

The Growth Role of Natural Gas Consumption for Developing Countries

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Abstract : Carbon emissions have emerged as global concerns. Intergovernmental Panel of Climate Change (IPCC) have published reports about Green House Gases (GHGs) emissions regularly. United Nations Framework Convention on Climate Change (UNFCCC) have held a conference yearly since 1995. Especially, COP21 held at December 2015 made the Paris agreement which have strong binding force differently from former COP. The Paris agreement was ratified as of 4 November 2016, they finally have legal binding. Participating countries set up their own Intended Nationally Determined Contributions (INDC), and will try to achieve this. Thus, carbon emissions must be reduced. The energy sector is one of most responsible for carbon emissions and fossil fuels particularly are. Thus, this paper attempted to examine the relationship between natural gas consumption and economic growth. To achieve this, we adopted the Cobb-Douglas production function that consists of natural gas consumption, economic growth, capital, and labor using dependent panel analysis. Data were preprocessed with Principal Component Analysis (PCA) to remove cross-sectional dependency which can disturb the panel results. After confirming the existence of time-trended component of each variable, we moved to cointegration test considering cross-sectional dependency and structural breaks to describe more realistic behavior of volatile international indicators. The cointegration test result indicates that there is long-run equilibrium relationship between selected variables. Long-run cointegrating vector and Granger causality test results show that while natural gas consumption can contribute economic growth in the short-run, adversely affect in the long-run. From these results, we made following policy implications. Since natural gas has positive economic effect in only short-run, the policy makers in developing countries must consider the gradual switching of major energy source, from natural gas to sustainable energy source. Second, the technology transfer and financing business suggested by COP must be accelerated. Acknowledgement—This work was supported by the Energy Efficiency & Resources Core Technology Program of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) granted financial resource from the Ministry of Trade, Industry & Energy, Republic of Korea (No. 20152510101880) and by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-205S1A3A2046684).

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