

## SOME NOTES ON THE WEATHER DERIVATIVES & TEMPERATURE SWAPIN JAPAN

Prof. Dr. Atsushi Takao,

Graduate School Business Administration, Kobe University, JAPAN

In Japan is the wise saying that no one can control the influence of the weather as "Act of God". On the one side, it is not so critical for household to undervalue this saying. On the other side, the weather can exercise a great influence on the output of producers or firms, especially in the field of agriculture. Naturally, if it affects their activity negatively, it goes without saying we become worse, so in order to prevent their entity from bad influence of weather; we must take risk management tools against it. Until now, however, we have no effective ones.

Insurance system could also work not well in the field of such a risky situation, because (1)fluctuation of income by weather change comes almost into category of speculative risk, which is impossible to insure; (2)in most cases weather change does not subject to the "law of large numbers", which is the essential factor for insurance system.

In recent years, *weather derivatives* have developed in order to overcome the limitation of insurance. As 1st case, the ENRON and the Koch have developed "energy derivatives" in August 1997. After 2 years June 1999 in Japan the Himalaya co. have made a contract with the Mitsui-Sumitomo Marine co. for "Snow Depth Index Option." After more 3 years, the scale of this market became larger to annual trade JPY 30 billion and now with more rapid speed.

There are 2 reasons why we here focus such brand new financial goods. 1stly, on the supply side the financial engineering has far made greater advances. 2ndly, on the demand side not only expected profit but also its stability are highly valued, related to "investor relationship(IR)," which has become lately most important concept in security market. Anyway in this paper we will overview 2 types of financial tools in order to fight against the meteorological disturbance from nature.