Chapter 8
Backward and Forward Linkages in Chinese Steel Industry Using Input Output Analysis

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ABSTRACT
This paper measures the direct and indirect contribution made by iron and steel industry in the economy of China and assess the differences between China and other steel producing countries. With this aim in view, the input-output modelling is used to detect the industrial linkages known as backward and forward linkages of eight iron and steel producing countries, including China, USA, Japan, Germany, Italy, Brazil, Korea, and India. The induction effect of export demand on steel industry in China is shown to be less than several OECD countries, such as Japan.

1. INTRODUCTION
Chinese steel sector has made quiet great progress after China implements its reform and opening to the outside world. Output of crude steel had risen from 0.158 million tons in 1950 to 31.78 million tons in 1978. In 2008, it reached to 502 million tons, accounting for 37.8% of the world output, which is equal to the total steel output of Top.2 to Top.9 countries’ in the world (it was almost four times the size of Japan’s, five times of USA and eleven times of Germany). China became the world’s largest steel producer since 1996, and had been the world’s largest steel exporter in 2006 for the first time, surpassing Japan, Russia, and the European Union.

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Steel industry is in the middle of the manufacturing value chain. On the one hand, it will have influence on up-stream industry, such as mining industry, energy industry, etc. On the other hand, the steel products are the raw and processed materials for many down-stream industries. The steel industry now has driven a very long chain, it can be used as a way to restrict or accelerate the development of the national economy by adjusting the scale of input and output, the ripple effects on employment and economic activity on other sectors of the economy is sizeable. Although the scale of Chinese steel industry is sizable, it’s push and pull effect on national economy mostly depends on the extent of linkage effect between steel industry and its up-stream & down-stream industries. Policy makers need to recognize and assess the effects of these two impacts in the economy.

In recent years, many scholars have examined the economic effects of Chinese steel industry. Gao (2004) has probed into the pull effect which economic increase exert on the demand of steel industry with Variation Coefficients model. The result shows that the demand of steel products can be pulled significantly by the investment of infrastructure construction and real estate. Export can pull the demand of steel products obviously before China attended the WTO, but this pull effect trails off after China attended the WTO. Based on the research of Gao (2004) and Tan (2007), we chose different variables to evaluate the dynamic effects which the macro economy exerts on the demand of steel industry. The result shows that the industrial added value, the infrastructure investment, the real estate investment and export can pull the demand of steel remarkably. Using VAR model, Dou(2007) has gotten the similarity result. Above-mentioned researches mainly analyzed the key pull factors of steel industry from the demand aspect. The backward linkage and forward linkage effects of steel industry had not been examined. Also the induction effects exerted on steel industry by the final demands had not been fully touched.
