ON NONPARAMETRIC ESTIMATION FOR THE GROWTH OF TOTAL FACTOR PRODUCTIVITY: A STUDY ON CHINA AND ITS FOUR EASTERN PROVINCES

Bing Xu[1,2]

[1]Research Institute of Quantitative Economics
Zhejiang Gongshang University
Hangzhou 310035, P. R. China

[2]Graduate School of Information Production & Systems
Waseda University
2-7, Hibikino, Wakamatsu, Kitakyushu 808-0135, Japan
bingxu@zjgsu.edu.cn

Berlin Wu

Department of Mathematics
National Chengchi University
Taibei 116, Taiwan
berlin@nccu.edu.tw

ABSTRACT. *A nonparametric approach is applied in the paper to study sources of economic growth in China and its four eastern provinces. The nonparametric approach loosens the restrictive assumptions such as the particular form of the underlying aggregate production function and the perfect competitiveness of factor markets compared with the conventional method. The study finds out some innovative results. First, the conventional method shows that inadaptability to China's economy because it doesn't follow the law of constant return. Second, the growth rate of total factor productivity (TFP) increases along with time and the contribution of TFP growth rates to GDP growth shows the technical progress plays a remarkable role in the studied economic growth. Third, labor-intensive industry is still the main drive of economic growth in Zhejiang and Guangdong, which is implied by their output elasticities of labor.*
Keywords: Conventional estimate, East China, Nonparametric regression, Elasticity of output, TFP growth

1. **Introduction.** In recent years, China's economy has kept growing at a dramatic speed. It is a miracle while the global economy is suffering a recession. The eastern China especially exhibits an exciting development. Lots of literature have studied the resources of economic growth, trying to find out which is the key element for its growth, capital, labor or the total factor productivity (TFP). Especially after the Asian financial crisis in 1997, the sustainable potential has attracted the world's attention. As to the studies over TFP growth, Gaofeng Han, Kalispell Kalirajan and Nirvikar Singh [4] proposed a methodology that allows one to decompose the total factor productivity (TFP) growth into technical efficiency changes (catching up) and technological progress, with a varying coefficients frontier production function model to estimate the TFP growth.