The factor income distribution in China: 1978–2007

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ABSTRACT

This paper investigates changes in aggregate labor share in China during 1978 and 2007 with a particular focus on the 1995–2007 period during which official statistics report a drop of 12.45 percentage points in labor's share of national income (labor share). Our main findings are: (1) The reported fall in aggregate labor share is overstated. According to the official statistics released by the NBS (2007a), the labor share fell 5.25 percentage points from 2003 to 2004. However this dramatic decline, 42.16% of the total reported decline of the labor share from 1995 to 2007, is completely due to the changes in the way NBS break down the operating surplus state-owned and collective-owned farms and the mixed income of the owners of individual economy; (2) For the last three decades, two main forces have been driving shifts in the aggregate labor share: (i) structural transformation between the agriculture and non-agriculture sectors and (ii) shifts in the labor share within the industry sector; (3) From 1995 to 2003, these two effects are both negative and together drive down aggregate labor share by 5.48 percentage points. The structural change explains 61.31% of the decline and the remaining 38.69% of the decline is due to the changes in the labor share within sectors, primarily in the industry sector; (4) Labor share in agriculture is lower than labor share in services. Therefore, when the service sector grows relative to the agriculture sector in the economy, the aggregate labor share of income declines; and (5) Restructuring of the SOEs and expanded monopoly power are the main reasons for the decline of labor share within industry after 1998. Relative price shifts, the factor input ratio, and biased technological progress are all insignificant forces for this decline because the substitution between factors in the industry sector is nearly unit elastic.

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1. Introduction

During the last one and half decades, labor share in the national income of China has declined over 12.48 percentage points according to the official data released by the National Bureau of Statistics of China (NBS). Although many economies have observed a drop in the labor share in recent years, no other economy in the world has experienced a factor income distribution shift comparable to that of China (Economists, Oct 11th 2007). This precipitous decline in China's labor share has attracted wide attention.

Changes in factor income distribution are significant for two main reasons. First, a shift in factor income distribution impacts the flow of income to groups of different wealth levels in a population (Atkinson, 2000). Because labor ability is more equally distributed across a population than the capital is, a decline in the labor share exacerbates income inequality across a population. Since the *Reform and Openness*, China has experienced a steady increase in its GINI coefficient, nearly reaching 0.5 in recent years. For this reason, it has been proposed that the significant decline in the labor share may explain the steady increase in income inequality in China (Cai, Oct 17th 2005), which in turn might hinder China's future development (Subramanian, 2008).

Second, studying the changes in factor income shares improves our understanding of the investment ratio, which has been rising in China since the mid-1990s. According to NBS, today, China has the highest investment ratio in the world, exceeding 40% since 2003. Bai, Hsieh and Qian (2006) find that aggregate capital return does not show a clear decline after 1978 even though both

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the investment ratio and the capital–output ratio have been increasing since the mid-1990s. They cite the increase of the capital share of national income (i.e. decrease in the labor share) since 1995 as an explanation for these findings. In turn, Kuijis (2006) argues that the consumption ratio has declined because the share of China's household income has fallen. Since labor compensation is the main source of household income, the decline in the labor share is, of course, a key contributor to the drop in household income as a share of national income. The Bai, Hsieh and Qian (2006) and Kuijis (2006) conclusions are supported by Nicholas Kaldor's theory that economies with a high capital share of income tend to have a high ratio of investment to output (Solow, 2000). These sources suggest that the increase in the investment ratio in China might be related to the increase in the capital share (and parallel decline in the labor share) since the mid-1990s.

In the present paper, we first discuss data sources and accounting methods for factor income shares in China. Using GDP by income approach at the provincial level we calculated the aggregate labor share since 1978. We find that the labor share fluctuates before 1995 after which it has been declining, most dramatically between 2003 and 2004.

We then investigate the large drop in the labor share between 2003 and 2004 and find that this abrupt decline is mainly caused by a change in categorization of the income of state-owned and collective-owned farms and the owners of the individual economy. Using 2004 National Economic Census data, we obtain estimates of operating surplus of state-owned and collective-owned farms and the mixed income of the self-employed owners of individual economy in 2004. We reclassify these two types of income as they were before 2004 to obtain an adjusted labor share for 2004. This adjustment reduces the decline of aggregate labor share between 1995 and 2007 from 12.45 to 7.2 percentage points.

Following the decomposition method advanced by Solow (1958), we quantify the relative importance of the two forces driving the movement in the aggregate labor share during 1978 and 2007: sectoral transformation and labor share changes within sectors. We find that both of them are important to understand shifts in aggregate labor share. Structural transformation from agriculture to non-agriculture sectors has shown negative impact on aggregate labor share since the mid-1980. Industry takes the major role in the within-sector change effect on aggregate labor share. The main reason for the accelerated decline of the aggregate labor share since the mid-1990s is that the labor share in the industry sector, which had been rising, began declining from its 1995 peak after 1998.

We further investigate the fundamental source of the significant structural change effect. NBS counts mixed income of rural household from agriculture as labor compensation. This accounting method has overstated the labor share in agriculture to a large degree. As a result, the differential labor share between agriculture and non-agriculture sectors is overstated, which causes the significant negative structural change effect on aggregate labor share when relative importance of agriculture declines.

To understand why the labor share in the industry sector began to decline in 1998, we design an econometric model to show the determinants of the labor share in this sector. By applying industrial survey data to our model, we determine that the decline of the SOEs and the increase in monopoly power are the main reasons for the shift in factor income shares within the industry sector. This conclusion contradicts the influential arguments that the decline of labor share after 1995 is caused by biased technological improvement (Huang and Xu, 2009), or depressed wage rate caused by declining labor bargaining power (Economists, Oct 11th 2007; Li, Liu and Wang, 2009; Wang, Oct 29th 2007), or over capital-intensive industry structure (Lin, April 28th 2007).

As far as we know, this paper is the first one that attempts to explain the movement in China's factor shares in the past three decades. In the literature of growth accounting, the measurement of factor shares are repeatedly visited (Ezaki and Sun 1999; Wang and Yao 2003; Young 2003). However, these works just make use of official GDP by income approach to calculate factor shares and pay little attention to its movement at all. As a matter of fact, with the pre 1995 estimates, they usually conclude that there are no trends in China's aggregate factor shares and use 0.5 as the average aggregate labor share. Furthermore, this paper particularly discusses the accounting method of GDP by income approach and also its implication on official factor shares for the first time. The problems with China's national income accounts have invited the attention of many scholars. For example, Wu (2001) pointed out that official price deflators were understated and hence exaggerated the growth rate of GDP. Rawski (2001) doubted that the official GDP growth by the NBS reflects the official objective rather than economic outcomes. Holz (2004) discussed the estimation of household consumption and concluded that the official consumption is unreliable. This paper contributes this line of literature by examining the NBS' accounting method of GDP by income approach.

The paper is organized as follows. Section 2 is devoted to the presentation of factor income distribution in China since 1978. We compare labor share computed with all available data in the National Accounts of China and discuss the trends of aggregate labor share. In Section 3, we explain how changes in GDP accounting method led to a precipitous decline of labor share in 2004. Adjustment in Section 3 shows that the abrupt decline of labor share from 2003 to 2004 completely originated from the changes in GDP accounting method. In Section 4, we analyze how the aggregate labor share changes with the structural transformation and labor share changes within sectors from 1978 to 2007. In Section 5, we show that the structural change effect is overestimated by the inaccurate inflated NBS statistics on the labor share in agriculture. Section 6 explains the movement of labor share in the industry sector. We present an econometric model of the determinants of the labor share in the industry sector and calculate the contribution of each factor to the decline of the labor share in this sector since 1998. Section 7 concludes.

2. The official estimates of aggregate labor share

In this section, we first explain how labor share is calculated with GDP by income approach data. Then we introduce all available sources for GDP by income approach in China's National Accounts. We compare the labor share estimates calculated with all possible sources and summarize the shifts of aggregate labor share from 1978 to 2007 at the end of this section.