Foreign direct investment and China's regional income inequality ☆

Kang Yu [a], Xian Xin [b,c], Ping Guo [a], Xiaoyun Liu [d,*]

[a] School of Economics and Management, Zhejiang Forestry University, Zhejiang, 311300, PR China
[b] Center for Rural Development Policy, China Agricultural University, Beijing, 100083, PR China
[c] College of Economics and Management, China Agricultural University, Beijing, 100083, PR China
[d] College of Humanities and Development Studies, China Agricultural University, Beijing, 100083, PR China

ARTICLE INFO

ABSTRACT

China's widening regional income inequality coupled with its pronounced regional disparity in foreign direct investment stock since 1990 has claimed the attention of many scholars. While some researchers confirm regional disparity in China's foreign direct investment, others attribute the widening regional income inequality to this regional disparity. This paper thus assesses the impacts of China's stock of foreign direct investment on its regional income inequality using simultaneous equation model and the Shapley value regression-based decomposition approach. Our results suggest that China's stock of foreign direct investment has accounted for merely 2% of its regional income inequality. Furthermore, the contribution ratio of per capita foreign direct investment stock to China's regional income inequality has relatively been on a steady decline since 2002. The decomposition results also reveal that provincial per capita physical assets account for over 50% of the nation's income inequality and 65% of the increases in income inequality since 1990. The other two important determinants of regional income inequality are province location and educational level. However, educational level is found to have a decreasing effect on regional income inequality.

© 2011 Elsevier B.V. All rights reserved.

1. Introduction

China's rapid economic growth has been marked by growing regional income inequality. A number of studies indicate that the widening regional income inequality observed in China has serious consequences on its GDP growth (Qin et al., 2009; Sicular et al., 2007). One source of China's widening gap in regional income has been attributed to the vast disparity in regional distribution of foreign direct investment (FDI) stock. A number of studies suggest that the country's stock of foreign direct investment has substantially contributed to its overall trade and GDP growth (Chen et al., 1995; Francoise, 2000; Zhang, 2001; Liu et al., 2002; Whalley and Xin, 2010). China has received an increasing amount of FDI stock, however, a large majority of the stock have gone to the developed coastal regions (Whalley and Xin, 2010; Yu et al., 2008). In addition, another strand of literature further confirms that China's foreign direct investment stock has significantly promoted economic development in the country's coastal provinces, while it has had slight impacts on GDP growth in the western provinces (Fujita and Hu, 2001; Demurger, 2001; Sun and Parikh, 2001; Demurger et al., 2002; Wen, 2003; Fu, 2004). This raises question about whether or not the disparity in China's regional FDI stock has led to the widening regional per capita income inequality.

This paper thus assesses the impacts of China's regional stock of foreign direct investment on its regional income inequality. To begin with, it is necessary to note the relationship between China's FDI inflows and its GDP growth. However, the traditional approach that uses econometric methods to regress GDP (or GDP growth) on the stock of FDI and other variables (as used by Berthelemy and Demurger, 2000; Borensztein et al., 1998; Graham and Wada, 2001; Chen et al., 1995; Liu et al., 2002; Wei, 1993; Wu, 2000; and Dees, 1998) may yield biased coefficient estimates. Alternatively, we use the simultaneous equation model to overcome the problem of endogeneity and then employ the most recently developed Shapley value decomposition approach to obtain the net impacts of FDI stock on regional income disparity. Our results suggest that China's stock of FDI accounts for merely 2% of its regional income inequality.

The rest of the paper is structured as follows. Section 2 briefly discusses China's FDI and its regional income inequality. In Section 3, we describe the methodology and data used, and discuss the regression and decomposition results. Section 4 focuses on conclusions and policy implications.

2. China's FDI and regional income inequality

This section begins with clear distinction between the International Monetary Fund (IMF) definition of foreign direct investment and the

definition offered by the National Bureau of Statistics of China (NBSC).[1] By the IMF definition, the balance of payments measures of FDI is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. The IMF categorizes the balance of payments measures of FDI into three components—equity capital, reinvested earnings, and other capital associated with various intercompany debt transactions used to purchase other (mainly financial) assets and reduce reliance on equity and loans. It further describes equity capital as comprising of equity in branches, all shares in subsidiaries and associates, and other capital contributions. Reinvested earnings are then described as consisting of the direct investor's share of earnings not distributed as dividends by subsidiaries or associates and earnings of branches not remitted to the direct investor. Other direct investment capital (or intercompany debt transactions) covers the borrowing and lending of funds (IMF, 1993, 2009). Conversely, NBSC (2009, pp.761) defines FDI as investments into China by foreign enterprises and economic organizations or individuals for the establishment of ventures exclusively with foreign own investment, Sino-foreign joint ventures and cooperative enterprises or for cooperative exploration of resources with enterprises or economic organizations in China. This definition thus includes the reinvestment of profits gained from investments by foreign entrepreneurs. The NBSC definition of FDI therefore includes the first two components of the IMF definition. Hence, compared with the standard definition provided by the IMF,[2] the NBSC definition of FDI is non-standard. However, the third component of the IMF definition of FDI is usually unrelated to per capita GDP levels so we use the NBSC definition in the rest of this paper. The NBSC also differentiates utilized FDI from contracted FDI. The latter includes the utilized FDI as well as the contracted but not utilized FDI. In the following sections, FDI refers to utilized FDI.

Since China lifted the restrictions on FDI, its FDI stock has increased very rapidly. China's inward FDI is featured by pronounced unevenly sectoral distribution. Data indicates that less than 60% of inward FDI went to the manufacturing sector before China's accession to WTO. More inward FDI went to the manufacturing sector and its share reached over 70% as the share of FDI going to the real estate sector decreased sharply after China joined the WTO. China's rapid growth of inward FDI is estimated to have contributed over 40% of China's economic growth (Whalley and Xin, 2010).

Nonetheless, regional disparity in FDI stock has been very pronounced (Whalley and Xin, 2008; Yu et al., 2008). In an attempt to analyze this regional disparity, we divide China's provinces into the three traditional regions—Eastern, Central, and Western China. We then compare the two variables—per capita GDP and per capita FDI stock[3]—within each of the three regions. Graphical results reveal that these two variables seemingly demonstrate the same trend (Fig. 1A, B, and C). This may lead one to conclude that the stock of FDI has contributed to China's widening regional income inequality.

However, if we further use the traditional inequality index (*Gini* coefficient) to measure regional disparity in both China's per capita GDP and FDI stock, we discover that this may not be the case. The *Gini* coefficients associated with different years are calculated and reported in Table 1. The coefficients indicate that China's per capita GDP inequality has been increasing while per capita FDI stock inequality has been decreasing. The seemingly negative correlation relationship

---

A

B

C
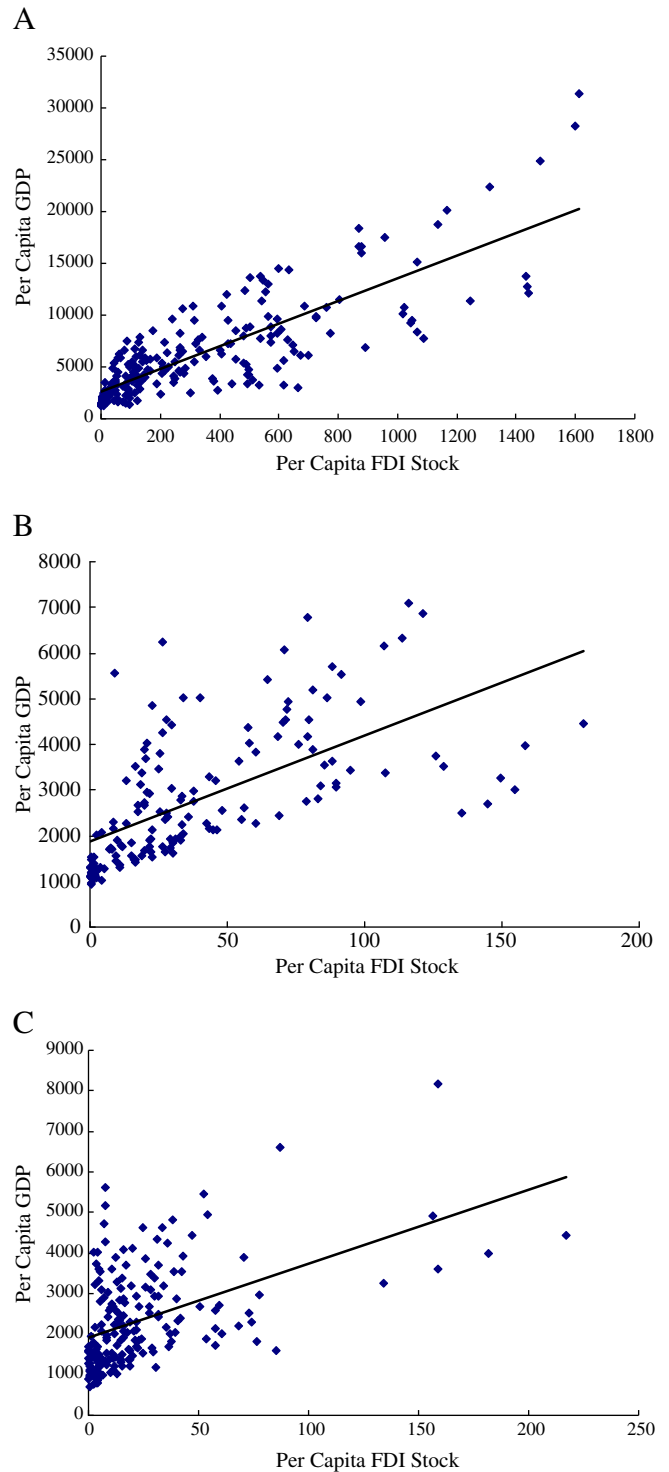
Fig. 1. Notes: Panels A, B, and C use data from the authors' calculation based on NBSC (2008 and various issues). Panel A: Per capita GDP and FDI stock of China's Eastern Provinces. Panel B: Per capita GDP and FDI stock of China's Central Provinces. Panel C: Per capita GDP and FDI stock of China's Western Provinces.

between the two series of *Gini* coefficients suggests that regional disparity in China's FDI stock might not have led to China's widening income inequality.

The contradiction between the two observations entails further investigation of the impacts of FDI stock on China's regional income inequality. In the next sections, we demonstrate that regional disparity in China's FDI stock did not lead to the widening regional income inequality.