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ISM Outline

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## **Leveraging Weather Derivatives and Climate Stabilization Investments to Enhance**

### **Agricultural Productivity in Singapore:**

In an era where climate change is becoming increasingly apparent, its unpredictable effects on agriculture are causing concern among investors and farmers alike. Worldwide, it is common for investors to rely on predictable seasonal patterns to know when to make consistent profits or when to cut losses. In more recent times, the erratic change in climate poses a significant threat to farmers in terms of their livelihood, and investors who rely on both the weather and farmers to support their investments. This inconsistency introduces additional risk, making agriculture less attractive as an investment for both investors and farmers without a stable way of insuring such losses. However, this leads to the production of financial instruments that could help insure losses incurred during unfavorable weather conditions. In this essay, I will run through the history behind commodities trading in Chicago alongside Singapore. I will then explore how investments in climate stabilization technologies and the strategic use of weather derivatives can mitigate the financial risks of agriculture loss associated with weather variability. By examining these approaches, I aim to demonstrate how they can benefit Singaporean investors. These strategies not only reduce the financial risks tied to unpredictable weather but also encourage investment in local agriculture, ultimately improving overall farm productivity and sustainability.

First of all, although both Singapore and Chicago may initially seem unrelated in the field of commodities trading, both cities are now widely known as financial hubs, despite their emphasis differing. Chicago being the founder of commodities trading, has its roots and

initial growth of grain trade and farmland processing being an outcome of taking advantage of the Civil War (Davis), whereas Singapore being a trading port, had its economy heavily reliant on global trade due to its lack of natural resources and great location, along the historical maritime trading route between China and Europe (Hirschmann).

Agriculturally, each city sees vastly different outcomes. Chicago has had a flourishing agricultural scene throughout history, whereas Singapore is more well-known for being an importer of goods and having little to no natural resources. In the past, Singapore held a rather thriving agricultural commodities trading scene, around the 1980s and 1990s, where agrotechnology parks were developed to aid in the production of commercial farms (Food for Thought). However, in 2020, there was a collapse of Hin Leong Trading, oil trading firm, one of Asia's largest oil traders, amounting to around \$800 million (Bloomberg), debt of nearly \$4 billion to over 20 banks (The Straits Times), and severely affected the viability of commodities trading in Singapore. The Hin Leong Trading crash resulted in the tightening of commodities trading practices in Singapore, reducing the growth and liquidity of the market.

In the midst of commodities trading exists a subset that can be considered more volatile, but exists as an extension of their own individual market. This is but of course agriculture commodities. Such commodities are necessary for society to function, with their addition to commodities trading acting as an extension of the production of their goods. Such commodities are easily affected by numerous factors, from day-to-day weather conditions to seasonal patterns (Alliance Knowledge Partners). Thus, instruments are then built to help restrict this volatility. This includes insurance, that mainly tackles low-probability, high-impact scenarios such as natural disasters like hurricanes and tornados, as well as weather derivatives that tackle high-probability, low-impact scenarios such as deviating temperatures or rainfalls from specific expected ranges. Although weather derivatives are designed to reduce the risk of financial losses for those directly affected by weather conditions, from an investor's perspective, these derivatives can also be viewed as a distinct form of investment

that carries its own risks. Unlike farmers who use weather derivatives to hedge against the impact on their crops, investors typically do not have a direct stake in agricultural goods. Instead, they leverage the flexibility of weather derivatives as financial instruments to diversify their portfolios and potentially profit from weather-related market movements.

However, as climate fluctuations become more frequent, investors face increasing uncertainty about whether to purchase weather derivatives to hedge against adverse weather conditions or to sell them, effectively betting on favorable weather. As weather derivatives themselves are relatively specific, and as the weather gets more complex, demand and the production of weather derivatives increases, resulting in greater complications (The Business Times). In such situations, investors may choose to invest in financial assets that pose a positive impact on the climate in the long run. From more energy-efficient technologies to green bonds (which are fixed-income securities designed to fund projects with positive environmental benefits), and even investing in stocks of companies that seek positive climate change such as sustainable transportation (such as electric vehicles). Investors may choose to find means to invest in assets that contribute to the stability of the climate in the long run.

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