

China's National and Provincial Productivity Calculations
Using Physical Capital and Human Capital Stocks

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Abstract

While some studies have shown the remarkable growth the Chinese economy has experienced, others have worked out China's post-reform total factor productivity growth rates. Chow and Li (2002) estimated China's national capital stock and together with the labor variable showed China's productivity and income growth rates up to 2010. The study showed that China experienced a three percent annual productivity increment in her post-reform years. Li (2003) extended the analysis by estimating the provincial capital stock from four sources of finance (state appropriation, domestic loans, self-raised funds and foreign direct investments) and calculated the provincial productivity figures. Four capital stocks were calculated, and the result showed that productivity discrepancy existed between coastal and inner provinces. Foreign direct investment was more productivity in the coastal provinces, and due to the lack of foreign investment opportunities, bank loans and state appropriation were more important in inner provinces.

This paper extends the analysis by estimating China's national and provincial human capital stock. The human capital stock calculation is based on the number of schooling years and the different categories of education. Similar to the calculation of the physical capital stock, the estimation of the human capital stock will compare with similar recent studies.

Using a translog production function, total factor productivity analysis will be based on both the physical capital stock and the human capital stock. Analysis at both the national and provincial levels will be presented. The inclusion of the human capital stock will produce different complications. For example, mortality rate, migration and mobility and unemployment have to be taken into account. Preliminary calculation (up to the time

of writing this abstract) of the human capital stock shows that inner provinces as a whole have more human capital, measured in the number of school years. On the other hand, human capital per capital is higher in coastal provinces than inner provinces. It is expected that the human capital stock will produce a positive contribution to total factor productivity at the national level. At the provincial level, the hypothesis is that human capital will be less efficient in inner provinces than in coastal provinces. The policy recommendation is that the Chinese authority should promote and improve infrastructure in the inner provinces, raise education and living standards so that better education workers will be attracted to remain in the inner provinces.

The inclusion of the human capital stock completes China's national and provincial analysis on total factor productivity, and the results can be compared with previous studies which used the traditional Solow residual method based on capital and labor variables. The productivity experience in the last two decades will have great implications on the Chinese economy in the next two post-WTO accession decades. The empirical study will present a number of policy options in capital deployment, education and employment opportunities, investment priorities, appropriate economic policies for foreign investment, policies required to promote efficient banking, the role of state appropriation and improvement in the stock market and other capital markets.

References

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