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논문제목	An Estimation of Market-Based Carbon-Emission Prices Using Comparative Analogy: A Korean Case
게재정보	The Energy Journal, vol40, noSI1, 2019
개요	<p>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.</p>
연구결과	<p>We found that data period set is more important than considering time lag. At the forecasting test, models which include EU-ETS third phase data, had higher forecasting power than the models without it. But there were no discrepancies between the models with and without time lag. Also it was found that coal and oil are the most influential factor for carbon price through sensitivity analysis. It is similar result with previous studies. It is confirmed that the standard price did not reflect the expectation of market participants. The estimation results of the market-based Korean carbon prices in 2015-2016 are higher than the standard price. The actual Korean carbon price was very similar with estimations in the period when the Korean government did not intervene in market. The Korean carbon price was lower than international carbon prices. We identified that the prices of raw materials were the reason for the discrepancy.</p>
활용분야 및 기대효과	<p>The estimated market-based Korean carbon prices can be used to reset the standard prices, determine current market downturns, or identify overheating levels. In addition, it is expected that the results of this study can be used by emerging countries that are currently developing a nationwide carbon trading system, such as China. However, this study has several limitations. For example, these models are based on the assumption that these factors have the same influence in different markets. Therefore, in future research, it is necessary to improve the model reflecting the characteristics of each individual market.</p>