

Accounting for the Role of Land as a Source of Growth in China and Japan

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Paper Abstract: This paper has two objectives. It first measures the stock and service of land asset in China and Japan in a comparable framework and then accounts for their roles in the growth of the two economies.

China and Japan are among the world's most arable land scarce countries, being 0.08 and 0.03 hectares per capita (data for circa 2010), respectively, compared to the world average of 0.21 hectare. The economic development in these countries especially at the earlier stage experienced not only significant reallocation of land from the agricultural to nonagricultural sectors but also the rapid increase in land productivity. Equally important, while the stock of land assets changed dramatically across different sectors, the user costs of the land assets also changed. However, the role of land was not been taken into account particularly at the industry level in the previous growth accounting exercises for China and Japan. This tends to create biases in the estimated aggregate TFP growth trend because changes in land use can be significantly different across sectors.

This problem needs to be addressed not only with an appropriate methodology that takes into account the role of land across industries, but more importantly with industry productivity accounts data as a basis that are constructed coherently under the national accounts framework which includes the cost of land assets. This study is benefitted from the industry data constructed under the CIP (China Industrial Productivity) and JIP (Japan Industrial Productivity) Database Programs. The outline of the work for each country is given as follows:

1. Estimation of real land stock by industry (in constant price)
 - a. Estimation of economy-wide real land stock as the “control total”
 - b. Estimation of the land stock structure by type
 - c. Estimation of the land stock structure by industry (=a x b x c)
2. Estimation of land service by industry (in constant price)
 - a. Estimation of land price by type

- b. Estimation of land service cost by type
- c. Estimation of land service cost by industry

Studying China and Japan together provides some advantages. On the one hand, being East Asian neighbors with strong ties in culture and history, both countries are similar in many aspects. On the other hand, Japan has a better statistical system than China supported by regular surveys and censuses and almost uninterrupted since their establishment, some of which began in the late nineteenth century. Given far insufficient information in the case of China, we have to explore both direct and indirect methods in the estimation. First, we will collect all available data on land use and land stock of all sectors of the economy. For industries where there is hardly any information, we take an indirect approach that considers the rental cost of land captured in the output account of individual industries. In this regard, by controlling the similar stage of development, the case of Japan can be used to gauge the likely land use structure and direction of its changes over time.