An Estimation of Market-Based Carbon-Emission Prices Using Comparative Analogy: A Korean Case

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Executive summary

After joining the Climatic Change Convention in 1993 to take part in international efforts to prevent global warming, Korea introduced the Emission Trading System (ETS) in 2015, which is considered to be a more effective carbon reduction system. The Korea ETS set 10,000 KRW per ton as initial standard price in order not to overburden companies. If the market price deviates too far from the standard price, then the government could intervene to make the market price equal the standard price. Nonetheless, by the end of 2015, the trading volume of Korea ETS's first year was 4.44 million tons, representing only 0.8% of the total quota. Some researchers maintained that such low records of carbon trading resulted mainly from the fact that the carbon credits were not at a fair market price.

The purpose of this paper is to estimate the market-based prices of carbon credits in Korea by using a comparative analogy approach. In this paper, the comparative analogy is applied as follows: Based on the assumption that the factors affecting carbon prices would be same with the those of EU ETS which is the most matured market in the world if Korean ETS market becomes stable and has sufficient relevant past data, we attempt to estimate the market-based carbon prices of Korea with the estimation model obtained by using the data from EU ETS. Therefore, in this paper, the meaning of market-based carbon prices of Korea which have not been observed in the actual Korean ETS market could be interpreted as prices that might have been formed if the Korean ETS market would be as stable and mature as EU ETS market. After estimating the market-based price of carbon in Korea, we compare the estimated price to the actual observed prices and analyze the reasons why there existed the gap between two prices. Furthermore, we examine the properties of the estimated market-based price with respect to the changes of factors affecting the carbon price through sensitivity analysis.

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