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Growth of industrial CO$_2$ emissions in Shanghai city: Evidence from a dynamic vector autoregression analysis

Boqiang Lin$^a$, Bin Xu$^{b,c,*}$

$^a$Collaborative Innovation Center for Energy Economics and Energy Policy, China Institute for Studies in Energy Policy, School of Management, Xiamen University, Xiamen, Fujian 361005, PR China

$^b$School of Statistics, Jiangxi University of Finance and Economics, Nanchang, Jiangxi 330013, PR China

$^c$Research Center of Applied Statistics, Jiangxi University of Finance and Economics, Nanchang, Jiangxi 330013, PR China

Abstract: Carbon dioxide (CO$_2$) is one of the main sources of global warming, rising sea levels, and frequent outbreaks of extreme weather. China is now one of the largest energy consumer and CO$_2$ emitters in the world. As one of China’s economic centers, Shanghai city has a perfect industrial system with large industrial scale. The industrial sector is an energy– and emission–intensive industry, which contributes the significant part of CO$_2$ emissions in Shanghai city. Therefore, an in–depth investigation of the main driving forces of CO$_2$ emissions in the industrial sector is essential to reduce CO$_2$ emissions in the city. This study uses Vector Autoregressive model to analyze the main factors causing the increase in CO$_2$ emissions in the industrial sector. The results show that economic growth leads to an increase in CO$_2$ emissions in the short run, but is conducive to reducing CO$_2$ emissions in the long run, due to the differences in fixed–asset investment and export trade. Energy consumption structure leads to a growing CO$_2$ emissions in the short term, and is beneficial to mitigate CO$_2$ emissions in the long term, owing to the gradual optimization of energy consumption structure. However, urbanization helps to reduce CO$_2$ emissions in the short term, but leads to an increase in CO$_2$ emissions in the long term, because of

*Corresponding author at School of Statistics, Jiangxi University of Finance and Economics, Nanchang, Jiangxi 330013, PR China. Tel.:+86 83816428; fax:+86 83816428. E-mail addresses: xubin9675@163.com (B. Xu).
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