

## BROOKINGS TRADE FORUM 2007

Nicholas R. Lardy  
Senior Fellow  
Peterson Institute for International Economics

Comments on John Whalley and Xian Xin,  
“China and FDI”

Brookings Trade Forum  
May 10-11, 2007

John Whalley and Xian Xin have provided a very imaginative analysis of the contribution of foreign direct investment to economic growth in China. China is an interesting case since foreign direct investment inflows have been large but China has been a significant and growing net supplier of capital to the rest of the world. China has been the number one recipient of foreign direct investment among emerging markets for 15 consecutive years but in the 25 years from 1982 through 2006 China absorbed foreign capital on a net basis in only 5 years. Thus it has long been clear that a principal contribution of foreign investment to China's growth has not been, as is typically the case, through allowing a level of domestic investment that exceeds the level of domestic savings. Rather the contribution of foreign investment in China must come through other factors that are embodied in foreign investment such as technology, managerial and marketing skills, and so forth.

The authors' reach several main conclusions. Of these the most important is that foreign invested firms now produce about a fifth of China's GDP and these firms account for a disproportionately large share of economic growth, over 40 percent in the most recent years they examine (2003 and 2004). They judge that unless the indigenous portion of the economy becomes more productive that a slowdown in FDI inflows, which they think is likely, will slow China's overall economic growth.

While there is no doubt that inward foreign direct investment has contributed substantially to the transformation of the domestic economy, my view is that the paper has over estimated its contribution.

It is important to recognize explicitly at the outset that the approach of the authors, to estimate separate production functions for the foreign and indigenous components of the economy, is quite challenging. To begin with there are no data partitioning the output of the Chinese economy into these two components. Only for industry (manufacturing, mining, and utilities) do the Chinese statistical authorities disaggregate value-added into the components contributed by foreign invested firms and indigenous firms. In order to partition the entire economy into its foreign and indigenous components the authors make the strong assumption that the marginal productivity of a dollar of foreign investment in agriculture, construction, and services is the same as that in industry. I don't know of direct evidence of whether or not this is the case and the issue is not addressed in the paper. Certainly indirect evidence suggests that the

assumption is not warranted.<sup>1</sup> If the productivity of capital is higher (lower) in manufacturing than in agriculture, construction, and services, then the foreign portion of the economy is overestimated (underestimated). Similarly, if the capital employed in industry has exhibited a growing positive productivity differential compared to investments in other sectors, then the authors' assumption would result in an overstatement of the overall growth rate of the foreign component of the economy.

A second critical building block in the authors' estimation procedures is the labor shares of the foreign and indigenous components of the economy. This calculation seems problematic. The authors estimate the wage bill of the foreign component of the economy as the product of official data on the number employed in the foreign sector and the average wage rate. Then to estimate the labor share of the indigenous component of the economy this estimate is subtracted from data on employee compensation. Two problems arise. First, what we want is total labor remuneration in each sector as a share of value added. But for the foreign sector the authors' procedure includes only the wage bill in the numerator and appears to make no allowance for non-wage labor costs, such as required social insurance payments to the government. Non-wage labor costs in Chinese manufacturing in 2002 were 55 percent of the wage bill.<sup>2</sup> Thus the authors appear to have substantially understated the labor share of output in the foreign sector. Second, to calculate the labor share of indigenous firms they subtract the foreign wage bill from data on employee compensation. This results in an overstatement of the labor share of output in the indigenous sector for two reasons. First, Chinese data on employee compensation include social insurance payments and other non-wage labor costs. Thus this procedure incorrectly attributes the non-wage labor compensation of the foreign sector to the indigenous sector. Second, Chinese data on employee compensation come from adding up the provincial entries for the employee compensation component of the income side of the gross regional product accounts. But the sum of the provincial regional product accounts from the income side, which are rarely if ever used in Chinese statistical analysis, exceeds the national gross domestic product reported in the GDP production accounts, which are the official data on China's GDP, by a significant amount. For example, in 2003 the sum of the provincial entries for gross regional product in the income accounts exceeds the national gross domestic product in the GDP production accounts by 15 percent.<sup>3</sup> The rest of the authors' analysis is based on the more commonly used GDP production data, suggesting the possibility that the compensation data used in the analysis are not consistent with the other GDP data used in the analysis. In short, it appears to me that the authors may have significantly overstated the labor share of output in the indigenous economy, both because they start with a total compensation figure that may be too large and because they then subtract the wage bill of the foreign sector rather than total labor compensation in the foreign sector. On the other

---

<sup>1</sup> David Dollar and Shang-Jin Wei, "Das (Wasted) Kapital: Firm Ownership and Investment Efficiency in China," IMF Working Paper 07/9 (January 2007) show that there is substantial variation in returns to capital across regions, forms of ownership, and sub-sectors of manufacturing in China. But their analysis does not include economic activity outside of manufacturing.

<sup>2</sup> Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, August 2005, p. 28.

<sup>3</sup> National Bureau of Statistics, *China Statistical Yearbook 2005* (Beijing: China Statistics Press, 2005), pp. 52 and 61.

hand the labor share of output in the foreign sector is almost certainly understated by at least half.

What difference could either of these criticisms of the authors' methodology make to the results they present? One striking finding the authors report is that over 30 percent of the growth of China's economy in the decade from 1995 to 2004 was contributed by foreign invested enterprises and that in both 2003 and 2004 foreign invested firms accounted for over 40 percent of China's economic growth. In short, the contribution of foreign capital to China's economic growth is quite high and apparently rising sharply over time.

This seems puzzling. The share of fixed investment in China financed by foreign direct investment fell from a peak of 11-12 percent in 1995-96 to an average of under 5 percent in 2003-2004.<sup>4</sup> Could the productivity of foreign firms in China be rising so rapidly relative to that of indigenous firms that they could account for a rising share of overall growth even as their share of investment fell by more than half?

A further check of the plausibility of the estimate that foreign firms account for a high and rising share of China's growth is to analyze the official data, mentioned above, on value added in industry by foreign and indigenous firms. These data show that foreign invested firms accounted for 28.4 percent of the expansion of value added in industry (defined to include manufacturing, mining and utilities) in 2004. Industry on this definition accounted for 45.9 percent of GDP in 2004.<sup>5</sup> In order for foreign firms across the entire economy to account for 40 percent or more of GDP growth in 2004, foreign firms would have had to contribute 50 percent or more of the growth of value added in agriculture, construction, and services, which cumulatively accounted for 54.1 percent of GDP in 2004. How productive must foreign firms have been to contribute 50 percent or more of the growth of value added outside of industry? We know that well over half of China's inbound foreign direct investment has always gone into industry (as just defined), for example 64 percent in 1998, 67 percent in 1999, 70 percent in 2000, and 74 percent in 2004.<sup>6</sup> That means foreign capital employed outside of industry is half or less the size of that employed in industry. For this foreign capital stock to have contributed 50 percent or more of the growth of value added outside of industry, it would have to be about four times more productive than the foreign capital stock employed in manufacturing, mining and utilities. This strikes me as unlikely in the extreme. If foreign capital deployed in agriculture, construction, and services was four times more productive than that in manufacturing, mining, and utilities we would expect the share of

---

<sup>4</sup> *China Statistical Yearbook 2005*, p. 186.

<sup>5</sup> *China Statistical Yearbook 2005*, p. 488. The data cover value-added of all state-owned enterprises and the value added of non state-owned enterprises with output value above RMB 5 million. On a gross value basis the output of the universe of all industrial enterprises exceeds this universe by a little under one-fifth. Data from *China Statistical Yearbook 2006*, p. 505 can be used to calculate that three-quarters of the gross value of output of the firms excluded from the disaggregation of value added into its indigenous and foreign components is produced by small private and collective indigenous firms and only one-quarter is produced by foreign invested firms.

<sup>6</sup> National Bureau of Statistics, *China Statistical Yearbook 2000* (Beijing: China Statistics Press, 2000), p. 610; *China Statistical Yearbook 2001*, p. 608 *China Statistical Yearbook 2005*, p. 648.

foreign capital flowing into the former sectors of the economy to be rising over time. But, as already noted, the actual trend is in the opposite direction.

My conclusion is that the estimate that foreign firms account for an average of 30 percent of the growth of the Chinese economy over the 1995-2004 decade and more than 40 percent in the final two years of that period is likely biased significantly upward. I would speculate, but can not show, that Whalley and Xin's result is driven by their partitioning procedure. I believe that foreign capital employed in industry has likely exhibited a positive and growing productivity differential compared to that in agriculture, construction, and services and that the procedures Whalley and Xin use thus overstate the growth of the foreign component of the economy.<sup>7</sup>

Similarly, I believe that some of the other findings in the paper do not withstand careful scrutiny. The authors, for example, argue that the share of foreign direct investment in the output of foreign invested enterprises is strikingly high. But since the capital share is a residual, this finding can be attributed in part to the 50 percent understatement of the labor share of value-added by foreign invested firms. The results from the decomposition of economic growth reported in Table 4 presumably also require some modification if the criticisms above are upheld. Overstatement (understatement) of growth in the foreign (indigenous) sector of the economy results in an upward (downward) biased estimate of the pace of growth of total factor productivity in the sector. Similarly it would seem that the contribution of the growth of the labor force (capital stock) to the expansion of the foreign sector is understated (overstated).

---

<sup>7</sup> One piece of evidence that suggests this possibility is the sharp rise in returns on foreign direct investment in industry. Between 1998 and 2003-04 pre-tax profits as a share of the sum of the depreciated value of fixed assets plus working capital rose from less than 6 percent to an average of 12 percent.