Enron’s weather derivatives essay sample

Economics, Insurance

Background

In October Mary Watts, CFO of Pacific Northwest Electric (PNW) reviewed the forward plan for PNW’s 200-2001 season. PNW’s has been experiencing nearly no EPS growth since 1995 due to deregulation and warmer-than-average winter climate. The stock price had suffered accordingly, but there maybe a way to hedge the weather risk via a new “ weather derivative” being proposed by Enron’s Mike James. Since the colder the season, the greater the electrical usage and the recent weather advisory called for another unseasonably warm winter, Mary was considering on of the Enron “ weather derivatives”.

Problem Statement

Mary Watts wants to know how the “ weather derivative” products worked, and how they maybe restore PNW’s credibility in the capital markets. Should Mary consider purchasing Enron’s weather protection products for the upcoming winter season? Mary would need to decide soon about he use of these derivatives is she wanted to put in place a hedge for the3 winter months ahead.

1 – What is the “ optionality” in the weather derivative contracts, i. e. why are these contracts derivatives? Draw a diagram of the payoffs at the end of the life for the contract as presented in Exhibit 1 of the case.

A weather derivative or weather option is a financial instrument that has a payoff derived from variables such as temperature, snowfall, humidity and rain-fall. However, the industry has set up temperature as the common underlying for those contracts. Unlike insurance and catastrophe linked-

instruments, which cover high-risk and low probability events, weather derivatives shield revenues against low-risk and high probability events (such as mild winters). Temperature contracts are more specifically traded in what is called Heating Degree-Days (HDD) or Cooling Degree-Days (CDD) defined on daily average temperatures.

The optionality is that one does not have to execute the agreement, one has the option once said agreement is purchased. If the agreement is not in the purchaser’s favor, they do not owe any more than the prepaid option fee, as calculated using Black and Sholes. This is very unlike that of a futures contract, which can move out of the favor of the purchaser, but the purchaser remains liable.

A difference between derivatives and insurance contracts is that the holder of an insurance contract has to prove that they have suffered a financial loss due to weather in order to be compensated. If they are not able to show a loss, the insurance company will not pay. Payouts of weather derivatives are based only on the actual outcome of the weather, regardless of how it affects the holder of the derivative. One does not need to have any weather sensitive production, for example, to buy and benefit from a weather derivative.

2- What are the pro’s and con’s of weather protection from PNW’s perspective?

The Pros are the advantages over insurance and the optionally of the derivative. The “ weather derivative” is simply an insurance policy that has

an upfront premium and pays out if certain situations arise without need for proof of a loss. This is unlike the “ typical” weather insurance policy in that you don’t have to prove there was a loss to receive remediation. Also, PNW expects “ bad” weather and a continuing warming of the winders so they would like to reduce/hedge their EPS and Bond rating risks which they have suffered.

The cons include the unfamiliarity of PNW with this instrument. Also, the unpredictability of the weather is a large factor. Also, the payoff is $0 with a sudden change and top-off at $800, 000. This does not balance well will PNW’s costs or lost revenues, which correlate very closely with the weather, the “ weather derivative” is roughly a step change.

3- Why was Enron in this situation? What does a firm such as Enron have to gain?

Enron is in the energy business, which is very sensitive to the weather. The US Department of Commerce estimated that at least $1 trillion of the total US GNP (~ 7 trillion) is sensitive to various in weather. Enron’s power companies’ believe that “ weather risk is the biggest independent variable in the power business”

4- How should Mary Watts proceed to assess, and decide upon, the use of weather protection for PNW? What criteria should she use to make her decision?

Mary should consider the impact the weather has on revenues, profits, and costs. Then relate this to HDD’s to determine how much impact it has on

HDD with the revenues, sales, and profits. Mary should consider the strike price and how much risk she is willing to absorb. Also she should consider the size of the compensation; where caps and floors have maximum payout limits the premium will be less than would otherwise be the case. Also consideration must be made to the meteorological data. The time period is important as well because of the correlation between the weather in one month with the weather in the month before and after.