung Pui Sze for translating selected Chinese texts and to Laura Schmidt for bibliographic assistance. Special thanks are due to Susanne Karine Gjonnes who gave both research and editorial support. The author is particularly grateful for comments received in a seminar held in Turin, Italy, in the summer of 2015 at the ITC-ILO, where this paper was presented. Ajit Ghose, Honorary Professor at the Institute for Human Development (IHD), New Delhi, read the draft and made very valuable suggestions. The usual disclaimer applies.

Contents

Preface iii
Foreword iv
Acknowledgements v
List of abbreviations ix
Abstract x
1. Introduction 1
2. Examining the employment situation in developing countries 2
3. The historical context of employment and growth in China 4
4. The measure of employment and its relationship to population and output 12
5. The unemployed in China: Trends and attributes 15
6. Output, income and productivity growth 17
7. Trends in regular and non-regular employment in China 22
8. Towards an historically consistent explanation of employment trends 25
9. Wages and the regularization of employment in China 30
10. Conclusions 31
Selected Bibliography 37
Annex 41
Annex A Data sources 41
Annex B Data tables 42

List of figures

Figure 1. Annual population growth rate in China, 1961-2013 6
Figure 2. Value added per worker in agriculture, 1960-2013 6
Figure 3. Employment in township and village enterprises, 1978-2011 (in millions) 7
Figure 4. Migration and income differentials in China 8
Figure 5. Internal migration in China, 1993-2013 (in millions) 8
Figure 6. Rural-urban migrant workers in China, 1990-2013 (in millions) 9
Figure 7 Value added per employed in industry (in constant US$) and employment in traditional formal enterprises (in ten thousands), 1990-2012 9
Figure 8. Rural employment as a percentage of total employment, 1990-2011 10
Figure 9. Percentage gap of employed with more than junior school education (urban China-all China), 2002-2012 10
Figure 10. Percentage of employed with more than junior school education by sector, 1996-2012 11
Figure 11. Employment share by sector, 1990-2012 11
Figure 12. Value added per employed person and employment population ratio (log) 13
Figure 13. Employment and working age population, 1990-2011 (log) 13

Figure 14 Percentage employed with more than junior school qualifications and percentage of employed over 45 years, 1996-2012 14
Figure 15. Total employment and labour force, 1990-2010 (in millions) 14
Figure 16. Labour force participation rate, 1990-2010 15
Figure 17. Registered and estimated unemployment in China, 1990-2010 (in millions) 16
Figure 18. Percentage of unemployed persons with primary education or less and percentage unemployed persons with more than junior school education, 2001-2012 16
Figure 19. Unemployment rate (estimated) and GDP per capita (constant 2005 US$) 16
Figure 20. Average GDP growth rate in China, by decade 17
Figure 21. GDP per capita in China, 1980-2012 (in constant LCU) 17
Figure 22. Real urban and rural income in China, 1978-2003 (income in 1978 constant prices) .. 18
Figure 23. Urban – rural ratio of real income, 1978-2003 18
Figure 24. Labour productivity growth in China, 1990-2012 (in constant ¥ per person) 19
Figure 25. Decomposition of labour productivity growth I, 1990-2012 21
Figure 26. Decomposition of labour productivity growth II, 1990-2012 21
Figure 27. Employment composition in China, 1990-2010 (in millions) 24
Figure 28. Regular employment as a percentage of total employment, 1990-2011 25
Figure 29. Rural employment composition in China, 1990-2010 (in millions) 25
Figure 30. Agricultural productivity (productivity index, with 1990=100) and regular rural employment as a percentage of total rural employment 26
Figure 31. Employment in TVEs as a percentage of total rural employment and regular employment as a percentage of total rural employment 27
Figure 32. Regular and non-regular urban employment, 1990-2011 (in millions) 28
Figure 33. Composition of urban regular employment in China, 1990-2011 (in millions) 28
Figure 34. Urban traditional formal employment as a percentage of regular employment and registered urban unemployment 29
Figure 35. Urban non-regular employment and rural-urban migrants without hukou 30
Figure 36. Real wages proxy in modern and traditional sectors, 1985-2012 (in ¥) 31
Figure 37. Regular employment as a percentage of total employment and GDP per capita (constant 2005 US$) 32
Figure 38. Regular employment and labour force growth rates, 1991-2012 33
Figure 39. Agriculture and services productivity index (1990=100), 1990-2012 33
Figure 40. Employment situation index (1990=100), 1990-2011 34

List of tables in annex

Table A1. Annual population growth rate in China, 1990-2013 42
Table A2. Average value added per worker in agriculture, 1990-2012 (in constant ¥) 42
Table A3. Total employment in town and village enterprises, 1990-2012 (in millions) 43
Table A4. Internal migration in China, 1993-2013 (in millions) 43
Table A5. Rural-urban migrant workers in China, 1990-2013 (in millions) 44
Table A6. Value added per employed in industry (in constant US$) and employment in traditional formal enterprises (in ten thousands), 1990-2012 44
Table A7. Rural employment as a percentage of total employment, 1990-2011 45
Table A8. Percentage of employed with education above junior school level, by sector, 1996-2012 45
Table A9. Employment share by sector, 1990-2012 46

Table A10. Value added per employed person and employment population ratio, 1990-2011 (log) 46
Table A11. Employment and working age population, 1990-2011 (log) 47
Table A12. Percentage employed with more than junior school qualifications and percentage employed over 45 years, 1996-2012 47
Table A13. Total employment and labour force, 1990-2010 (in millions) 48
Table A14. Labour force participation rate, 1990-2010 48
Table A15. Registered and estimated unemployed, 1990-2011 (in millions) 49
Table A16. Percentage of unemployed persons with primary education or less and percentage unemployed with more than junior school education, 2001-2012 49
Table A17. GDP per capita (constant US$) and the unemployment rate in China, 1990-2012 50
Table A18. Average GDP growth in China, by decade, 1980-2013 50
Table A19. Annual GDP per capita, 1980-2013 (constant LCU) 51
Table A20. Labour productivity by sector, 1990-2012 (in constant ¥ per person) 52
Table A21. Decomposition of labour productivity growth by sector, 1990-2012 52
Table A22. Employment composition in China, 1990-2010 (in millions) 53
Table A23. Regular employment as a percentage of total employment, 1990-2011 53
Table A24. Rural employment composition in China, 1990-2010 (in millions) 54
Table A25. Agricultural productivity (productivity index, with 1990=100) and regular rural employment as a percentage of total rural employment, 1990-2011 55
Table A26. Employment in TVEs as a percentage of total rural employment and regular employment as a percentage of total rural employment, 1990-2011 55
Table A27. Regular and non-regular urban employment, 1990-2011 (employed in millions) 56
Table A28. Composition of urban regular employment in China, 1990-2011 (in millions). Built up by aggregating sectors. 56
Table A29. Urban traditional formal employment as a percentage of regular employment and registered urban unemployment rate, 1990-2012 57
Table A30. Urban non-regular employment and rural-urban migrants without hukou, 1993-2011 (in millions) 57
Table A31. Proxy for weal wages in modern and traditional sectors, 1990-2011 58
Table A32. Regular employment and labour force growth rates, 1991-2012 58
Table A33. Rural and urban income per capita, 1978-2003 (in 1978 constant prices) 59
Table A34. Urban-rural ratio of real income, 1978-2003 60
Table A35. Employment situation index (1990=100), 1990-2011 61
Table A36. Agriculture and services productivity index (1990=100), 1990-2012 61
Table A37. Percentage gap of employed with more than junior school education (urban China – all China), 2002-2012 62
Table A38. Decomposition of labour productivity growth, 1990-2012 62

List of abbreviations

CE	Cooperative Enterprises
CO	Collective-owned and Cooperative Enterprises
EF	Emerging Formal Enterprises
EP	Small Private Enterprises
ES	Individual Businesses
HRS	Household Rural Responsibility System
MOLSS	Ministry of Labour and Social Security (China)
NBS	National Bureau of Statistics of China
NRE	Non-regular Employment
SEZs	Special Economic Zones
SOEs	State Owned Enterprises
TF	Traditional Formal Employment
TFs	Traditional Formal Enterprises
TVEs	Township and Village Enterprises
UNDESA	United Nations Department of Economic and Social Affairs

Abstract

This paper assesses the employment situation in China in terms of (a) existing macro data related to output and labour and (b) its historical consistency with policy shifts in the country. It discusses the problems in analysing aggregate employment in typical large developing countries and identifies possible ways to overcome these. After an historical overview of the employment and growth process in China from 1949 to the 1990s, the paper examines the trends in the standard measures of employment and unemployment in the context of growth from 1990 onwards. This is supported by an analysis of sectoral labour productivity and its decomposition into its component sources of capital accumulation and labour transfer respectively. The paper then uses an alternative aggregate indicator of employment to study the trends in regular and non-regular employment and produce a cross-validated narrative of what has really happened to "employment" in China at the macro level since the 1990s. The paper concludes by identifying core employment challenges for China and suggesting some policy directions for the future.

Key words: China, dual economy, economic growth, employment, employment measures internal labour migration, labour force, productivity, structural change, wages

1. Introduction

In the last three and a half decades, some large countries in the developing world have achieved and sustained high rates of output growth. China is the leader of this group of emerging developing countries. It has had such phenomenal growth that the US $1 international poverty line which is typically used to measure extreme poverty is no longer relevant for the country[1]. It is likely that the overall conditions of employment in China ought to have improved in this period as well. Unfortunately, the relationship between measures of growth and employment is more difficult to demonstrate than the one between measures of growth and poverty. This is largely because of limitations of the employment indicator itself. The main objective of this paper is to construct a credible quantitative *economy-wide* assessment of the changing employment situation in China, especially since 1990. The idea is to make an assessment of the employment situation that is (a) supported by macro data related to output and labour that exists on the Chinese economy; and (b) that is consistent with historical information on the policy shifts that have taken place in China[2].

The paper is organised in the following way. Section 2 discusses problems associated with the analysis of aggregate employment in typical large developing countries and identifies possible ways to deal with these problems. Section 3 provides an historical discussion relevant to the employment and growth process in China from the time of her independence to the present. This overview gives the minimum necessary policy context for the following discussion on the post-1990 period. Section 4 of the paper looks at the standard measure of employment in China and changes in this indicator in the context of growth from 1990 onwards. It examines trends in employment as well as some its correlates. In Section 5, unemployment is examined, both in terms of its trends and what the measure represents in the Chinese context. Section 6 examines sectoral labour productivity and its decomposition into component sources of capital accumulation and labour transfer respectively, and asks how far this takes us in explaining changes in the employment situation. In Section 7, we look at an alternative aggregate indicator of employment that captures regular employment. Trends in regular and non-regular employment, their variation with other related economic indicators and relationships with known policy shifts are analysed to produce a cross-validated narrative of what has really happened to "employment" in China at the macro level since the 1990s. Section 8 corroborates these findings with an overview of wage based indicators. Section 9 makes some concluding observations on the employment situation in China, identifies core employment challenges and indicates some policy directions for the future.

[1] Poverty in China has seriously declined from the time of reforms. The major decline in poverty in China began quite early in the 1980s, with changes in the rural economy.

[2] See Annex for details on the data that is used. All the figures in the paper are based on the author's estimates of indicators directly taken from or calculated on the basis of official Chinese databases. The data used in the graphs is given in the Annex.

2. Examining the employment situation in developing countries

In typical large developing economies, the organised sector often employs a minority proportion of workers. Within the organised part of such economies, most of the employment is regular and full time. Most of such organised and regular employment has returns in the form of wage income whose levels are socially acceptable in the context of those societies. Some of this regular employment in the organised economy can also be characterized as "formal", where additional features pertaining to rights and collective bargaining obtain. Such employment on average also has relatively higher productivity. In general, such employment related attributes cannot be assumed for much of the non-organized parts of a typical developing economy, in which a majority of the labour force works either as self-employed or as temporary and casual labour. This is the reason why, when looking at social transformations that accompany economic development, we are particularly concerned with the changing structure of employment that accompanies economic growth[3]. Original two sector models in development economics (Lewis, 1954), suggest that growth driven changes will take the developing economy in a direction that will be beneficial from the point of view of employment in the longer run. It is expected that successful economic growth in modernizing developing economies would exhaust labour surplus and ultimately eliminate underemployment, as employment increasingly takes on regular waged forms and eventually becomes formal. When this happens, the developing economy could be characterised, for analytical purposes, as a structurally homogeneous capitalist economy as opposed to being a dual economy.

The objective of focusing on the growth-employment relationship is that we want to know the extent to which economic growth in a country has or has not led to desirable employment – that is, employment with the likelihood of having many, if not all, of the afore**e**mentioned attributes of regularity, adequacy of returns, productivity and rights. This is why the indicator used for measuring employment becomes critical (Ghose et al., 2008; Majid, 2014). While each of the attributes that we associate with the idea of desirable employment are in themselves subject to discussion and debate, what ought to be clear is that the aggregate employment indicator as it is normally calculated for a typical developing economy environment is analytically unusable because it includes not just the regularly employed but also the severely underemployed and the working poor who must work in very productivity activities in order to survive[4]. The use of employment elasticities for policy work in developing economies is subject to cautions and warnings precisely because of this problem. Small wonder then, that the employment elasticity measure can only be justifiably used for analysing parts of the manufacturing sector in developing economies. Thus, we need to have a defensible measure of employment that allows us to take a stand on whether the employment situation in an economy as a whole has improved

[3] See Sen (1975) for the first empirical cross country discussion of employment structure on existing categories of employment. For a more recent version of this exercise, see Majid (2005).

[4] This is what the employment measure captures in those developing economies that do not have a welfare system. This is also the reason why aggregate employment elasticity measures are quite meaningless in most developing economies. This is of course less true for the employment indicator in developed and advanced countries. The only workers that are excluded from the measurement in such exercises are unemployed, who while not exactly well off; are often also not the worst off workers in the labour force. The unemployed are also in limited numbers compared to those working in poverty in developing countries (Majid, 2014).

or deteriorated. In the absence of such an alternative, which is often the situation we face, we are left with indirect strategies to assess employment situations that can be severely misleading[5].

Sectoral productivity analysis is sometimes considered an alternative way of examining employment without changing the measure of employment. This approach examines labour productivity over time in an economy that is split into broad economic sectors (typically agriculture, industry and services and sub-divisions within these). Sectoral productivity analysis assumes that employment quality improves if the share of employment in the sector with the highest productivity growth increases over time. The broad sectoral divisions in labour productivity analysis implicitly distinguish more and less productive labour at the sectoral level, without changing the measure of employment. Sectoral productivity analysis thus gives a partial picture of what is happening to employment in an economy-wide sense. The reason for this is quite simple. Its direct concern is not with what is happening to the overall employment situation in a country in the growth process. Instead, the question that a decomposition analysis of labour productivity asks concerns the contribution of labour (reallocation across sectors) and capital accumulation to labour productivity growth.

These are two ways in which the employment situation can be assessed in a developing economy. The first is to do nothing about the employment indicator and proceed as if there is nothing fundamentally wrong with it. This approach leads to an economy-wide assessment that relies on unemployment as the main indicator of labour market distress and the employment rate as an indicator of employment, and in which poverty is thrown in as an extra for a view on income and welfare. The main problem with this approach is that the economy-wide analysis of employment and growth becomes misleading because the employment rate is not an "employment" rate, and the unemployment rate's variation with growth as well as with poverty requires a deeper appreciation of what the unemployment rate precisely captures in a typical developing economy compared to an advanced one (Majid, 2014). The second way is to maintain the employment indicator as it is, but divide the economy into broad sectors and then examine sectoral growth and productivity in these sectors over time. The assumption that can be made here is that more productive sectors have less underemployment or surplus labour and therefore more of the type of employment that we wish to capture. In our view, the sectoral labour productivity decomposition approach while critical for the analysis of growth is only partly useful for the analysis of employment, because the causation it is largely focussed on concerns what employment does for growth and not vice versa. The third approach is to generate an alternative indicator of employment that is likely to capture employment of a regular kind, and examine the employment situation using that indicator at the economy-wide level.

[5] Often the unemployment rate, the poverty rate, the employment rate are used together to make such an aggregate economy-wide assessment, without appreciation of how these indicators stand in relation to each other. As has been demonstrated in our earlier work, this is an inappropriate employment assessment strategy for a typical large developing economy.

3. The historical context of employment and growth in China

While it is simplistic to describe the monumental changes that have occurred over past decades in the Chinese economy in a few paragraphs, it is still important to sketch the broad outlines of this history to set the economic context of the post-1990 period. The People's Republic of China was founded in 1949. The first decade of Chinese independence is effectively that of the 1950s. Central economic planning began in this period (from 1953) with the objective of developing a heavy industrial base in parts of urban China and maintaining an agricultural sector able to feed modern industrial China by providing consumption goods at low prices. This was the received wisdom of planning in a socialist setting at the time[6]. Planned industrialization and maintaining agriculture related populations ***within*** rural China, was the broad strategy of development in the first decade[7]. It was therefore necessary that the ***movement of labour*** across China was governed by rules on migration. A residence permit system (the *hukou* system) eventually evolved on this premise. Those living in rural China obtained rural residence permits and those born in urban China were given urban permits. Even temporary movements were subject to permissions from both points of departure and arrival. Movement of labour in China was probably just short of an internal visa system. In short, in the early days, not only was the production of output planned, but by the end of the first decade so was the movement of labour.

Attempts to transform agriculture in the very initial period involved the promulgation of the Agrarian Reform Law passed in 1950. This law essentially redistributed land from large landlords to millions of landless peasants. However, only a couple of years later, in 1952, the collectivization process began (Lin, 1990). In hindsight, it can be said that the initial redistribution of land from large landowners to poor peasants in 1950 politically eased the collectivization that was to follow in 1952. There was a serious incentive problem associated with this change, although the Chinese authorities perhaps believed that working for objectives that were collective and national would subsume private incentives to gain embedded in the idea of land ownership. Collectivization to some extent undid the redistribution of land associated with the Agrarian Reform Law of 1950; and independently damaged incentive structures that may well have adversely affected agricultural output[8].

The crisis in economic development in China in the first decade was in considerable part a consequence of collectivization[9], although there are other reasons for it as well. The hukou registration law, which was given a legal form in 1958 (Chan and Zhang, 1999;

[6] Economic planning introduced in China was modelled on the Soviet planning system. The first Chinese Five-Year Plan was for 1953-7.

[7] There were no attempts at evolving a population control policy in this period, and early ideas on population- due to Mao Zedong, were in fact against any birth control at all.

[8] A convincing case for separating the famine from the agricultural crisis is made by Lin and Yang (1998). Their argument about urban bias in food supply and distribution is an important one for understanding the mechanics of the famine.

[9] While estimates of the number of deaths in the great Chinese famine vary, we estimate from Chinese data that within a matter of three years, from 1958- 1961, rural employment numbers declined by 10.46 million. For a larger and detailed view on the famine, see Dikötter (2010). Meng, Qian and Yared (2010) focus on the institutional failure of the State to respond to the crisis. Also see Lin (1990) and Lin and Yang (1998).

Chen, 1998; Cheng and Selden, 1994), effectively acted as an instrument for restricting the movement of the rural workers. In effect, an urban bias in the distribution and supply of food grains was reinforced by the hukou system. In addition, China pursued a quixotic rural industrialization policy towards the end of the 1950s (Sigurdson, 1977). This included large scale experiments with steel production based on small backyard wood-fed furnaces[10]. Collectivization, the increasing control on labour mobility; and rural industrialization all came under the umbrella of the Great Leap Forward. It is well known that this leap ended in a catastrophic fall, and the largest famine known to modern history came to pass. It is still not clear how many perished, but the figure is definitely above millions. It is quite possible that the active restrictions on mobility of labour may have contributed to trapping labour in rural areas at the time of the famine but this is an historical counterfactual that is difficult to answer. The hukou system, which was conceived as an instrument of manpower planning may have contributed to increasing the fatalities of the great famine. But this was not officially understood as such; rather, the problem was identified more as one of high incidence of rural population[11].

Following the 1961 famine, the rest of the 1960s was marked by the Chinese government's Agriculture First Policy. Increased agricultural inputs, as well as tube well irrigation improved the food supply[12]. While there was a policy stance on controlling population, population growth in fact peaked in China during the decade of the 1960s, especially in the aftermath of the famine. This was expected as a response to the fatalities of the famine. People wanted bigger families. It was despite of the growth in population and continued restriction on physical movement that there was some recovery in agricultural productivity, although agricultural productivity really takes off in China in the post-reform period of the 1980s. As a result of high population growth in the 1960s, country-wide birth control campaigns began in earnest in the 1970s, with the famous *recommended family sizes* for rural and urban China formulated under the aegis of the Chinese State Council[13]. This ultimately led to the stricter one child family planning programme of 1979. The restrictions on the movement of labour remained intact in the 1970s and went well in to the 1980s. These were initially relaxed, first with respect to rural-rural migration; then in the context of rural-urban migration to selected urban areas, and finally, from the 1990s, more generally.

[10] Apart from leading to a growth disaster in agriculture, it also brought massive deforestation in the country.

[11] The idea that famine was also caused by neglect because of mass rural migration to urban areas may be true but begs the question. People may have started to move because there was an urban bias in food distribution. The evidence on labour movement in this period is limited, but the larger point is that disincentives and collectivization were the more obvious reasons.

[12] See Zhang (2011) for an evidence based discussion on the subject.

[13] See Greenhalgh and Winckler (2005) for a detailed discussion on the population policy and governance of China's great economic transformation. After 1979, when one child policy became law in China, extreme practices of population control like forced sterilization- that had become common practice in India only a few years earlier in 1976 during the Emergency- were perceptibly less in China (Scott, 2014). Nevertheless there were punishments associated with violation as there were incentives associated with adherence. In many ways the Chinese population control policy was less authoritarian that the Indian one that preceded it by a couple of years.

Figure 1. Annual population growth rate in China, 1961-2013

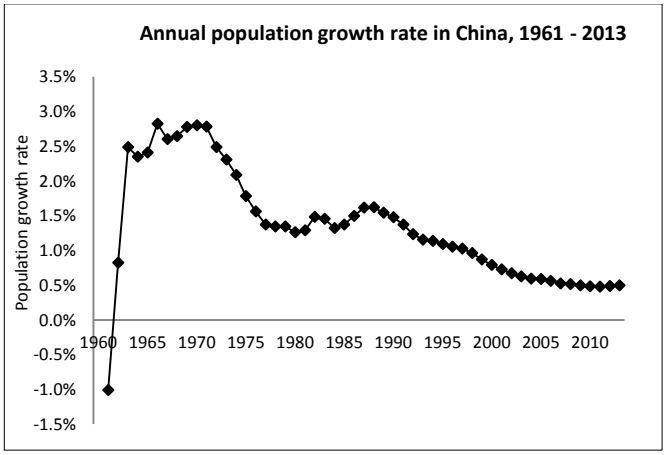
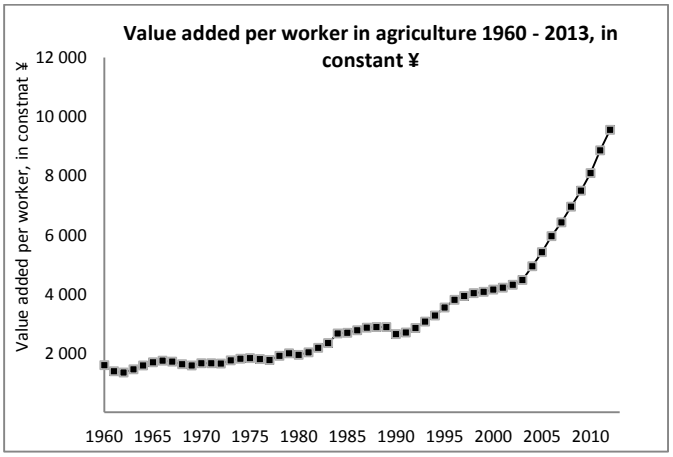


Figure 2. Value added per worker in agriculture, 1960-2013



China's economy began opening to the rest of the world after the death of Mao Zedong in 1976. We see evidence of this in the modernization programme under Deng Xiaoping in the late 1970s[14]. The critical moment in agrarian China came with the effective reversal of collective agriculture through the Household Rural Responsibility System (HRS) in 1984 (Lin, 1987; Lin, 1988)[15]. From the early 1980s, agricultural growth picked up in China[16]. The reason for this is that part of the surplus labour in agriculture began to flow not only to other rural activities in the township and village enterprises (TVEs), but also towards employment in urban areas. In other words, the statutes that were promulgated in 1958 on Regulations of Hukou Registration began to get selectively and slowly relaxed from the 1980s.

The policy principle behind the HRS was general and not just focused on agriculture, although it began with the agrarian economy. Essentially, the idea was to inject incentives in order to enhance productivity through giving workers responsible for the production of output, a stake in the profits and losses of an enterprise. Farmers who previously received

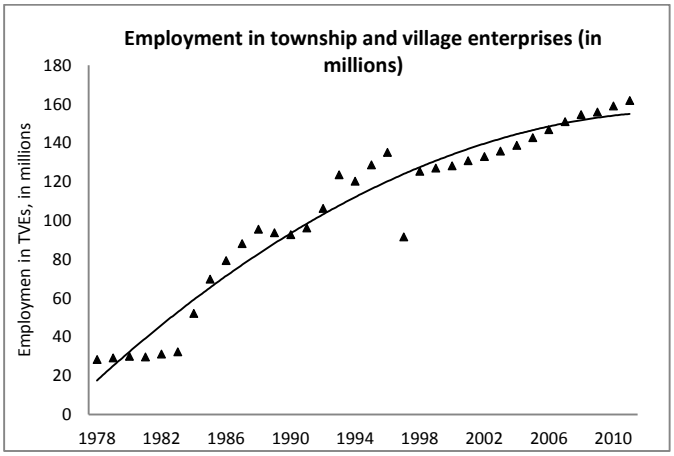
[14] Technically speaking the four modernizations was a strategy that originated with Zhou Enlai in 1975, while Mao was still alive.

[15] Also see Ghose (2005) for estimates of the size of the responsibility system.

[16] See Lin (1992) on reforms and growth. For a comprehensive discussion of post-reform agricultural policy and the important insights in to policy making, see Ash (1988).

output quota targets, were given lower quotas and rewarded directly for producing output above and beyond targets, which they sold in what was effectively an open market. This HRS system, which was in certain respects also a partial de-collectivization programme, allowed farmers to use their household labour in other non-agricultural activities. This necessitated some relaxation in the enforcement of the hukou system, as even rural to rural movement was previously subject to some control. Thus, the 1979 reforms began with altering agricultural production organization by reintroducing private enterprise, which in turn led to increased agricultural productivity. To complement this, the successful advent of the Township and Village Enterprises (TVEs) also absorbed significant rural surplus labour that was released through the HRS[17]. The establishment of the HRS freed surplus labour in agriculture. Some was absorbed in TVEs and some became rural-urban migrant labour. This system also improved the incentive structure in team based production organization.

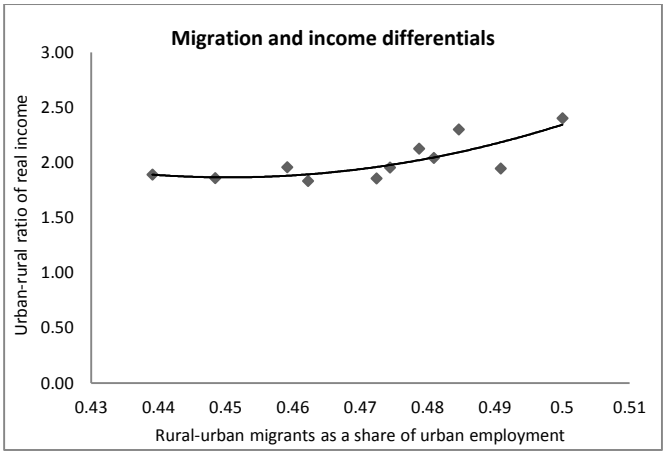
Figure 3. Employment in township and village enterprises, 1978-2011 (in millions)



It was in the mid-1980s that the transformation of the modern sectors of the Chinese economy began. As early as 1980, special economic zones (SEZs) were set up in Shenzhen, Zhuhai, Shantou and Xiamen, and by 1984 (Zeng, 2011), 14 major coastal cities were opened up to foreign investment[18]. Not only did the SEZs require labour for production, but more importantly, the new target cities needed construction and services. It was also because of the SEZs that residency rules affecting rural-urban migration began to be relaxed in China. This was viable because freer movement of labour had in principle already become possible with the HRS; and rural-rural migration was in turn more permissible because of the TVEs. The social and economic choice to migrate for Chinese farmers became a feasible option in this period[19]. For the State, the easing of control of the migrant flows has been a key instrument in affecting the desired steps in this transformation. We have evidence from 1993 to 2003 suggesting that differentials in potential earnings in urban and rural areas were positively related to migrant flows.

[17] See Zou (2003); Chen (1998).
[18] While the objective of SEZs was not to provide employment, but technology transfer and to attract foreign investment, the SEZ did provide a structured basis upon which the labour market and rules governing labour movement could change. See Liang (1999) for a case study (Shenzhen) perspective on the core objectives of SEZs.
[19] See Knight and Song (2003); Zhang and Song (2003); and Zhao (1999).

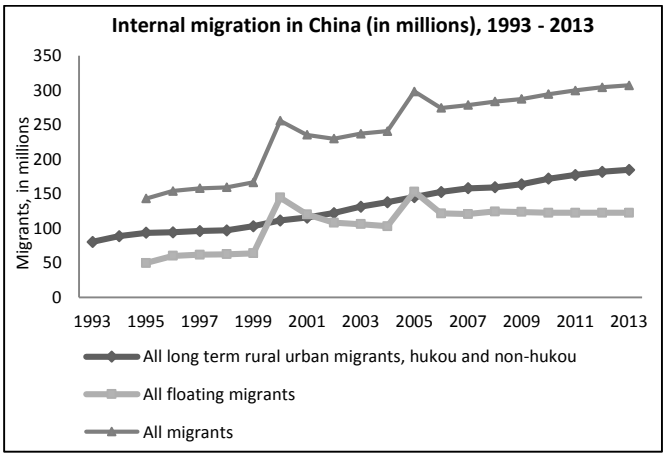
Figure 4. Migration and income differentials in China



Note: The regression equation is y = 194.13x2 - 174.86x + 41.243, R^2 = 0.6198, N = 11. Source: Real income figures derived from Heilig, et al. (2005). Migration figures based on NBS (2013). Report on Monitoring and Survey of Migrant Rural Workers in China as well as data in Chan (2013).

While the 1990s saw considerable increase in this migration, it was still not fully open[20]. However, the rules governing the *hukou* system were being eased in practice[21]. By the early 2000s, the migrant population in China had become very large indeed. Only the long-run rural-urban migrants were more than 166 million. Today, the total migrant population is likely to be over 300 million.

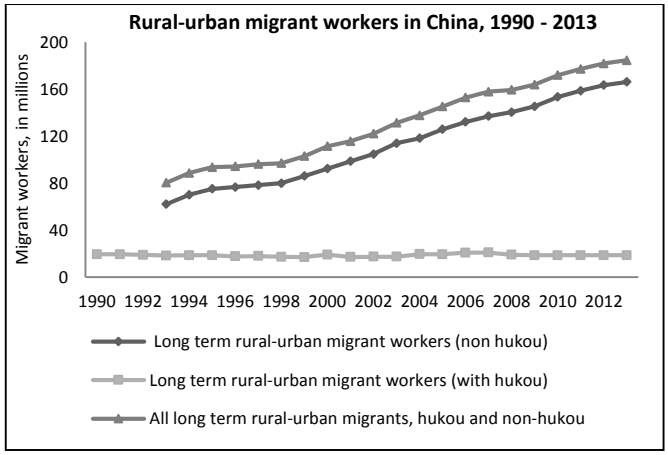
Figure 5. Internal migration in China, 1993-2013 (in millions)



[20] Even until the mid-1990s there was tension in the way some city governments looked at migrants on the one hand, and central driven view encouraging relaxation of constraints on the physical movement of labour

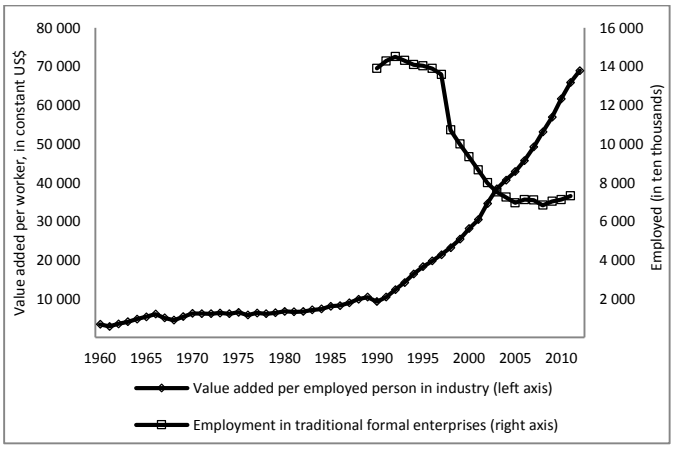
[21] It is our view that this relaxation of rules on movement of labour needs to be seen as a broader instrument used by the State for sequencing the transition in China. When this dimension is not taken into account it is possible to look at restrictions on movement of labour simply as output restricting.

Figure 6. Rural-urban migrant workers in China, 1990-2013 (in millions)



The economic transformation that took place in the first half of the 1990s in China importantly involved industry and growth in the modern sectors of the economy[22]. Industry was restructured and the closure of state enterprises came into force and harder market reforms were implemented. The figure below shows how, as industrial productivity rose, employment in large scale state-owned enterprise fell.

Figure 7 Value added per employed in industry (in constant US$) and employment in traditional formal enterprises (in ten thousands), 1990-2012

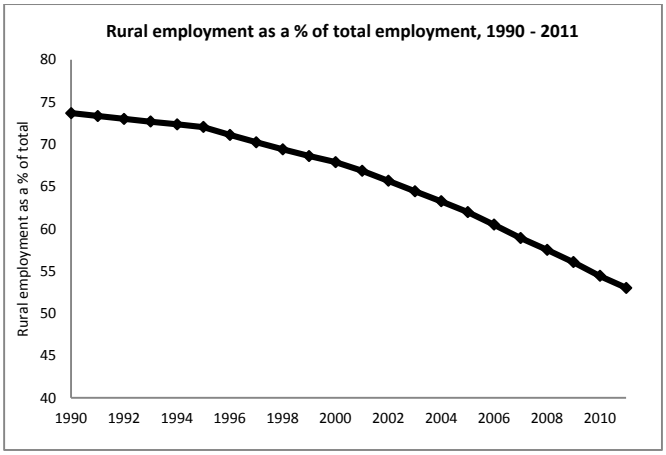


Since the 1990s, changes in the Chinese economy have been clearly visible in the urbanisation process. The employment data in China is divisible between rural and urban estimates, and this sub-division of the employment measure carries some useful albeit general information. What it does confirm is that there has been a large movement of labour across the two classifications in recent decades. Rural employment was just above half of all China employment in 2011 and is probably no longer in the majority today[23]. This is also entirely consistent with the trends in migration patterns that we observed earlier.

[22] See Faint (2005); Garnaut, Song and Yao (2006); Hassard, Morris, Sheehan and Yuxin (2010); Zu (2009).

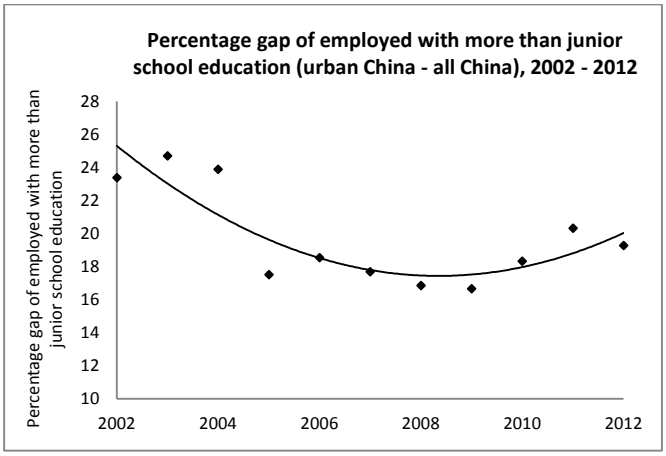
[23] The pattern of urbanisation is very important in explaining the spread of the labour force and the evolution of small to medium sized cities in a large country like China. See Schneider and Mertes (2014).

Figure 8. Rural employment as a percentage of total employment, 1990-2011



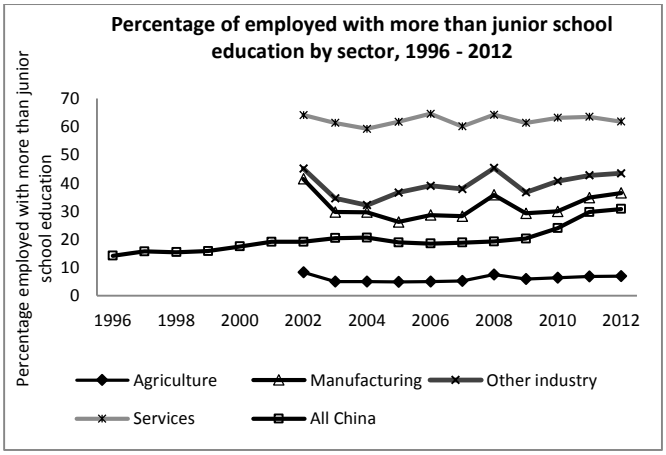
This process of change has also been accompanied by a changing skill profile of the rural and urban workforce. Although education estimates are not available for rural employment separately, these are available at the all China and the urban China level. We calculate the percentage of employment with qualifications above the junior school level for all China and for urban China respectively. The difference between the two percentages is taken as a proxy for the relative skills of the rural employed. Data for this measure is only computable from the early 2000s. It would appear that this gap may have been falling gradually on trend since 2000. It fell in the early 2000s, stabilised from the mid-2000s, and may be rising now.

Figure 9. Percentage gap of employed with more than junior school education (urban China-all China), 2002-2012



Note: The equation is y = 0.1952x2 - 784.15x + 787443, R^2 = 0.7366, N = 11

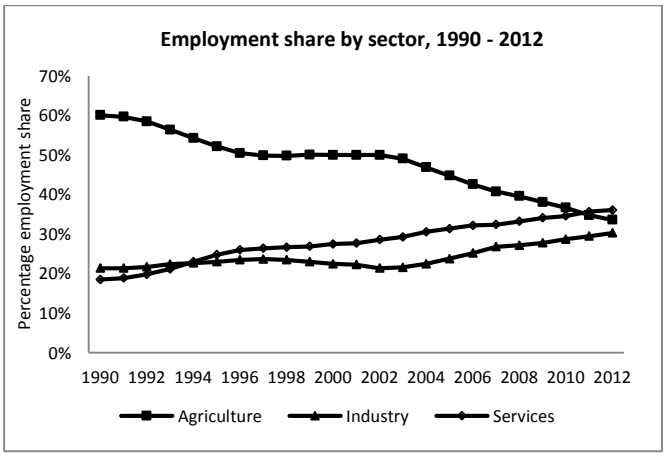
Figure 10. Percentage of employed with more than junior school education by sector, 1996-2012



The ordering of skill levels across sectors has remained the same over time, and the recent rise in skills mostly reflects rising skills needs due to the technical changes and expansion in industry including manufacturing[24].

Sector employment shares show a trend decline in agriculture and a rise in services and industry. However, there is an interim period (1996-2003) in which these longer-run trends do not entirely move in the direction associated with expected improvements. Between 1996 and 2003, industrial employment shares declined, agricultural employment shares remained stationary, and service sector shares grew. While the rise in services from the employment point of view may not be an issue, as education levels are highest in services and because productivity levels in it are not the lowest in China, the arrest of the decline in agricultural employment and the fall in industrial employment shares are very noteworthy.

Figure 11. Employment share by sector, 1990-2012



The growth process in China in recent decades has been accompanied by rapid urbanisation. It is the case that the overall education level of persons in employment is

[24] For a longer run assessment of the ageing population on labour force and development of skills, see Banister, Bloom and Rosenberg (2010).

increasing, but it is also true that a considerable rural-urban skills gap is likely to still exist. While this gap was narrowing earlier, this may not be narrowing anymore. Sectoral employment shares also show trend declines in agriculture and rises in industry except for an interim period in which there are signs of possible employment problems. Even though this turbulence may be over now, and we are back on the desired trend, it is important to unravel this phase in Chinese employment history in an empirically grounded manner, as it will give us insights in to how the employment transformation has come about in China.

The great employment transformation in China has had three prominent *sequenced* policy drivers:

- The restructuring of agricultural production organization that came into being through the introduction of the HRS in the early 1980s.
- The rural industrialization initiative that produced the expansion in TVEs in the 1980s, was second.
- The transformation of the modern sectors of the economy came third:
    - Initially with SEZs based external opening up in the 1980s;
    - And subsequently, with state enterprise industrial restructuring in the 1990s.

These sequenced initiatives required changing the enforcement of rules governing internal labour migration. Post-reform China first effectively decollectivized agriculture, then embarked upon rural industrialization via the expansion of TVEs. Subsequently, the government opened the economy to external investment and manufacturing and finally embarked upon domestic industrial restructuring. This process required a complex and calibrated process of guided institutional change involving decentralization and fundamental changes in the enterprise culture[25]. The purposive and timed relaxation of the rules governing the movement of labour was absolutely critical in this sequence. These shifts in the Chinese economy ought to be reflected in changes in employment structure if one were able to capture employment meaningfully at an aggregate level. The aim of the following sections is to demonstrate how the overall employment situation changed during this Great Chinese transformation, with a special focus on the period after 1990.

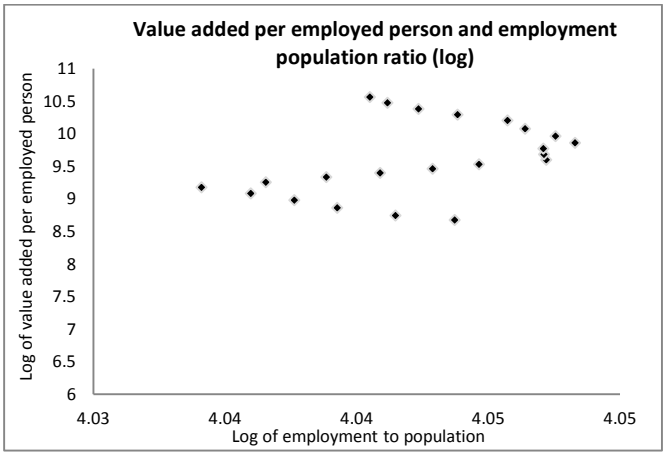
4. The measure of employment and its relationship to population and output

The employment indicator has a number of limitations. This is something that was discussed earlier, but we illustrate this point in the Chinese context briefly. The figures below show two things about employment. First, that value added per employed person, which is an output proxy, is unrelated to the share of employed persons in the population. Second, that employment as it is calculated and working age population are directly and positively related to each other. In other words, at the most general level, if the measure of employment is taken at face value, employment and population are very likely to be closely

[25] For an excellent and clear discussion of how this institutional transformation was guided by the State that not only maximised growth but carried over China's accumulated social capital in the first two decades of the reform. See Husain, Stern and Stiglitz (2000).

related, and output and employment unlikely to be so. The deficiency of capture in the employment indicator is a subject that has been addressed elsewhere (Ghose et al., 2008; Majid, 2001; Majid, 2014).

Figure 12. Value added per employed person and employment population ratio (log)



Note: The regression equation is y = 58.597x - 227.27, R^2 = 0.1823, N = 22.

Figure 13. Employment and working age population, 1990-2011 (log)

Note: The regression equation is y = 0.5437x + 2.8344 with R^2 = 0.9738, N = 22. The coefficient is statistically significant at the 1 per cent level.

It is however still worth examining some attributes of persons who are generally and so broadly classified as employed. We first focus on the period after 1990 with regards to education and skills. Since 1990, the age structure amongst the employed and their education profile has changed (Banister et al., 2010). Earlier we saw that population growth had been declining. There is considerable discussion in the literature on the end of the demographic dividend in China[26]. A critical observation in this regard is that while the share of older workers in total employment is rising, this older workforce is also more qualified.

In the two decades under review (1990-2011), the Chinese population (above 16) increased by 1.5 per cent, while the Chinese labour force did so at 0.87 per cent per annum.

[26] For example, see Golley and Tyers (2012).

The participation rates of the labour force are falling[27], and the gap between employment and total labour force has widened on trend. The latter can be reflective of rising open unemployment.

Figure 14 Percentage employed with more than junior school qualifications and percentage of employed over 45 years, 1996-2012

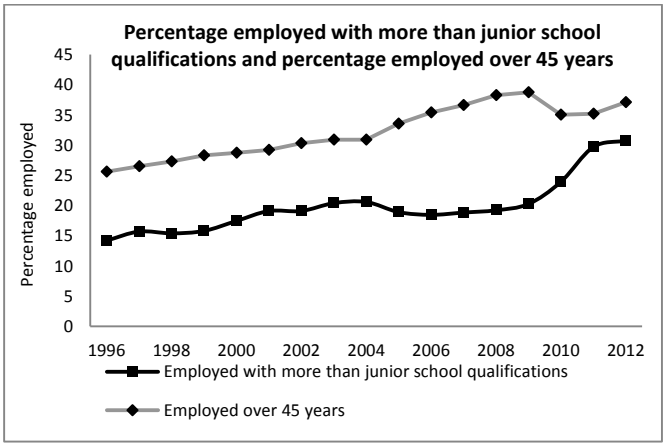
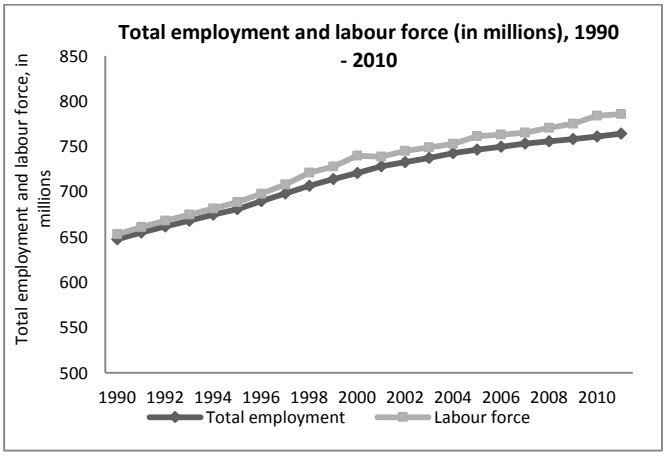
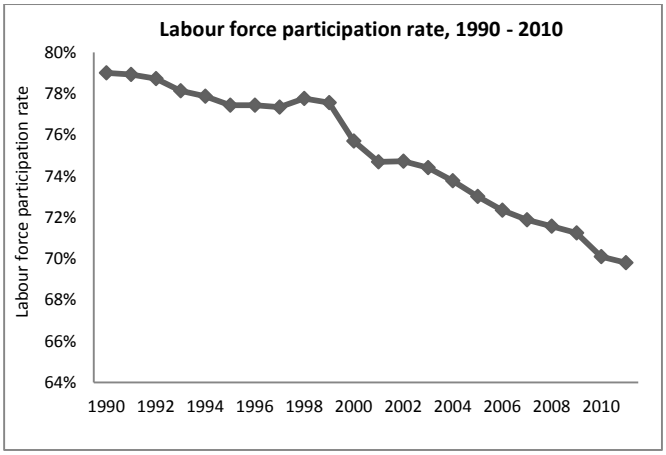


Figure 15. Total employment and labour force, 1990-2010 (in millions)



[27] There is no evidence to suggest that there is a gender based explanation to the falling participation rates.

Figure 16. Labour force participation rate, 1990-2010



5. The unemployed in China: Trends and attributes

China does not collect unemployment figures through surveys[28]. All it has is a registration system of unemployed persons where the onus of registration is on the unemployed person. We can, however, estimate the unemployed by using labour force and total employment figures. This figure would include the unemployed who are registered as well as those who are not. Unemployment rose from 5.7 million in 1990 to 21.6 million in 2011. The registered unemployed were a majority of all unemployed in 1990 (66 per cent), in 2011 they became a minority (43 per cent). The estimated unemployment rate also shows a rising trend with a spike during 1996-2001. This period overlaps with the period in which we found sectoral employment shares to be moving in a direction that suggested turbulence (1995 to 2003). One can say that not only is estimated unemployment (and the unemployment rate) rising in China, but the composition of the unemployed is moving in favour of the unregistered. It is also the case that the unemployment rate is significantly and positively associated with GDP per capita growth[29]. If we examine the educational composition of the unemployed in urban China, it is quite clear that the shares of the educated unemployed (senior school and above) in urban unemployment are high and that their share in total unemployment is also rising over time. In short, open unemployment has been increasing systematically with output growth in China and these unemployed are increasingly more educated.

[28] See Wang and Sun (2014); Giles, Park and Zhang (2005). For earnings and re-employment data of the registered unemployed see Knight and Li (2006).

[29] This may be indicative of the fact that China has increasing open unemployment (and declining underemployment). For a discussion of the rationale behind the positive association between unemployment and growth, see Majid (2014).

Figure 17. Registered and estimated unemployment in China, 1990-2010 (in millions)

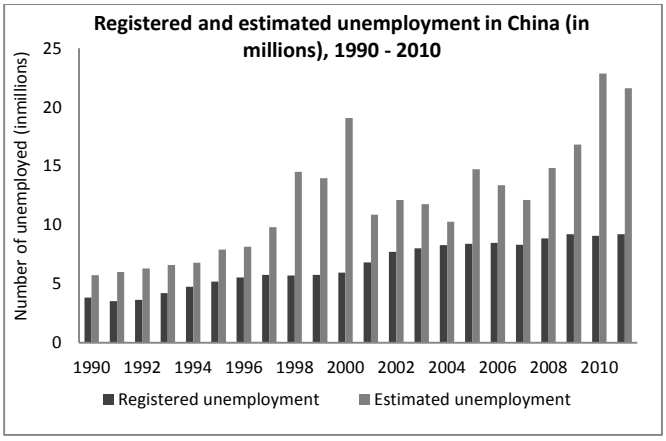


Figure 18. Percentage of unemployed persons with primary education or less and percentage unemployed persons with more than junior school education, 2001-2012

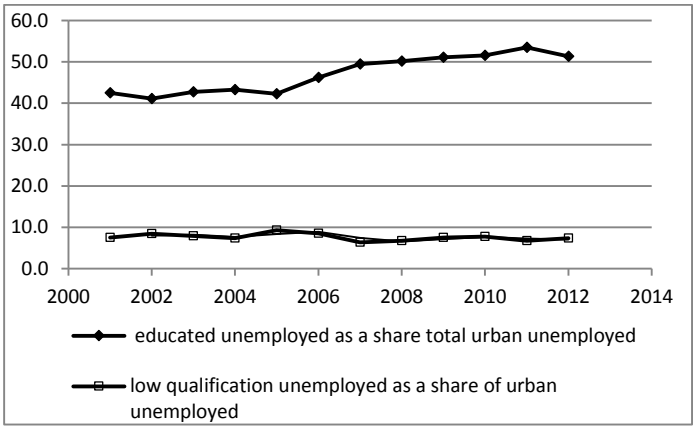
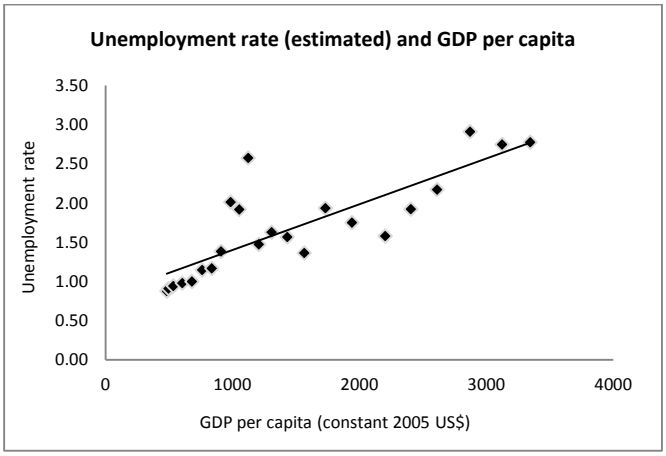


Figure 19. Unemployment rate (estimated) and GDP per capita (constant 2005 US$)



Note: The regression equation is $y = 0.0006x + 0.816$; $R^2 = 0.6731$, N = 23. The coefficient is statistically significant at the 1 per cent level.

6. Output, income and productivity growth

Growth is an all-encompassing subject and there are numerous analyses of China's growth process. The aim in this section is limited to the analysis of the growth process in China insofar as it gives us any further insights into the foregoing discussion on employment. Economic growth in China has been remarkably high and steady in recent decades[30]. Since the 1979 reforms, the GDP growth rate has been around 9.86 per cent per annum. Significant output growth began soon after the 1979 reforms, and was well underway by 1990. Given that population growth was also declining in this period, GDP per capita has been rising at more than 9 per cent per annum.

Figure 20. Average GDP growth rate in China, by decade

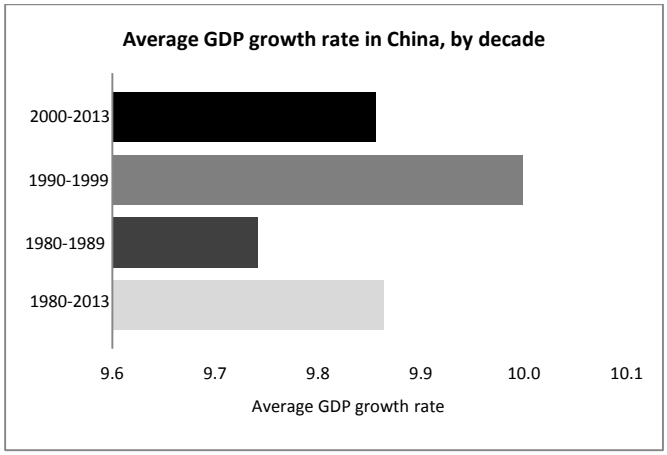
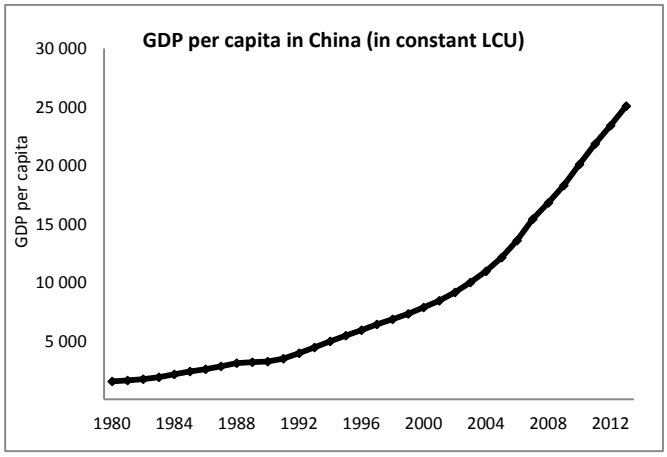


Figure 21. GDP per capita in China, 1980-2012 (in constant LCU)



In the decades of high growth, China has developed and urbanized to a high degree. We have seen that skills and educational levels are gradually rising in the country, as are the estimated numbers and rates of open unemployment[31]. Alongside this growth process,

[30]There is a whole literature on growth estimates in China. The accuracy of data and the methods of estimation are near special topics in themselves. A thorough discussion of the issues and references to the literature is available in Chow (2002). The point is that even if we take a very sceptical view of China's statistics like in Yeh (2001), the growth rate would still average around 7 per cent for the period.

[31] However, given the nature of aggregate employment numbers that do not distinguish between the regularly employed and the underemployed, it is difficult to say what exactly is happening to

it is worth highlighting two simple indicators of income. Both urban and rural income grew in China since the reforms. Trends in real rural and urban income suggest that it was in the early post-reform period from 1979 to the mid-1980s that agricultural incomes grew rapidly. This is also when the incidence poverty declined significantly[32]. The second point to note is that during the first phase of agrarian transformation and rural industrialization, the income gap between rural and urban China was not rising. It is after 1990, and particularly after 1996 (and up to 2002, the end date of estimates), that the income gap between rural and urban China began to grow[33].

Figure 22. Real urban and rural income in China, 1978-2003 (income in 1978 constant prices)

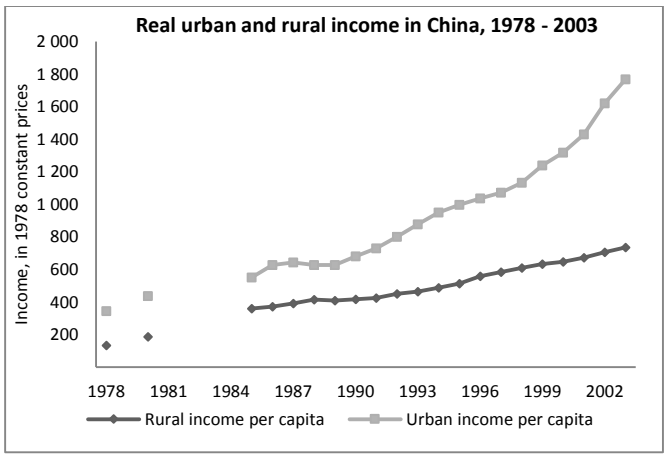
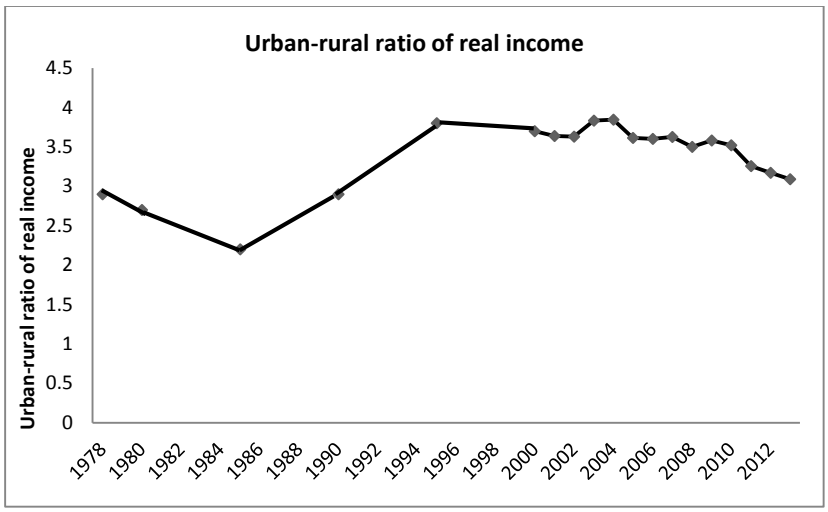


Figure 23. Urban – rural ratio of real income, 1978-2003



Note: Ratio of income is based on NBS average consumption data at constant prices.

While productivity is an important subject of analysis on its own, labour productivity analyses are often carried out not only to take a sectoral view of output but also to shed

desirable employment or quality employment in China. By virtue of this problem, the unemployment numbers themselves do not give an economy-wide view of the adversity in the labour force or the extent of unemployment throughout the economy. There are, however, clear signs of an increasing open unemployment problem in China.

[32] Ravallion and Chen (2004) show that between 1980 and 1985 the biggest decline in poverty occurred.

[33] Income inequality has of course risen in China during the entire period. See Xie and Zhou (2014).

light on employment. The categories that are examined here are employment shares and (real) labour productivity in each of the three broad sectoral classifications: agriculture, industry and services[34]. As suggested above, the levels of sectoral productivity in comparison to the national average, and relative to each other, can be seen as indicative of the existence of surplus labour (in economies where surplus labour is *independently* known to exist)[35]. The measure or indicator of employment in such exercises remains unaltered.

Figure 24. Labour productivity growth in China, 1990-2012 (in constant ¥ per person)

We find that productivity in each sectoral division, including agriculture, has been rising on trend in the long-run. As noted above, the ordering of sectors in terms of productivity levels have remained the same in China since 1993, with industry leading and services and agriculture respectively following until 2012[36]. The gaps between industrial productivity and services productivity have been rising; as is the case for an industry-agriculture comparison. It is quite clear that productivity growth in China since the 1990s has been led by industry[37]. By and large, during the period under review, economic growth has been associated with discernibly rising productivity levels in industry and services. Agricultural productivity growth exists, but its level is low and its growth weaker in comparison to services and industry in recent decades.

[34] For primary, secondary and tertiary definitions we have a full series from 1980 to 2012. Sub-sectoral classifications for all China discontinue after 2001. We have all China estimates before 2001, but after 2001 we have urban units' estimates only.

[35] This qualifier is important because even in economies without surplus labour there will be differences in productivities across sectors. But once we assume that surplus labour exists, then if a sector's productivity is below the national average, it is likely to have a proportionately higher percentage of surplus labour in total employment within the sector. Thus, for the sector that has below (national) average productivity, the share of employment (as it is normally calculated) in that sector is something that one needs to automatically focus on. In China's case, like many developing countries, this sector is agriculture.

[36] It is worth bearing in mind that while industrial productivity is often above the productivity average and agriculture below, the case of services can and does go either way in many countries. In many countries service sector productivity is lower than the national average, in some it is higher. In China it was on a par with industry before 1993 and has been higher than the average as well as agriculture for the period under review. For discussions on sectoral productivity growth in China, see Nabar and Yan (2013); Hussin and Yik (2012). For a comparison to India see Bosworth and Collins (2008). For an assessment of growth and total factor productivity in China see Zhang, Jiang and Wang (2014).

[37] In fact the output and employment growth was largely driven by manufacturing exports in China between 1984 and 1995. See Ghose (2003).

Do the drivers of change in labour productivity shed some further light on the pattern of changing employment shares that we observed in the previous section? The standard way to examine the sources of productivity change with employment and output data, at a sectoral level, is by growth accounting. A growth accounting framework essentially takes a measure of employment that includes all types of employment within a sector as given. The exercise can be done for any number of additive sectoral divisions of an economy. On a three sector level, it divides all employment into a sectoral space for growth episodes. The idea is to decompose changes in aggregate labour productivity into two separable components[38]. One component of productivity change is capital accumulation (and technology) calculated for a *given* employment share. It is sometimes called the *within* component, we call it the ***capital accumulation component*** of productivity growth. The second component is that part of sectoral productivity growth that takes place through the mobility and transfer of labour *across* sectors (i.e. from a low productivity sector to a higher productivity sector) *given* productivity. We refer to this component as the ***labour transfer component***[39].

We find that the capital accumulation makes the dominant positive contribution to growth in aggregate labour productivity in China over 1990-2012, while labour transfer across sectors has made a lower, but still positive, contribution to changes in productivity. It is worth noting the positive sign of the labour transfer component throughout the two decade period as well as its sub periods. Therefore, it can be said that the labour transfer (or across sectors) component has at least always contributed positively to aggregate productivity in both decades in China, although it has done so to a lesser degree than capital accumulation.

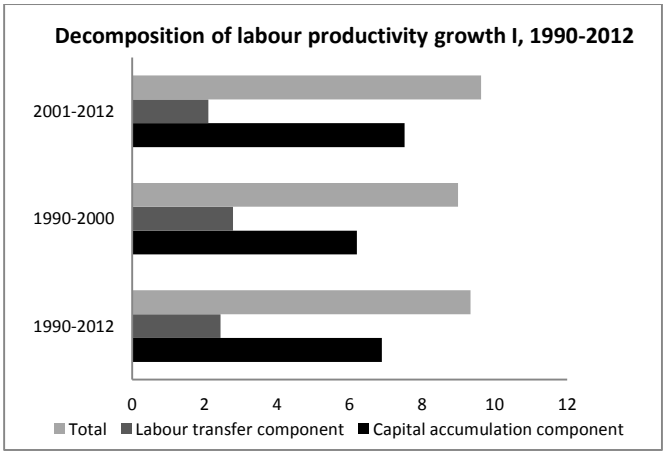
[38] For the method, see McMillan and Rodrik (2011).

[39] Symbolically decomposition can be expressed:

$$\Delta P_t = \sum_{i=1}^{n} \theta_{i,t-k}\ \Delta p_{i,t} + \sum_{i=1}^{n} p_{i,t} \Delta\, \theta_{i,t}$$

where P_t and $p_{i,t}$ represents aggregate and sectoral labour productivity levels at year t, respectively, and $\theta_{i,t}$ represents the share of employment in sector i. The Δ operator captures the changes in productivity or the changes in the shares of employment. The first term in the decomposition is the weighted sum of productivity growth within each individual sector, where the weights are the employment share of each of the sectors from the beginning of the time period. This is supposed to capture the contribution of productivity growth within sectors (through accumulation of capital and thus investment) to aggregate productivity growth. The second term in the decomposition represents the contribution of labour reallocation and labour transfers across sectors to changes in aggregate labour productivity.

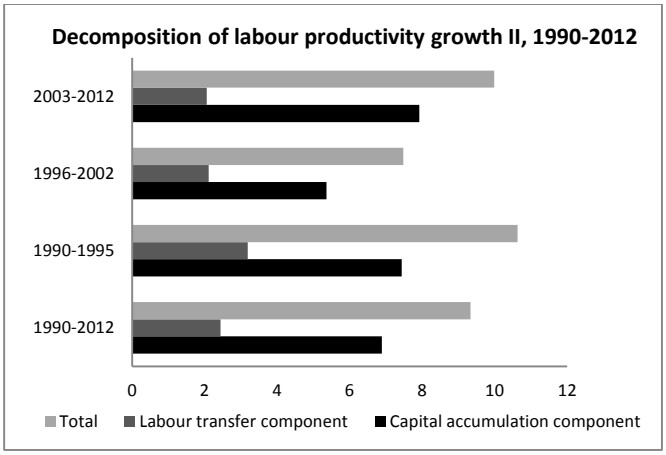
Figure 25. Decomposition of labour productivity growth I, 1990-2012



Note: Value added in the decomposition is in real terms taken in constant Yuan.

It is worth recalling the observation we made earlier that sectoral employment shares in China have been moving the right direction on trend, except for the 1995-2003 period, when the shares of industrial employment actually declined and that of agricultural employment remained nearly stationary. We suggested that this was a period worth re-examining as a period of employment problems. By repartitioning the data in order to separate the 1996-2003 period, we can see this result again.

Figure 26. Decomposition of labour productivity growth II, 1990-2012



The results are not very different. In the first period, the contribution of labour transfer to productivity growth is most significant. In the next two periods, it becomes **progressively** smaller. It nevertheless remains significant throughout. The examination of the components of productivity growth in a periodisation that is supposed to capture a problem period (1996-2003) gives no further insight other than perhaps the fact this was also a **relatively** lower growth period (average annual growth of productivity was 7.5 per cent).

Thus, in the period in which we detected ostensible signs of an employment problem on the basis of trends in sectoral employment shares, we find that productivity growth, although comparatively lower than in other periods, was still high; capital accumulation still led the growth process; and labour transfer continued to make a significant and

positive contribution to productivity growth. In other words, one can say that if there was an employment problem in the sub-period 1996-2003, it was not caused by a crisis in output and productivity. So what was the nature of this employment problem?

7. Trends in regular and non-regular employment in China

We have observed that in the context of China, the indicator of employment in the aggregate economy-wide sense is of limited value. We have also noted that indicative signs of an employment problem (including a declining share of industrial employment coupled with a stationary share of agricultural employment) that one can pick up by examining employment shares at the sectoral level in a certain period (1995-2003) may not be fully reflected in the labour productivity components analysis.

In this section we reconstruct the existing employment database by dividing it into regular and non-regular parts to see if this reconstructed database can give us some further insights into the employment situation in China between 1990 and 2013.

As is the case for most developing countries, we need to devise special ways to tackle the problem of measuring employment in China as well, precisely because the aggregate economy-wide employment number is only useful for very limited purposes and sectoral productivity analysis, as we have seen, is likely to be limited for examining employment effects of the growth process. Such a re-classification often depends on the ways in which employment information is collected and aggregated in a country in the first place, and can only be done imperfectly. However, such an attempt is absolutely necessary not only to develop an economy-wide picture of changes in the employment situation, but also to confirm, reject or qualify what we can indirectly infer about employment through sectoral productivity and growth analysis on the one hand, and sectoral employment shares as estimated by the unaltered measure of employment, on the other.

In China, estimates are available on employment types on a rural and urban division defined according the classifications made by Chinese labour statisticians. In our view, these jobs can be classified as regular. They include both registered self-employment as well as salaried and wage workers. When these numbers are added, they can be considered a proxy for the total regular employment figure for China. This number can also be divided between rural and urban components. Regular employment in China can be divided into the following sub-categories of employment[40]:

1) Employment in Township and Village Enterprises (TVE_R). These are essentially rural.

2) Two types of self-employment. First, employment in registered small private enterprises (EP). This employment can be both rural and urban (EP_R and EP_U). Second, we have registered self-employment in individual business (ES). The latter type of self-employment can also be both rural and urban (ES_R and ES_U). We add these two categories EP and ES into a new category, EI, which can also be both urban and rural. In other words, $EI_A = EI_U + EI_R$.

[40] Of these (1) to (4) below are available.

3) Employment in traditional formal enterprises (TF_U). This includes state-owned enterprises (SO_U), collective-owned (CO_U) and cooperative enterprises (CE_U). These are essentially urban.

4) Employment in emerging formal enterprises (EF_U). They include joint ownership enterprises, limited liability corporations, shareholding corporations and foreign-funded enterprises, including those funded by residents of Hong Kong, Macao and the Taiwan Province of China. These are also essentially urban.

These categories taken together constitute regular employment for our purposes. Given that we have separate census adjusted estimates of total employment both at the rural and urban level, employment that is not regular can be deduced as a residual. We call employment that is not registered and is of a non-regular variety in rural areas NRE_R. This category **includes** persons in the HRS (Household Responsibility System) discussed earlier, as well as casual labour and the small unregistered self-employed. Non-regular employment in urban areas, NRE_U, similarly includes urban casual wage workers as well as urban small scale unregistered self-employment. Employment of a non-regular variety at the all China level can be written as $NRE_A = NRE_U + NRE_R$. The sum of all regular employment types and non-regular employment can be said to constitute the total census adjusted employment figure.

Thus, total urban employment $E_U = RE_U + NRE_U$. Similarly, total rural employment $E_R = RE_R + NRE_R$.

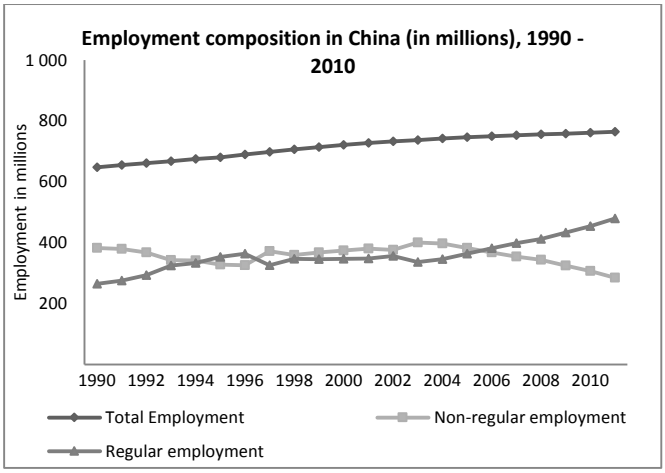
It follows that all the forms of regular employment in urban areas as well as those in rural areas constitute total economy wide regular employment. If we add to this all forms non-regular employment in urban and rural areas respectively (that are calculated as residuals), this would constitute total employment:

$$E= (RE_U + RE_R + NRE_U + NRE_R) = ((TF_U+ EF_U +EI_U) + (TVE_R+EI_R) + NRE_U + NRE_R)$$

The rural labour surplus that has been discussed earlier is likely to be within the category NRE_R, that is also the core source of internal migration, which can move to other rural areas or to urban areas or to both, and of course across sectors in rural and urban areas.

Levels of regular and non-regular employment thus calculated are plotted over time in the figure below at the all China level.

Figure 27. Employment composition in China, 1990-2010 (in millions)



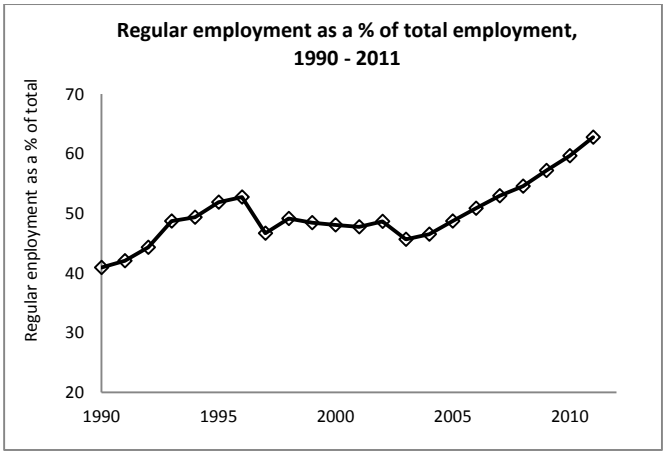
What is encouraging from the point of view of the estimate is that the problems identified by looking at trends in sectoral employment shares and labour productivity are evident in this re-classification for the same period. The figure above shows a few things. First, that the employment transformation was under way at the all China level from before 1990, as the trend in **levels** of non-regular employment was downward and that of regular employment upward. The two trends were set on a convergence path, and for a few years in the 1990s, the regular employment level even exceeded that of non-regular employment.

Second, that the period of 1996 to 2003 - that we identified from looking at sectoral employment shares as a matter of possible concern and on which productivity decomposition analysis did not shed too much light - can be seen as one in which there is the possibility of labour market turmoil, as both forms of employment, regular and non-regular, tend to move in unsystematic and sometimes divergent directions.

In other words, *the period in which we find that industrial employment shares were falling and agricultural employment shares stopped doing so (and which was importantly **not** an output growth crisis period), also happens to be the period in which the path of convergence between the regular and non-regular employment level is disturbed.*

However, in 2003, this process stops and both trends are set once again on a convergence path. In fact, in 2006, there is a breakthrough as lines cross and regular employment starts to exceed non-regular employment in absolute terms. A concise and standardised way to see this process is to look at regular employment as a share of total employment over time. The period between 1996 and 2003 is one in which regular employment shares adjust downward and then stagnate.

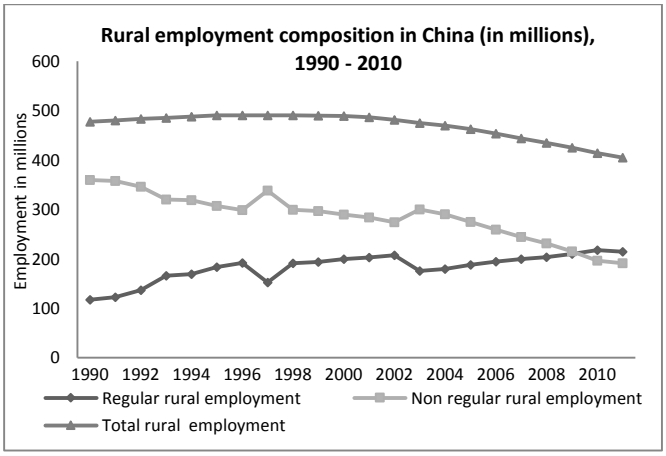
Figure 28. Regular employment as a percentage of total employment, 1990-2011



8. Towards an historically consistent explanation of employment trends

To what extent was this situation driven by changes in agriculture and to what extent was it driven by shifts in industry or in the service sector? This is a special question that the previous graph poses. To probe this matter further, we need to examine these trends in absolute numbers at the rural and urban level separately[41]. We first do this for rural employment.

Figure 29. Rural employment composition in China, 1990-2010 (in millions)



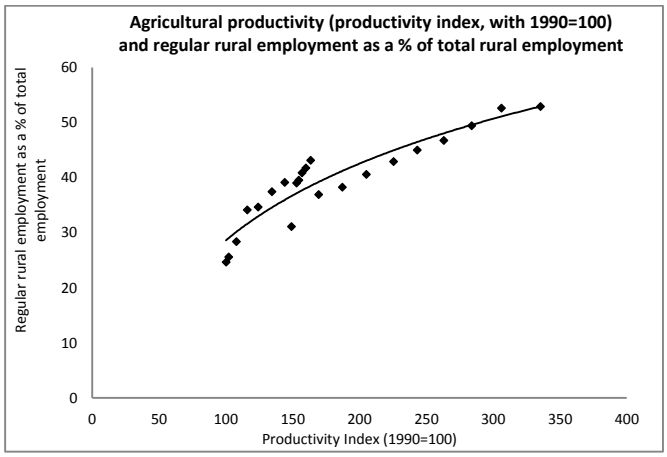
Rural employment trends reveal some things. First, that *in absolute terms* rural employment remained at almost the same level until 2001. If anything, there is a very slow positive growth in rural employment. It is only after 2001 that a decline in the rural employment level can be seen in a pronounced manner.

Second, non-regular employment has dominated regular employment levels in rural China until very recently – in fact until as late as 2009. However, trends in regular and non-regular rural employment levels for the entire period were by and large **converging**

[41] In the rural case we need to bear in mind that a good amount of rural employment that is non-regular is also agricultural.

in rural China[42]. It is also the case that in the period 1995 to 2002, when the share of agricultural employment in total employment had stopped falling, these trends also continue. The rise in regular rural employment can be discerned just as the fall in non-regular employment also obtains. This suggests that a good part of the story for the sub-period that we identified as potentially problematic from the point of view of employment shares may well lie outside the rural context. It is after all the industrial sector's employment share that falls. For the sake of completeness it is important to see what is behind these gradual but positive movements in rural employment. The first point that needs to be made here is that the regularization of employment that we find in rural China was related to the changes in agricultural productivity which increased very gradually prior to 1990 and more quickly later. It is likely that the migration of workers out of agriculture was an important source of rising agricultural productivity and the rising share of regular workers in total rural employment[43].

Figure 30. Agricultural productivity (productivity index, with 1990=100) and regular rural employment as a percentage of total rural employment



Note: The regression equation is: $y = 20.065\ln(x) - 63.78$; $R^2 = 0.8594$, N = 23

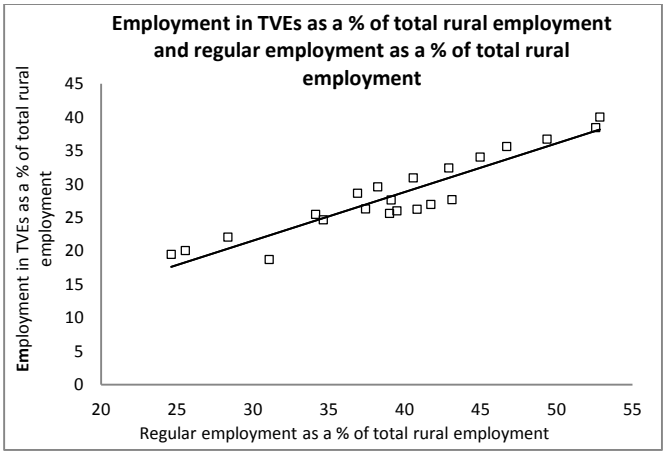
The figure below shows that the gradual regularization of employment in rural areas also had much to do with employment in TVEs that are largely non-agrarian enterprises[44].

[42] 1996-97 and 2002-2003 are the exceptional years.

[43] Agriculture has made major contributions to China's economic growth and poverty reduction. The institutional factors (government policy instruments for land reallocation and use certification) that accompany this growth are discussed in a recent paper by Deininger, Songquing and Fang (2012).

[44] TVEs involved in agriculture on average employ around 2 million persons. This number has ranged from 2.5 per cent of total TVE employment in 1990 to 1.2 per cent in 2011.

Figure 31. Employment in TVEs as a percentage of total rural employment and regular employment as a percentage of total rural employment



Note: The regression equation is y = 0.7255x - 0.2258; R^2 = 0.8761, N = 22. The coefficient is statistically significant at the 1 per cent level.

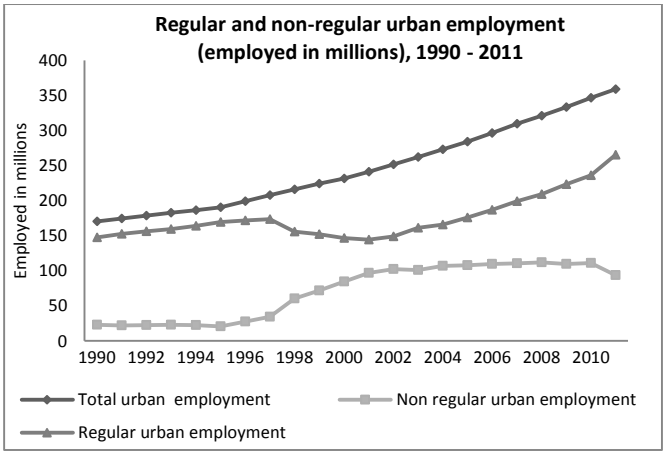
In short, we have a broad perspective on slowly increasing shares of regular employment in rural China. In the 1990s, these were driven by non-agricultural employment and particularly by employment in TVEs. The slowly rising trend in post 1990 agricultural productivity (slow between 1996 and 2003 and faster subsequently) still needs to be seen in the context of the shrinking share of employment in agriculture and the movement of labour out of agriculture, part of which also went to rural TVEs.

The urban employment story is very different. Non-regular employment has been lower than regular employment in urban China for a very long time. The reason for this has essentially been the control of the movement of rural labour, which, as we noted, was gradually and selectively relaxed in China after the reforms of 1979. We find that non-regular employment in urban China begins to show a serious rise from around 1995 and this process lasts until 2003[45]. From then onwards, non-regular employment starts to stabilize in urban China and stops rising. It does not go back to previous levels, but it stops rising. On the other hand, regular employment undergoes a fall in absolute terms in urban China during this period.

The employment problems during 1995 -2003 detected earlier when we looked at sectoral employment shares is reflected much more directly in the employment story of urban China: It is a period of sharply rising non-regular employment and significantly falling regular employment.

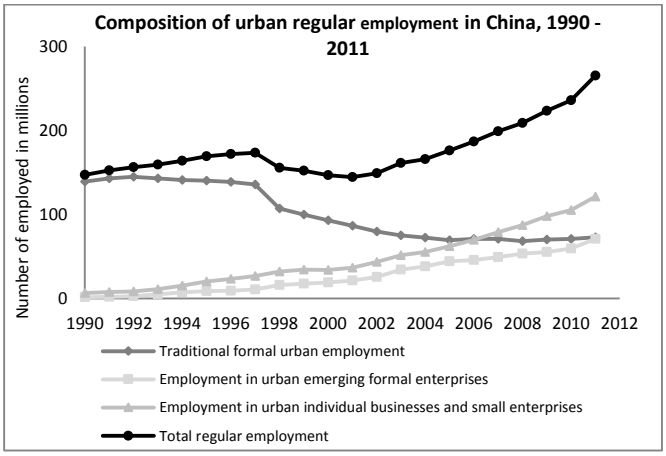
[45] See Park, Wu and Du (2012).

Figure 32. Regular and non-regular urban employment, 1990-2011 (in millions)



A rising trend of urban employment shares in total employment in itself tells us little about what was happening to regular employment shares within urban employment[46]. Falling absolute numbers of urban regular employees (1997-2001) are related to particular types of changes. The question of the source of rising absolute numbers of non-regular urban employment (1997-2003), as we shall see, is a separate one. We first look at falling numbers of regular urban employment. For this we need to look at the trends in different components of urban regular employment.

Figure 33. Composition of urban regular employment in China, 1990-2011 (in millions)

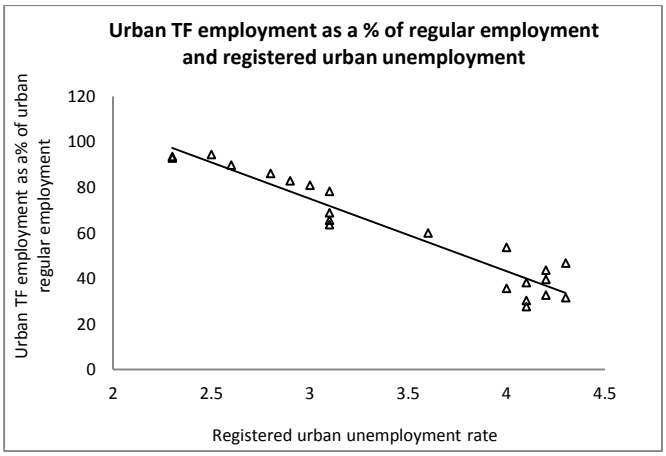


What is absolutely clear is that employment in traditional formal enterprises (TF_U), which includes state-owned (SO_U), collective-owned and cooperative enterprises (CO_U), is where employment levels plummeted from 1997 onwards, but the slide, as we can see, had begun from as early as 1992. In 1997, these enterprises employed over 135 million persons. By 2004, this number had gone down to 72 million! The largest employer of regular and formal workers, not only in China, but in the world, nearly halved its employment in six years. While some of those who were made redundant may have been re-employed in other regular jobs, and others may have migrated elsewhere, even back to rural areas, many of these redundant workers are likely to have joined the group of

[46] We saw the same thing with rural employment, when the absolute numbers of rural employment remained stable but changes occurred in the composition of rural employment in favour of regular employment.

registered urban unemployed in China. After all, the persons who were made redundant were also relatively skilled workers. Many of these persons would not have had problems in registering as unemployed since they belonged to public enterprises, collectives and large cooperatives in the first place[47]. We can clearly see that as the share of traditional formal employment (TF_U) in urban regular employment declines, the registered urban unemployment rate increases in China.

Figure 34. Urban traditional formal employment as a percentage of regular employment and registered urban unemployment



Note: The regression equation is y = -31.856x + 170.59 with $R^2 = 0.9184$, N = 22. The coefficient is statistically significant at the 1 per cent level.

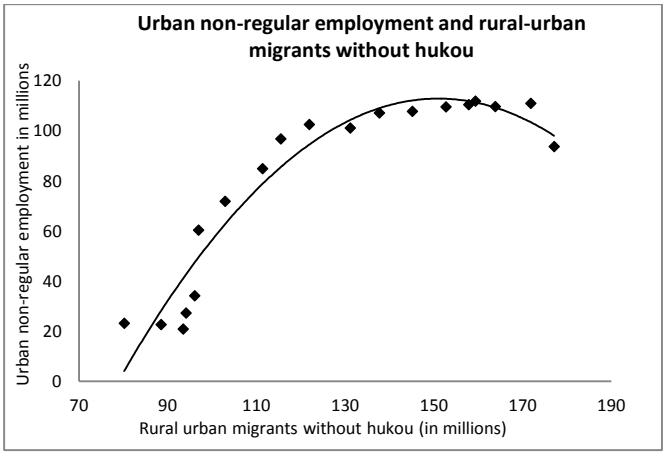
Going back to the graph with absolute employment trends in different components of urban employment, we find that **emerging formal enterprises (**EF_U) and **registered small private enterprises** and **individual business** (EI_U) showed the greatest rise in employment. This is the high employment growth part of the urban economy[48]; and this component continued to rise during the 1995-2003 sub-period as well. From around 2003 employment growth in such small enterprises along with growth in larger emerging formal companies together outstripped the employment losses from the TF_U enterprises. At least in terms of employment there is not much that can be said about the conflict between the small private businesses and large enterprises in urban China. If the argument about redundancies in TF_U enterprises and registered unemployment is correct, then it follows that falling employment in TF_U enterprises cannot be a major explanation of rising non-regular urban employment. The rise in non-regular employment in urban China is relatively more about rural-urban migration. This is a process that seems to continue while the TF_U employment is declining. It is our view that rural-urban migration increased the size of non-regular employment in urban China. The 1990s saw an easing of controls on

[47] While we have reservations against using the registered unemployment rate as an "unemployment rate" for the Chinese economy as such, the measure is clearly useful in establishing an explanation of the redundancies from state enterprises.

[48] Many authors (see for example Huang (2008) suggest that excessive advantages to large scale domestic (as well foreign) investment existed in China's transformation. While this may be so in some way, in terms of employment growth this is not clear. In 1990 employment in each of the two employment categories was around 7 million; by 2011 employment in small enterprises and businesses was 121.7 million while in large scale emerging formal enterprises was 71 million. And the gaps continue to widen.

migration in China. Estimates of rural-urban migration from 1992 to 2013 show a link between the changing structures of urban employment and rural-urban migration. As rural urban migration in China was increasing, it was swelling the ranks of the non-regular urban employed. It is also interesting to note that there may be a limit to or a "natural level of informality" of urban non-regular employment (around 100 million) in China beyond which migrants are much more likely to be absorbed into regular employment.

Figure 35. Urban non-regular employment and rural-urban migrants without hukou



Note: The equation is y = -0.0217x2 + 6.5523x - 381.8; R^2 = 0.9234; N = 19. The coefficient is statistically significant at the 1 per cent level.

Therefore, in the urban context, while a good part of the rise in overall employment and urbanisation has in fact taken place on the basis of rural-urban migration, migrants from rural China came in predominantly to take up non-regular work in urban China. The workers who became redundant from restructured state enterprises are more likely to have joined the queue of the registered unemployed or found other regular jobs in enterprises that were growing in urban China.

9. Wages and the regularization of employment in China

What have these trends in employment meant for the returns to workers? Since we have clear indications of the rise in regular forms of work in China, it would be useful to have an idea about real wages. This is an assessment that is indeed very difficult to make for any large developing economy and China is no exception[49]. A lot of judgement is required in order to construct proxies for trends in rural and urban wages and the wage gap. We have taken average real wages for employment in the TVEs as representing the wage at the low end of the modern sectors or the high end of the traditional sectors; and a composite of all other wage rates that were available to represent wages in modern sector.

[49] For sector specific assessments see Banister (2004) and Banister (2007).

Figure 36. Real wages proxy in modern and traditional sectors, 1985-2012 (in ¥)

What is quite clear is that in the post-reform period since 1992, real wages have consistently risen for regular employment in the modern sector. This has been concomitant with the restructuring and the process of rising regular employment described earlier. The TVE wage, if it is acceptable as proxy for wages in the less advanced parts of the regular economy, rose up to 1997, remained very stable until the late 2000s. In particular, the 1997-2007 decade shows wage stagnation for the high end of the traditional sector. It is only after 2007 that we see a rise in real wages in the TVEs, alongside rising real wages in the modern sectors of the Chinese economy. This may be indicative of the beginning of a Lewisian transformation in the Chinese labour market[50]. That is to say, real wages start rising in both parts of the dual economy.

10. Conclusions

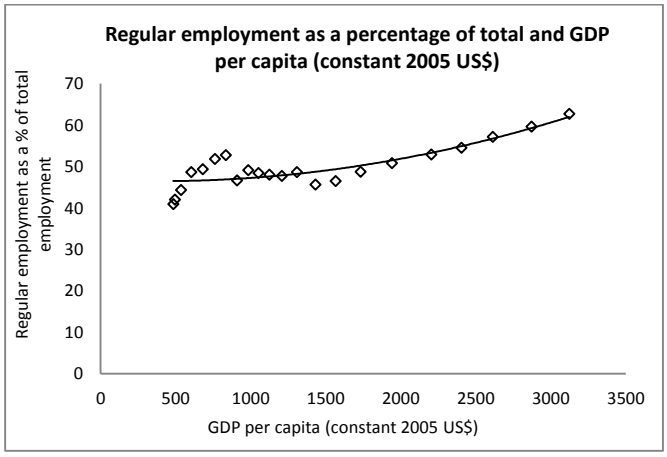
Although the employment situation in China has transformed for the better in the recent high-growth decades, it is difficult to see this transformation at the aggregate level in an empirically credible manner because of data capture problems in available measures of employment. Growth has definitely been high and consistent in China in this period. We can make some inferences on what may have happened to employment based on sectoral growth patterns. Nevertheless, at best this gives us indirect evidence and hence limited grounds to link the known changes that have occurred in the Chinese economy and the overall employment situation. Interim aggregate measures of employment of an imperfect kind are however possible to construct. In the case of China, such second best measures of regular and non-regular employment can help us form a view of the changing

[50] There are many interesting discussions in the literature on the Lewisian turning point in China see for example Wang (2008) ; Das (2013). Our general view on this matter is that the search for such a turning point in developing economies where this can be expected is not only too literal and mechanical, but betrays Lewis original intent. It is best seen as a phase in the transformation of an economy, in which certain conditions need to be met. Indicators for these conditions ought to be carefully constructed with a core requirement that these give a picture of the change in the economy represented *as a whole*. In many ways this is what we have tried to do in this paper.

employment situation, as well as providing some plausible links with other labour related variables.

In 1990, regular employment in China was around 265 million and non-regular employment was close to 383 million. In a matter of two decades, regular employment in China has increased to nearly 480 million and non-regular employment was down to 285 million in 2011. The increase in the share of the regular employment from 40.1 per cent in 1990 to 62.7 per cent in 2011 in the most populous country of the world is staggering. This is around 132 million persons. This is the magnitude of the great Chinese employment transformation. The transformation is clearly visible in the positive relationship between the rising share of regular employment in total employment and changing levels of per capita GDP.

Figure 37. Regular employment as a percentage of total employment and GDP per capita (constant 2005 US$)



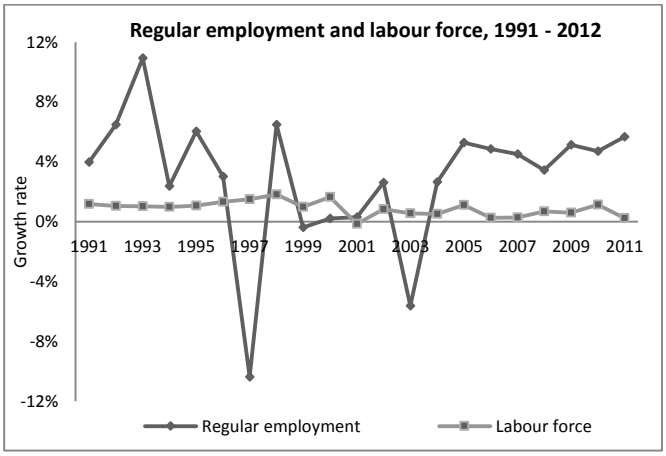
Note: The regression equation is y = 2E-06x2 - 0.0016x + 46.757; R^2 = 0.7358, N = 22

Despite the positive longer run trends in this transformation, some sub-periods have not been smooth. Regular employment as a share of total employment faced stagnation and stopped rising between the mid-1990s and early 2000s, after which this share started rising again. We have argued that these disturbances in the employment trends were not only produced by the State's economic and sectoral policies, but also managed by it through its post-reform administrative policies, through easing controls on the movement of labour. This particular employment problem was dominantly urban. We have shown that in this sub-period there was a rise in urban non-regular employment and a fall in urban regular employment. The former, i.e. rising non-regular employment, was directly linked to rural-urban migration on which effective controls were being relaxed; the latter, i.e. falling regular employment, was a result of industrial restructuring in the State sector that in turn increased "registered" unemployment. In this sense, this ostensible turbulence in employment is best seen as a managed urban employment problem, as its causes lay in sectoral and labour policies that the government was consciously adopting as a condition for transition. We have also indicated that this industrial restructuring was a final policy move in the long-term strategy of the post-reform period that began in 1979.

A summary illustration of this process can be seen in the relative growth rates of absolute numbers of regular employment and the labour force. When the labour force number increases faster than regular employment, the employment situation is unlikely to

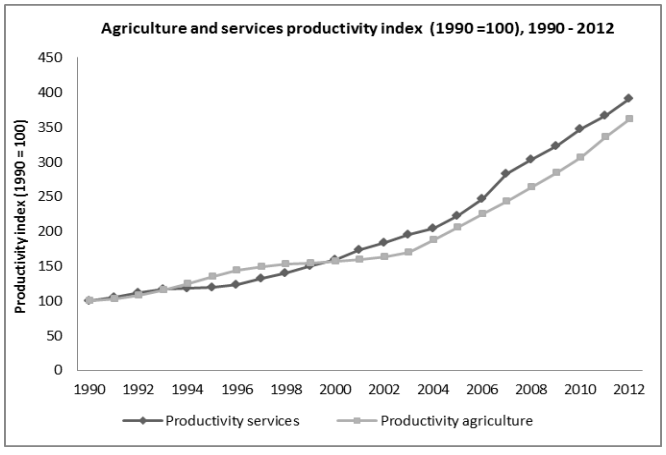
be improving. There are three times between 1995 and 2003 when the labour force growth in China exceeded the increase in the numbers of the regularly employed. Other than this, growth in regular employment has consistently been higher than labour force growth.

Figure 38. Regular employment and labour force growth rates, 1991-2012



The rural economy and in particular agriculture were already on an even (albeit slow) growth path from the time of the reforms in 1979. The introduction of the HRS in 1979, the setting up of the TVEs in the 1980s and the relaxation of the rules governing rural-rural and rural-urban migration facilitated the slow productivity growth in the rural economy, especially in agriculture. This is partly why shares of regular employment in rural China have been rising gradually since 1990. It is also the case that productivity growth in both agriculture and services - sectors with higher shares of non-formal employment- has been positive. It was low in the 1990s, especially for agriculture during the urban employment crisis period, but increased in the 2000s.

Figure 39. Agriculture and services productivity index (1990=100), 1990-2012



Note: To highlight the growth differences original values in the graph have been transformed into index numbers by setting the 1990 value to 100.

In order to make a composite assessment of the employment situation in China we use three indicators to make a simple index[51]. These are:

[51] For a fuller explanation of this index, see Ghose et al. (2008).

(1) The share of regular employment (or the formal segment) in total employment.

(2) Output per worker (i.e. productivity) in the sectors that are likely to cover the majority of the non-formal part of the economy.

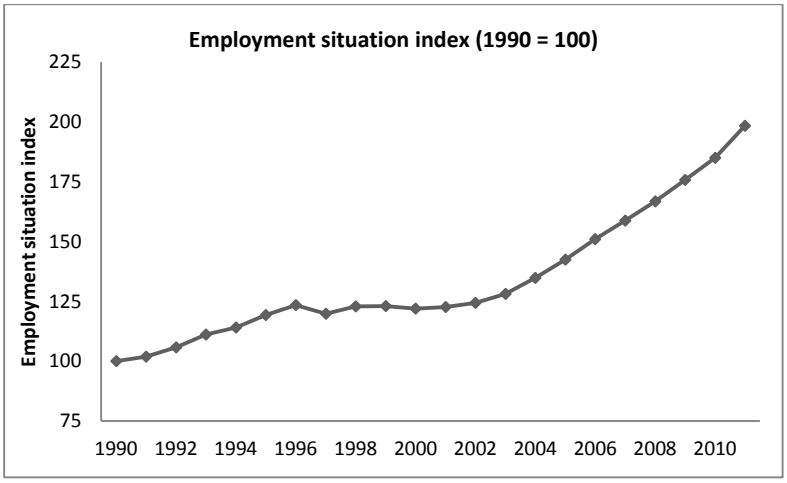
(3) The rate of open unemployment[52].

Other things being equal:

- The larger the share of regular employment in total employment, the better the employment situation will be.
- The higher the output per worker in the non-formal segment, the better the employment situation will be.
- The higher the employment ratio[53] (i.e. the lower the unemployment rate), the better the employment situation will be.

We take these indicators, to produce a simple Employment Situation Index. This is plotted over time below.

Figure 40. Employment situation index (1990=100), 1990-2011



Note: The index is a composite of the average of three indicators: (1) regular employment as a percentage of total employment, (2) productivity in agriculture, and (3) 1 - the estimated unemployment rate. Their original values have been transformed into an index by setting the 1990 value to 100. The three separate components have been given equal weight. A higher value compared to the previous year indicates improvement. Productivity is computed through dividing value added in agriculture (constant LCUs) by total employment in agriculture.

The improvement in the employment situation in China has been consistent between 1990 and 2011. There was a slowdown between 1995 and 2003, but the overall situation was improving even then. Since 2003, employment has improved much faster.

It is our view that the factors behind the improvement of the employment situation stem from the sequenced policy shifts in the country's sectoral economic growth strategies

[52] We use its inverse because we want each of the components to be additive.

[53] Employment Ratio= 100- (unemployment rate in percentage). For a fuller explanation of this index, see Ghose et al. (2008). The employment ratio is used instead of a measure of unemployment because we want the indicators to be additive for the index.

on the one hand, and the removal of constraints on the physical movement of labour on the other. Our analysis has shown that it is both economic growth, which is the outcome of sectoral growth strategies, and the simultaneous management of available labour flows, that have brought about this improvement in the employment situation in China. This improving employment situation reflects the increase in productive employment in the country. We also know from the income side that poverty has declined and observed that real wages have risen.

These findings are not just indicative of what has been achieved, but also show the extent of the future employment challenge. In 1990, over 59 per cent of the labour force was either unemployed or underemployed in China, by 2011 this percentage had come down to 38 per cent. But 38 per cent it was. China may well be in a Lewisian *turning phase* but it has not crossed the Lewis turning point, if there is one, yet. Surplus labour in the economy has declined, but is not eliminated. On the other hand, open unemployment has risen. It can be said that the hard part of industrial restructuring is over, and in a sense the accumulation of (a non-Lewisian) surplus labour in the "modern" part of the economy, which was due to incentive problems associated with planning, has been dealt with to a considerable degree.

Serious employment concerns for the future are high incidence of non-regular employment and now, increasingly, the problem of open (urban) unemployment. There is a growing urban open unemployment problem which was around 21.6 million in 2011. It is likely to be higher today. While it is the case that some of the unemployed have skills and may have been part of those who were made redundant during the restructuring, it is also the case that demands for even higher skills from upcoming and newer enterprises may not allow some these persons to be easily reabsorbed into new jobs. Parts of the unemployed are relatively more educated and are now also younger. The second area of concern is that while non-regular employment is declining as a share of the total, it is still extremely high and also being urbanised. As the regulatory instrument of controlling labour flows (the residency permit) has been exhausted, and there will be few non-market mechanisms available to the State to control this urbanisation of underemployment. The point is that the instrument (easing enforcement of regulations on migration) that originally allowed for the reduction in rural non-regular employment and contributed to increasing productivity in agriculture, also contributed significantly to the urbanisation of non-regular employment, and is likely to additionally do the same to open urban unemployment in the future.

The present employment challenge for China's policy makers is to continue to increase the overall share of regular employment in total employment in such a way that (a) the open urban unemployment problem is meaningfully contained and then reduced; and (b) the process of labour transfer out of agriculture to non-agriculture is also freely permitted without reverting to the control of residency permits.

Even with the exceptionally high rates of growth that China has sustained over past decades, this would be a challenge; but with lower growth rates than ones that we have seen in past decades, this challenge is likely to be great. We propose a three-fold employment policy focus as a socially sustainable response to the Chinese employment challenge for the coming years:

- The first policy focus concerns incentives for encouraging growth in key sectors of the economy. Growth in the emerging non-state formal enterprises and individual business in particular needs to be the focus of any future growth strategy. The objective here is to absorb new entrants to the labour market as well as migrants who get re-skilled. There are supply side implications for targeted and niche skilling programmes for the latter here. There is also an additional case for re-focusing on those TVEs that are likely to increase productivity in the rural non-farm economy and thus also influence the rural-urban migrant flows. There should be mechanisms put in place to ensure that new employment in these focus areas – i.e. in emerging enterprises, individual businesses and targeted TVEs – is of a regular and not of an informal or casual kind. This task is going to be most challenging in the context of smaller individual businesses and TVEs because of costly monitoring.

- The second employment policy focus concerns regulation. The eased movement of labour must continue, or at least there should be no attempt to roll this process back simply because we have slower growth prospects on the horizon. Ease of migration is an important objective in itself. While the State's skilful deregulation of labour residency permissions over the past decades to manage growth and development is worth admiring from an historical policy point of view; the stricter permit system whose origins are in the early decades, is not something that ought to be reverted to. In fact, much more pro-active facilities for obtaining full residency rights in urban areas for those who do not have them or are in need of them should be put in place.

- The third focus ought to be to increase social protection. Open unemployment in urban China cannot be ignored anymore by simply referring to the smaller number of registered unemployed. It size compared to non-regular employment may still not be very large, but it is over 20 million and it is urban. Enhanced protection systems that have fewer bureaucratic filters to screen out non-resident workers need to be developed for the rising numbers of the openly unemployed.

Selected Bibliography

Ash, R. F. 1988. "The evolution of agricultural policy", in *The China Quarterly,* Vol. 116, pp. 529 – 555.

Banister, J. 2004. "*Manufacturing employment and compensation in China"*, Beijing: Beijing Javelin Investment Consulting Company. http://www.bls.gov/fls/chinareport.pdf [accessed 14 Sept 2015].

Banister, J. 2007. *Manufacturing in China today: Employment and labor compensation*, The Conference Board Economics Program Working Paper Series, 07-01 (New York NY).

Banister, J., Bloom, D. E. and Rosenberg, L. 2010. *Population aging and economic growth in China*, PGDA Working Paper, No. 53. (Cambridge MA).

Bosworth, B. and Collins, S. M. 2008. "Accounting for growth: Comparing China and India", in *Journal of Economic Perspectives*, Vol. 22, Issue 1, pp. 45 – 66.

Bureau of National Statistics of China. Various years. China Labour Statistical Yearbooks, available at: http://tongji.cnki.net/overseas/engnavi/HomePage.aspx?id=N2011010069

—. Various years. China Statistical Yearbooks, available at: http://www.stats.gov.cn/tjsj/ndsj/

Chan, K. W. 2013. "China, internal migration", in Ness, I. and Bellwood, P. (eds.) *The Encyclopaedia of Global Human Migration* (Maiden, MA, Blackwell Publishing Ltd)

Chan, K. W. and Zhang, L. 1999. "The Hukou system and rural-urban migration in China: Processes and changes", in *The China Quarterly*, Vol. 160, pp. 818 – 855.

Chen, W. 1998. "The political economy of rural industrialization in China: Village conglomerates in Shandong province", in *Modern China*, Vol. 24, No. 1, pp. 73 – 96.

Cheng, T. and Selden, M. 1994. "The origins and social consequences of China's Hukou system", in *The China Quarterly,* Vol 139, pp. 644 - 668.

Chow, G. 2002. *China's economic transformation*. (Maiden, MA, Blackwell Publishing Ltd)

Das, M. and N'Diaye, P. 2013. *Chronicle of a decline foretold: Has China reached the Lewis turning point?* IMF Working Paper, 13/26 (Washington DC).

Deininger, K. Songqing, J. and Fang, X. 2012. *Moving off the Farm Land Institutions to Facilitate Structural Transformation and Agricultural Productivity Growth in China*, World Bank Policy Research Working Paper No. 5949 (Washington DC).

Dikötter, F. 2010. *Mao's great famine: The history of China's most devastating catastrophe, 1958-1962*, (London, Walker & Company).

Faint, T. 2005. Review of the China State-Owned Enterprise Restructuring and Enterprise Development (SOERED) Project, (London, the Department for International Development).

Garnaut, R., Song, L. and Yao, Y. 2006. "Impact and Significance of State-Owned Enterprise Restructuring in China", in *The China Journal*, No. 55, pp. 35 – 63.

Ghose, A. K. 2003. “Trade, jobs and wages”, in *Jobs and Incomes in a Globalizing World,* (Geneva, International Labour Office), pp. 41 – 78.

Ghose, A. K. 2005. Employment in China : recent trends and future challenges. ILO Employment Strategy Papers, No. 18 (Geneva) . Employment strategy Paper No. 14

Ghose, A. K., Majid, N. and Ernst, C. 2008. *The global employment challenge* (Geneva, International Labour Office).

Giles, J. Park, A. and Zhang, J. 2005. “What is China's true unemployment rate?” in *China Economic Review,* Vol. 16, pp. 149 – 170.

Golley, J. & Tyers, R. 2012. “Demographic dividends, dependencies, and economic growth in China and India”, in *Asian Economic Papers,* Vol. 11, No. 3, pp. 1 – 26.

Greenhalgh, S. and Winckler, E. A. 2005. *Governing China's population: From Leninist to neoliberal biopolitics,* (Stanford: Stanford University Press).

Guisheng, W., Junb, T. and Shulinc, G. Innovation System and Transformation of the Agricultural Sector in China, With the Case of Shouguang City (Beijing, School of Economics and Management, Tsinghua University).

Hassard, J., Morris, J., Sheehan, J. and Yuxin, X. 2010. “China's state-owned enterprises: economic reform and organizational restructuring”, in *Journal of Organizational Change Management,* Vol. 23, Issue 5, pp. 500 – 516.

Heilig, G. K. et. al. (2005). Poverty alleviation in China: A Lesson for the Developing World? Paper presented at the International Conference on the West Development and Sustainable Development, 2 – 4. Aug. (Urumqi)

Huang, Y. 2008. *Capitalism with Chinese Characteristics: Entrepreneurship and the State,* (Cambridge, Cambridge University Press).

Hussin, F. and Yik, S. Y. 2012. “The Contribution of Economic Sectors to Economic Growth: The Cases of China and India”, in *Research in Applied Economics,* Vol. 4, No. 4, pp. 38 – 58.

Hussain, A., Stern, N. and Stiglitz, J. 2000. Chinese Reforms from a Comparative perspective in Incentives , Organization and Public Economics, essays in Honour of Sir James Mirrlees. Edited by Peter J . Hammond and Gareth D. Myles. Oxford University Press. 2000.

Knight, J. and Li. S. 2006. “Unemployment duration and earnings of re-employed workers in urban China”, in *China Economic Review,* Vol. 17, pp. 103 – 119.

Knight, J. and Song, L. 2003. “Chinese peasant choices: Migration, rural industry or farming”, in *Oxford Development Studies,* Vol. 31, No. 2, pp. 123 – 148.

Lewis, W.A. 1954. “Economic development with unlimited supplies of labour”, in *The Manchester School,* Vol. 22, Issue 2, pp. 139 – 191.

Lin, J. Y. 1987. “The household responsibility system reform in China: A peasant's institutional choice”, in *American Journal of Agricultural Economics,* Vol. 69, No. 2, pp. 410 – 415.

—. 1988. “The household responsibility system in China's agricultural reform: A theoretical and empirical study”, in *Economic Development and Cultural Change*, Vol. 36, No. 3, pp. 199 – 224.

—. 1990. “Collectivization and China's agricultural crisis in 1959-1961”, in *Journal of Political Economy*, Vol. 98, No. 6, pp. 1228 – 1254.

—. 1992. “Rural Reforms and Agricultural Growth in China”, in *The American Economic Review*, Vol. 82, No. 1, pp. 34 – 51.

Lin, J. Y. and Yang, D. T. 1998. On the causes of China’s agricultural crisis and the great leap famine, in *China Economic Review*, Vol. 9, No. 2, pp. 125 – 140.

Majid, N. 2001. “Working poor in deveoping countries”, in *International Labour Review*, Vol. 140, No. 3, pp. 271 – 291.

—. 2005. *On the evolution of the employment structure in developing countries*, ILO Employment Strategy Papers, No. 18 (Geneva)

—. 2014. “Measuring employment in developing countries”, in *World Economics*, Vol. 15, No. 3, July – September, pp. 1 – 31.

McMillan, M. and S. Rodrik, D. 2011. *Globalization, structural change and productivity growth,* NBER Working Paper No. 17143 (Cambrdige MA).

Meng, X., Qian, N. and Yared, P, 2010. *The institutional causes of China’s Great Famine,* Columbia Business School research Paper, November 2010 (New York NY).

Nabar, M. and Yan, K. 2013. *Sector-Level Productivity, Structural Change, and Rebalancing in China*, IMF Working Paper (Washington DC).

National Bureau of Statistics. 2013. *Report on the rural migrant workers monitoring survey* (Beijing, Rural Department of NBS).

Park, A., Wu, Y. and Du, Y. 2012. *Informal employment in urban China: Measurement and implications*, World Bank Working Paper 77737 (Washington DC).

Ravallion, M., and Chen, Shaohua (2004), China's (Uneven) Progress Against Poverty, World Bank Policy Research Working Paper No. 3408. World Bank.

Schneider, A. and Mertes, C. M. 2014. “Expansion and growth in Chinese cities, 1978–2010”, in *Environmental Research Letters*, Vol 9, No. 2, pp. 1 – 11.

Scott, G. 2014. Gender and power: Sterilisation under the emergency in India, 1975-1977, paper presented at the North West Gender Conference, Lancaster, 22 Apr.

Sen, A. 1975. *Employment and technology and development* (Oxford, Clarendon Press).

Sigurdson, J. 1977. *Rural Industrialization in China*, Harvard East Asian Monographs, No 73. (Cambridge MA, Harvard University Asia Center).

UN DESA. 2015. World Population Prospects 2015. Available at: http://esa.un.org/unpd/wpp/DVD/

Wang, X. and Sun, W. 2014. "Discrepancy between registered and actual unemployment rates in China: An investigation in provincial capital cities", in *China & World Economy*, Vol. 22, Issue 4, pp. 40 – 59.

Wang, D. 2008. "Lewis turning point and China's experiences" in *Reports on China's Population and Labor*, No. 9, pp. 88 – 101.

World Bank, 2015. World Development Indicators, available at: http://data.worldbank.org/data-catalog/world-development-indicators [downloaded August 2015].

Xie, Y. and Zhou, X. 2014. "Income inequality in today's China", in *Proceedings of the National Academy of Sciences*, Vol. 111, No. 19, pp. 6928 – 6933.

Yeh, K.C. 2001. "China's economic growth: recent trends and prospects", In Chen, S. and Wolf Jr, C. (eds.), *China, United States and the global economy* (Santa Monica, CA, The Rand Corporation).

Zeng, D. Z. 2011. *How do special economic zones and industrial clusters drive China's rapid development?* World Bank Policy Research Working Paper Series, No. 5583 (Washington DC).

Zhang, J. 2011. "China's success in increasing per capita food production", in *Journal of Experimental Botany*, May 2011, pp. 1 – 5.

Zhang, J., Jiang, C. and Wang, P. 2014. *Total factor productivity and China's miraculous growth: An empirical analysis*. Available at SSRN: http://ssrn.com/abstract=2456009 [18. Aug. 2015].

Zhang, K. H. and Song, S. 2003. "Rural–urban migration and urbanization in China: Evidence from time-series and cross-section analyses", in *China Economic Review*, Vol. 14, Issue 4, pp. 386 – 400.

Zhang, M. 2013. "China's declining labor pool approaching the 'Lewis turning point': IMF Paper", in: *International Business Times*, 4 Feb. 2013, Available at: http://www.ibtimes.com/chinas-declining-labor-pool-approaching-lewis-turning-point-imf-paper-1059950 [18. Aug. 2015].

Zhao, Y. 1999. "Leaving the countryside: Rural-to-urban migration decisions in China", in *American Economic Review*, Vol. 89, No. 2, pp. 281 – 286.

Zou, Wei. 2003. "The Changing Face of Rural Enterprises", in: *China Perspectives*, Issue 50. November – December, pp. 2 – 17.

Zu, L. 2009. "Enterprise Reform and Restructuring in China", in *Corporate Social Responsibility, Corporate Restructuring and Firm's Performance: Empirical Evidence from Chinese Enterprises*, (Heidelberg, Springer), pp. 135 – 191.

Annex

Annex A Data sources

Data presented in this annex are either directly taken from or estimated on the basis of data from the following sources:

- *China Labour Statistical Yearbooks*, various years; available at: http://tongji.cnki.net/overseas/engnavi/HomePage.aspx?id=N2011010069
- *China Statistical Yearbooks*, various years; available at: http://www.stats.gov.cn/tjsj/ndsj/.
- *China Statistical Yearbooks*, various years .We have also used hard copies of older yearbooks going back to 1990s.
- *Report on the rural migrant workers monitoring survey*, (Beijing, Rural Department of NBS) National Bureau of Statistics (NBS). 2013.
- United Nations Department of Economic and Social Affairs (UNDESA) database, available at: http://esa.un.org/unpd/wpp/DVD/
- World Bank, *World Development Indicators*, available at: http://data.worldbank.org/data-catalog/world-development-indicators

The aggregates of regular and non- regular employment in rural and urban China have been built up by adding annual data separated by sectors for agriculture, manufacturing, other industry and services. These are sometimes not equal to the aggregates for the category in any particular year. For post-2001 data we use the following sources: NBS, China Statistical Yearbook 2004 Tables 5-6,5-7,5-10,5-12,5-16 and 5-17; China Statistical Yearbook 2005-2012 Tables 5-7,5-9,5-10,5-11; NBS and Ministry of Labour and Social Security (MOLSS) China Labour Statistical Yearbook 2003 Table 1-18 and 7-3. For TVEs we have used China Labour Statistical Yearbook 2013Table 7-2. For rural estimates on registered small private enterprises and registered self-employment in individual businesses, prior the 2001, we use Ghose (2005). Our choice of building up data from broad sectoral aggregates as opposed to using the aggregates that are given for each year in the latest online are not large enough to affect regression results.

Annex B Data tables

Table A1. Annual population growth rate in China, 1990-2013

Year	Annual growth rate
1990	1.48
1991	1.37
1992	1.23
1993	1.16
1994	1.14
1995	1.09
1996	1.05
1997	1.03
1998	0.96
1999	0.87
2000	0.79
2001	0.73
2002	0.67
2003	0.62
2004	0.60
2005	0.59
2006	0.56
2007	0.52
2008	0.51
2009	0.50
2010	0.48
2011	0.48
2012	0.49
2013	0.49

Table A2. Average value added per worker in agriculture, 1990-2012 (in constant ¥)

Year	Value added per employed person in agriculture, in ¥
1990	2643.47
1991	2694.171
1992	2849.918
1993	3064.626
1994	3278.736
1995	3549.103
1996	3806.215
1997	3937.105
1998	4035.834
1999	4080.266
2000	4146.417
2001	4220.829
2002	4314.607
2003	4475.683
2004	4945.413
2005	5420.083
2006	5958.572
2007	6424.989
2008	6953.291
2009	7503.176
2010	8092.546
2011	8860.457
2012	9558.65

Table A3. Total employment in town and village enterprises, 1990-2012 (in millions)

Year	Total employment in TVEs, in millions
1990	93.67
1991	92.65
1992	96.09
1993	106.25
1994	123.45
1995	120.17
1996	128.62
1997	135.08
1998	91.58
1999	125.37
2000	127.04
2001	128.20
2002	130.86
2003	132.88
2004	135.73
2005	138.66
2006	142.72
2007	146.80
2008	150.90
2009	154.51
2010	155.88
2011	158.93
2012	161.86

Table A4. Internal migration in China, 1993-2013 (in millions)

Year	All long term rural-urban migrants hukou plus non-hukou	All migrants	All floating migrants
1993	80.19		
1994	88.49		
1995	93.46	143.16	49.7
1996	94.11	154.11	60.0
1997	96.05	157.85	61.8
1998	96.93	159.33	62.4
1999	102.90	166.595	63.7
2000	111.33	255.73	144.4
2001	115.49	235.5225	120.0
2002	121.92	229.92	108.0
2003	131.16	237.06	105.9
2004	137.69	240.69	103
2005	145.13	298.23	153.1
2006	152.70	274.3	121.6
2007	157.84	278.54	120.7
2008	159.33	283.63	124.3
2009	163.78	287.4821	123.7
2010	171.83	294.4071	122.575
2011	177.11	299.6871	122.575
2012	181.84	304.4171	122.575
2013	184.58	307.1571	122.575

Table A5. Rural-urban migrant workers in China, 1990-2013 (in millions)

Year	Long term rural-urban migrant workers (non hukou)	Long term rural-urban migrant workers (with hukou)	All long term rural-urban migrants, hukou and non-hukou
1990		19.24	
1991		19.24	
1992		18.7	
1993	62.00	18.19	80.19
1994	70.00	18.49	88.49
1995	75.00	18.46	93.46
1996	76.60	17.51	94.11
1997	78.20	17.85	96.05
1998	79.80	17.13	96.93
1999	86.03	16.87	102.90
2000	92.25	19.08	111.33
2001	98.48	17.01	115.49
2002	104.70	17.22	121.92
2003	113.90	17.26	131.16
2004	118.20	19.49	137.69
2005	125.80	19.33	145.13
2006	132.10	20.6	152.70
2007	137.00	20.84	157.84
2008	140.41	18.92	159.33
2009	145.30	18.48211	163.78
2010	153.35	18.48211	171.83
2011	158.63	18.48211	177.11
2012	163.36	18.48211	181.84
2013	166.10	18.48211	184.58

Table A6. Value added per employed in industry (in constant US$) and employment in traditional formal enterprises (in ten thousands), 1990-2012

Year	Value added per employed person in industry (constant US$)	Employment in traditional formal enterprises (in ten thousands)
1990	9242.71	13910
1991	10404.01	14290
1992	12306.38	14510
1993	14149.88	14310
1994	16367.89	14100
1995	18231.04	14040
1996	19746.55	13900
1997	21362.15	13590
1998	23192.23	10720
1999	25352.58	9990
2000	28087.75	9330
2001	30431.38	8650
2002	34598.63	7990
2003	38383.14	7520
2004	40651.42	7240
2005	42853.31	6950
2006	45689.71	7120
2007	49208.35	7090
2008	53102.44	6830
2009	56922.13	7030
2010	61666.28	7120
2011	65891.48	7310

Table A7. Rural employment as a percentage of total employment, 1990-2011

Year	Rural employment as a % of total employment
1990	73.68
1991	73.33
1992	73.00
1993	72.66
1994	72.35
1995	72.03
1996	71.11
1997	70.24
1998	69.40
1999	68.61
2000	67.88
2001	66.86
2002	65.67
2003	64.43
2004	63.25
2005	61.97
2006	60.48
2007	58.91
2008	57.52
2009	56.06
2010	54.42
2011	53.01

Table A8. Percentage of employed with education above junior school level, by sector, 1996-2012

Year	All	Agriculture	Manufacturing	Other industry	Services
1996	14.2				
1997	15.7				
1998	15.4				
1999	15.8				
2000	17.5				
2001	19.1				
2002	19.1	8.3	41.4	45.1	64.1
2003	20.4	5.0	29.7	34.6	61.3
2004	20.6	5.0	29.6	32.1	59.2
2005	18.9	4.9	26.2	36.6	61.7
2006	18.5	5.0	28.6	39.0	64.5
2007	18.8	5.2	28.2	37.9	60.1
2008	19.2	7.5	35.7	45.3	64.2
2009	20.3	6.0	29.2	36.6	61.3
2010	23.9	6.4	29.9	40.6	63.1
2011	29.7	6.9	34.8	42.7	63.4
2012	30.7	6.9	36.4	43.4	61.7

Note: New industry classification is adopted in the year of 2003 and 2011.

Table A9. Employment share by sector, 1990-2012

Year	Primary Industry	Secondary Industry	Tertiary Industry
1990	60%	21%	19%
1991	60%	21%	19%
1992	59%	22%	20%
1993	56%	22%	21%
1994	54%	23%	23%
1995	52%	23%	25%
1996	51%	24%	26%
1997	50%	24%	26%
1998	50%	24%	27%
1999	50%	23%	27%
2000	50%	23%	28%
2001	50%	22%	28%
2002	50%	21%	29%
2003	49%	22%	29%
2004	47%	23%	31%
2005	45%	24%	31%
2006	43%	25%	32%
2007	41%	27%	32%
2008	40%	27%	33%
2009	38%	28%	34%
2010	37%	29%	35%
2011	35%	30%	36%
2012	34%	30%	36%

Table A10. Value added per employed person and employment population ratio, 1990-2011 (log)

Year	Log of employment to population ratio	Log of value added per employed person
1990	4.04	8.67
1991	4.04	8.74
1992	4.04	8.86
1993	4.04	8.98
1994	4.04	9.08
1995	4.03	9.18
1996	4.04	9.26
1997	4.04	9.33
1998	4.04	9.39
1999	4.04	9.46
2000	4.04	9.53
2001	4.05	9.60
2002	4.05	9.68
2003	4.05	9.77
2004	4.05	9.86
2005	4.05	9.96
2006	4.05	10.08
2007	4.05	10.20
2008	4.04	10.29
2009	4.04	10.38
2010	4.04	10.47
2011	4.04	10.56

Table A11. Employment and working age population, 1990-2011 (log)

Year	Log of employment	Log of working age population
1990	6.47	6.72
1991	6.48	6.73
1992	6.49	6.74
1993	6.50	6.76
1994	6.51	6.77
1995	6.52	6.79
1996	6.54	6.80
1997	6.55	6.82
1998	6.56	6.83
1999	6.57	6.84
2000	6.58	6.88
2001	6.59	6.90
2002	6.60	6.90
2003	6.60	6.91
2004	6.61	6.93
2005	6.62	6.95
2006	6.62	6.96
2007	6.62	6.97
2008	6.63	6.98
2009	6.63	6.99
2010	6.63	7.02
2011	6.64	7.03

Table A12. Percentage employed with more than junior school qualifications and percentage employed over 45 years, 1996-2012

Year	Percentage employed with more than junior school qualifications	Percentage employed over 45 years
1996	14.2	25.6
1997	15.7	26.5
1998	15.4	27.3
1999	15.8	28.3
2000	17.5	28.8
2001	19.1	29.2
2002	19.1	30.3
2003	20.4	30.9
2004	20.6	30.9
2005	18.9	33.6
2006	18.5	35.4
2007	18.8	36.6
2008	19.2	38.3
2009	20.3	38.8
2010	23.9	35.0
2011	29.7	35.2
2012	30.7	37.1

Table A13. Total employment and labour force, 1990-2010 (in millions)

Year	Total employment (in millions)	Labour force (in millions)
1990	647.49	653.23
1991	654.91	660.91
1992	661.52	667.82
1993	668.08	674.68
1994	674.55	681.35
1995	680.65	688.55
1996	689.50	697.65
1997	698.20	708.00
1998	706.37	720.87
1999	713.94	727.91
2000	720.85	739.92
2001	727.97	738.84
2002	732.80	744.92
2003	737.36	749.11
2004	742.64	752.90
2005	746.47	761.20
2006	749.78	763.15
2007	753.21	765.31
2008	755.64	770.46
2009	758.28	775.10
2010	761.05	783.88
2011	764.20	785.79

Table A14. Labour force participation rate, 1990-2010

Year	Labour force participation rate (aged 16 and above)
1990	79.0
1991	78.9
1992	78.7
1993	78.1
1994	77.9
1995	77.4
1996	77.4
1997	77.3
1998	77.8
1999	77.6
2000	75.7
2001	74.7
2002	74.7
2003	74.4
2004	73.8
2005	73.0
2006	72.3
2007	71.9
2008	71.6
2009	71.2
2010	70.1
2011	69.8

Table A15. Registered and estimated unemployed, 1990-2011 (in millions)

Year	Unemployment estimate	Registered unemployed
1990	5.74	3.83
1991	6.00	3.52
1992	6.30	3.64
1993	6.60	4.20
1994	6.80	4.76
1995	7.90	5.20
1996	8.15	5.53
1997	9.80	5.77
1998	14.50	5.71
1999	13.97	5.75
2000	19.07	5.95
2001	10.87	6.81
2002	12.12	7.70
2003	11.75	8.00
2004	10.26	8.27
2005	14.73	8.39
2006	13.37	8.47
2007	12.10	8.30
2008	14.82	8.86
2009	16.82	9.21
2010	22.83	9.08
2011	21.59	9.22

Table A16. Percentage of unemployed persons with primary education or less and percentage unemployed with more than junior school education, 2001-2012

Year	Percentage of urban unemployed with more than junior school education	Percentage of urban unemployed with primary education or less
2001	42.50	7.50
2002	41.10	8.50
2003	42.70	7.90
2004	43.30	7.40
2005	42.28	9.34
2006	46.23	8.51
2007	49.48	6.36
2008	50.13	6.79
2009	51.07	7.55
2010	51.59	7.78
2011	53.50	6.77
2012	51.34	7.38

Table A17. GDP per capita (constant US$) and the unemployment rate in China, 1990-2012

Year	GDP per capita (constant US$)	Unemployment rate
1990	483.19	0.88
1991	494.94	0.91
1992	533.79	0.94
1993	602.84	0.98
1994	679.30	1.00
1995	759.85	1.15
1996	834.08	1.17
1997	908.22	1.38
1998	983.17	2.01
1999	1051.05	1.92
2000	1122.26	2.58
2001	1206.61	1.47
2002	1307.41	1.63
2003	1429.55	1.57
2004	1564.40	1.36
2005	1731.13	1.94
2006	1939.71	1.75
2007	2202.89	1.58
2008	2402.78	1.92
2009	2611.16	2.17
2010	2870.05	2.91
2011	3121.97	2.75
2012	3344.54	2.78

Table A18. Average GDP growth in China, by decade, 1980-2013

Period	Average GDP growth
2000-2013	9.86
1990-1999	10.00
1980-1989	9.74
1980-2013	9.86

Table A19. Annual GDP per capita, 1980-2013 (constant LCU)

Year	GDP per capita (constant LCU)
1980	1543.506
1981	1603.758
1982	1723.44
1983	1883.078
1984	2140.583
1985	2395.989
1986	2569.444
1987	2821.459
1988	3089.589
1989	3166.208
1990	3239.87
1991	3489.32
1992	3937.67
1993	4436.244
1994	4960.154
1995	5442.593
1996	5924.889
1997	6409.79
1998	6845.885
1999	7304.014
2000	7857.676
2001	8448.298
2002	9154.04
2003	10009.23
2004	10953.41
2005	12120.75
2006	13581.2
2007	15423.86
2008	16823.47
2009	18282.46
2010	20095.14
2011	21858.98
2012	23417.37
2013	25089.59

Table A20. Labour productivity by sector, 1990-2012 (in constant ¥ per person)

Year	Agriculture	Industry	Services	All Sectors
1990	2643.47	9242.71	12241.69	5831.38
1991	2694.17	10404.01	12897.98	6272.60
1992	2849.92	12306.38	13705.28	7051.33
1993	3064.63	14149.88	14219.07	7912.47
1994	3278.74	16367.89	14420.24	8812.52
1995	3549.10	18231.04	14557.88	9656.13
1996	3806.22	19746.55	14999.91	10462.55
1997	3937.11	21362.15	16152.02	11291.58
1998	4035.83	23192.23	17107.44	12027.71
1999	4080.27	25352.58	18367.63	12816.20
2000	4146.42	28087.75	19529.45	13763.55
2001	4220.83	30431.38	21168.11	14760.18
2002	4314.61	34598.63	22493.62	15994.59
2003	4475.68	38383.14	23894.04	17489.27
2004	4945.41	40651.42	25000.72	19116.19
2005	5420.08	42853.31	27203.11	21169.06
2006	5958.57	45689.71	30144.08	23758.55
2007	6424.99	49208.35	34588.28	27015.84
2008	6953.29	53102.44	37146.48	29530.00
2009	7503.18	56922.13	39486.95	32148.11
2010	8092.55	61666.28	42556.00	35392.56
2011	8860.46	65891.48	44942.26	38565.81
2012	9558.65	68974.81	47847.19	41383.60

Table A21. Decomposition of labour productivity growth by sector, 1990-2012

Period	Primary industry	Secondary industry	Tertiary industry	Total
1990-2000	4.64	11.81	4.81	8.99
1990-2012	6.06	9.62	6.43	9.33
1996-2002	2.85	9.60	6.43	7.48
2001-2012	7.25	7.80	7.78	9.62
2003-2012	8.29	7.16	7.88	9.99

Table A22. Employment composition in China, 1990-2010 (in millions)

Year	Regular employment	Non-regular employment	Total employment
1990	264.85	382.64	647.49
1991	275.39	379.52	654.91
1992	293.25	368.27	661.52
1993	325.25	342.83	668.08
1994	332.97	341.58	674.55
1995	353.02	327.63	680.65
1996	363.68	325.82	689.50
1997	325.98	372.22	698.20
1998	347.07	359.30	706.37
1999	345.74	368.20	713.94
2000	346.50	374.35	720.85
2001	347.56	380.41	727.97
2002	356.58	376.22	732.80
2003	336.53	400.83	737.36
2004	345.46	397.18	742.64
2005	363.72	382.75	746.47
2006	381.40	368.38	749.78
2007	398.60	354.61	753.21
2008	412.31	343.33	755.64
2009	433.48	324.80	758.28
2010	453.83	307.22	761.05
2011	479.56	284.64	764.20

Table A23. Regular employment as a percentage of total employment, 1990-2011

Year	Regular employment as a % of total employment
1990	40.90
1991	42.05
1992	44.33
1993	47.74
1994	49.36
1995	51.87
1996	52.96
1997	46.69
1998	49.13
1999	48.43
2000	48.07
2001	47.74
2002	48.66
2003	45.64
2004	46.52
2005	48.73
2006	50.87
2007	45.27
2008	54.56
2009	49.31
2010	51.65
2011	54.68

Table A24. Rural employment composition in China, 1990-2010 (in millions)

Year	Regular employment	Non-regular employment. Built up by sectors	Total employment
1990	117.45	359.63	477.08
1991	122.69	357.57	480.26
1992	136.95	345.96	482.91
1993	165.75	319.71	485.46
1994	169.07	318.95	488.02
1995	183.52	306.73	490.25
1996	191.78	298.50	490.28
1997	152.38	338.01	490.39
1998	191.27	298.94	490.21
1999	193.44	296.38	489.82
2000	199.80	289.54	489.34
2001	203.06	283.68	486.74
2002	207.48	273.73	481.21
2003	175.33	299.73	475.06
2004	179.56	290.15	469.71
2005	187.62	274.96	462.58
2006	194.60	258.88	453.48
2007	199.50	244.18	443.68
2008	203.11	231.50	434.61
2009	209.88	215.18	425.06
2010	217.83	196.37	414.2
2011	214.16	190.94	405.1

Note : Non regular employment in rural China is the difference between estimates of regular and total employment. Regular employment in rural areas is simply the addition of TVE employment estimates and the estimates registered self-employment.

TVE estimates are based on the 2013 Statistical Yearbook. For regular employment our estimates of self employment (EI) prior to 2001 also see Ghose (2005).

Table A25. Agricultural productivity (productivity index, with 1990=100) and regular rural employment as a percentage of total rural employment, 1990-2011

Year	Regular rural employment as a % of total rural employment	Agricultural productivity per worker (in constant ¥)	Agricultural productivity index (1990 = 100)
1990	24.62	2643.47	100
1991	25.55	2694.17	101.92
1992	28.36	2849.92	107.81
1993	34.14	3064.63	115.93
1994	34.65	3278.74	124.03
1995	37.43	3549.10	134.26
1996	39.12	3806.22	143.99
1997	31.07	3937.11	148.94
1998	39.02	4035.83	152.67
1999	39.49	4080.27	154.35
2000	40.83	4146.42	156.85
2001	41.72	4220.83	159.67
2002	43.12	4314.61	163.22
2003	36.91	4475.68	169.31
2004	38.23	4945.41	187.08
2005	40.56	5420.08	205.04
2006	42.91	5958.57	225.41
2007	44.96	6424.99	243.05
2008	46.73	6953.29	263.04
2009	49.38	7503.18	283.84
2010	52.59	8092.55	306.13
2011	52.87	8860.46	335.18

Table A26. Employment in TVEs as a percentage of total rural employment and regular employment as a percentage of total rural employment, 1990-2011

Year	Regular rural employment as a % total rural employment	TVE employment as a % total rural employment
1990	24.62	19.42
1991	25.55	20.01
1992	28.36	22.00
1993	34.14	25.43
1994	34.65	24.62
1995	37.43	26.24
1996	39.12	27.55
1997	31.07	18.68
1998	39.02	25.57
1999	39.49	25.94
2000	40.83	26.20
2001	41.72	26.88
2002	43.12	27.61
2003	36.91	28.57
2004	38.23	29.52
2005	40.56	30.85
2006	42.91	32.37
2007	44.96	34.01
2008	46.73	35.55
2009	49.38	36.67
2010	52.59	38.37
2011	52.87	39.96

Table A27. Regular and non-regular urban employment, 1990-2011 (employed in millions)

Year	Regular employment	Non-regular employment	Total urban employment
1990	147.4	23.01	170.41
1991	152.7	21.95	174.65
1992	156.3	22.31	178.61
1993	159.5	23.12	182.62
1994	163.9	22.63	186.53
1995	169.5	20.9	190.4
1996	171.9	27.32	199.22
1997	173.6	34.21	207.81
1998	155.8	60.36	216.16
1999	152.3	71.82	224.12
2000	146.7	84.81	231.51
2001	144.5	96.73	241.23
2002	149.1	102.49	251.59
2003	161.2	101.1	262.3
2004	165.9	107.03	272.93
2005	176.1	107.79	283.89
2006	186.8	109.5	296.3
2007	199.1	110.43	309.53
2008	209.2	111.83	321.03
2009	223.6	109.62	333.22
2010	236	110.87	346.87
2011	265.4	93.74	359.14

Table A28. Composition of urban regular employment in China, 1990-2011 (in millions). Built up by aggregating sectors.

Year	Traditional formal employment	Emerging formal enterprises	Individual businesses and small enterprises	Total regular employment
1990	139.1	1.6	6.7	147.4
1991	142.9	2.2	7.6	152.7
1992	145.1	2.8	8.4	156.3
1993	143.1	5.2	11.2	159.5
1994	141	7.4	15.5	163.9
1995	140.4	8.7	20.4	169.5
1996	139	9.4	23.5	171.9
1997	135.9	10.8	26.9	173.6
1998	107.2	16.3	32.3	155.8
1999	99.9	17.8	34.6	152.3
2000	93.3	19.3	34.1	146.7
2001	86.5	21.4	36.6	144.5
2002	79.9	25.7	43.5	149.1
2003	75.2	34.3	51.7	161.2
2004	72.4	38.3	55.2	165.9
2005	69.5	44.2	62.4	176.1
2006	71.2	45.9	69.7	186.8
2007	70.9	49.3	78.9	199.1
2008	68.3	53.6	87.3	209.2
2009	70.3	55.4	97.9	223.6
2010	71.2	59.4	105.4	236
2011	73.1	71	121.3	265.4

Table A29. Urban traditional formal employment as a percentage of regular employment and registered urban unemployment rate, 1990-2012

Year	Urban TF as a % of regular urban employment	Urban registered unemployment rate (%)
1990	94.37	2.5
1991	93.58	2.3
1992	92.83	2.3
1993	89.72	2.6
1994	86.03	2.8
1995	82.83	2.9
1996	80.86	3
1997	78.28	3.1
1998	68.81	3.1
1999	65.59	3.1
2000	63.60	3.1
2001	59.86	3.6
2002	53.59	4
2003	46.65	4.3
2004	43.64	4.2
2005	39.47	4.2
2006	38.12	4.1
2007	35.61	4
2008	32.65	4.2
2009	31.44	4.3
2010	30.17	4.1
2011	27.54	4.1
2012		4.1

Table A30. Urban non-regular employment and rural-urban migrants without hukou, 1993-2011 (in millions)

Year	Non-regular urban employment	All rural -urban migrants
1993	23.12	80.19
1994	22.63	88.49
1995	20.9	93.46
1996	27.32	94.11
1997	34.21	96.05
1998	60.36	96.93
1999	71.82	102.90
2000	84.81	111.33
2001	96.73	115.49
2002	102.49	121.92
2003	101.1	131.16
2004	107.03	137.69
2005	107.79	145.13
2006	109.5	152.70
2007	110.43	157.84
2008	111.83	159.33
2009	109.62	163.78
2010	110.87	171.83
2011	93.74	177.11

Table A31. Proxy for weal wages in modern and traditional sectors, 1990-2011

Year	Wages proxy TF and non-TF	TF	Non TF	TVEs
1990	980.00	980.00		1217.00
1991	980.50	980.50		
1992	981.00	981.00		
1993	981.50	981.50	490.75	
1994	982.00	982.00	491.00	
1995	982.50	982.50	491.25	2152.66
1996	983.00	983.00	491.50	
1997	983.50	983.50	491.75	2666.88
1998	984.00	984.00	393.60	2807.22
1999	656.33	656.33	393.80	2730.97
2000	656.67	656.67	394.00	
2001	657.00	657.00	394.20	
2002	657.33	657.33	394.40	
2003	657.67	657.67	394.60	2797.16
2004	658.00	658.00	394.80	2753.70
2005	658.33	658.33	395.00	2905.28
2006	658.67	658.67	395.20	2890.61
2007	659.00	659.00	395.40	2860.35
2008	659.33	659.33	395.60	3018.63
2009	659.67	659.67	395.80	3168.16
2010	660.00	660.00	396.00	3286.86
2011	660.33	660.33	396.20	3857.21

Table A32. Regular employment and labour force growth rates, 1991-2012

Year	Regular employment growth	Labour force growth
1991	4.0%	1.2%
1992	6.5%	1.0%
1993	10.9%	1.0%
1994	2.4%	1.0%
1995	6.0%	1.1%
1996	3.0%	1.3%
1997	-10.4%	1.5%
1998	6.5%	1.8%
1999	-0.4%	1.0%
2000	0.2%	1.6%
2001	0.3%	-0.1%
2002	2.6%	0.8%
2003	-5.6%	0.6%
2004	2.7%	0.5%
2005	5.3%	1.1%
2006	4.9%	0.3%
2007	4.5%	0.3%
2008	3.4%	0.7%
2009	5.1%	0.6%
2010	4.7%	1.1%
2011	5.7%	0.2%

Table A33. Rural and urban income per capita, 1978-2003 (in 1978 constant prices)

Year	Rural income per capita	Urban income per capita
1978	133.6	343.4
1979		
1980	185.7	436.1
1981		
1982		
1983		
1984		
1985	359.3	550.8
1986	370.9	626.7
1987	390.1	641.8
1988	415.1	626.7
1989	408.4	627.7
1990	415.8	680.3
1991	424.0	729.4
1992	449.2	799.8
1993	463.5	876.0
1994	486.8	950.5
1995	512.6	996.9
1996	558.7	1035.7
1997	584.4	1071.1
1998	609.5	1132.9
1999	632.6	1238.3
2000	646.0	1317.6
2001	673.1	1429.6
2002	705.4	1621.2
2003	735.7	1767.1

Table A34. Urban-rural ratio of real income, 1978-2003

Year	Urban-rural ratio of real income
1978	2.57
1979	
1980	2.35
1981	
1982	
1983	
1984	
1985	1.53
1986	1.69
1987	1.65
1988	1.51
1989	1.54
1990	1.64
1991	1.72
1992	1.78
1993	1.89
1994	1.95
1995	1.94
1996	1.85
1997	1.83
1998	1.86
1999	1.96
2000	2.04
2001	2.12
2002	2.30
2003	2.40

Source: Derived from Heilig et al. (2005). *Poverty alleviation in China: A Lesson for the Developing World?* Paper presented at the International Conference on the West Development and Sustainable Development, 2 – 4. Aug. (Urumqi)

Table A35. Employment situation index (1990=100), 1990-2011

Year	Share of regular employment index	Output per worker index	Estimated unemployment rate index	Total
1990	100	100	100	100
1991	102.80	105.00	99.97	102.59
1992	108.37	114.12	99.93	107.48
1993	119.02	124.67	99.90	114.53
1994	120.68	134.50	99.88	118.35
1995	126.80	144.71	99.73	123.75
1996	128.95	155.24	99.71	127.97
1997	114.14	166.51	99.49	126.72
1998	120.12	175.38	98.86	131.45
1999	118.39	185.04	98.95	134.13
2000	117.51	195.91	98.29	137.24
2001	116.72	209.33	99.40	141.82
2002	118.96	222.93	99.25	147.05
2003	111.58	239.32	99.30	150.07
2004	113.73	262.39	99.51	158.54
2005	119.12	293.65	98.93	170.57
2006	124.36	333.90	99.12	185.79
2007	129.38	385.32	99.29	204.66
2008	133.40	422.69	98.95	218.34
2009	139.76	461.17	98.70	233.21
2010	145.79	506.20	97.95	249.98
2011	153.42	553.41	98.11	268.32

Table A36. Agriculture and services productivity index (1990=100), 1990-2012

Year	Services productivity index	Agricultural productivity index
1990	100	100
1991	105.36	101.918
1992	111.96	107.8098
1993	116.15	115.9319
1994	117.80	124.0315
1995	118.92	134.2592
1996	122.53	143.9856
1997	131.94	148.937
1998	139.75	152.6718
1999	150.04	154.3527
2000	159.53	156.8551
2001	172.92	159.67
2002	183.75	163.2176
2003	195.19	169.3109
2004	204.23	187.0804
2005	222.22	205.0367
2006	246.24	225.41
2007	282.54	243.0513
2008	303.44	263.0365
2009	322.56	283.8382
2010	347.63	306.1335
2011	367.12	335.1828
2012	390.85	361.5948

Table A37. Percentage gap of employed with more than junior school education (urban China – all China), 2002-2012

Year	Percentage gap of employed with more than junior school education
2002	23.40
2003	24.70
2004	23.90
2005	17.51
2006	18.54
2007	17.70
2008	16.86
2009	16.67
2010	18.33
2011	20.32
2012	19.29

Table A38. Decomposition of labour productivity growth, 1990-2012

Year	Capital accumulation	Labour transfer component	Total
1990-2012	6.89	2.44	9.33
2003-2012	7.93	2.06	9.99
1990-2000	6.20	2.79	8.99
2001-2012	7.52	2.10	9.62
1990-1995	7.44	3.19	10.63
1996-2002	5.36	2.11	7.48

Employment Working Papers

The Working Papers from 2008 are available at:

www.ilo.org/employment/Whatwedo/Publications/working-papers

Please scan the code

Employment Policy Department

For more information visit our website: http://www.ilo.org/employment

International Labour Office
Employment Policy Department
4, route des Morillons
CH-1211 Geneva 22

Email: employment@ilo.org

Employment Policy Department

For more information, visit our website
http://www.ilo.org/employment

International Labour Office
Employment Policy Department
Route des Morillons 4
CH-1211 Geneva 22

Email: edempdoc@ilo.org

ISSN 1999-2939