

Sc.B. Computer Science-Economics Capstone (ECON 1750)

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Intelligent Financial Algorithms:

A Contemporary Analysis of AI in the Derivatives Market

Financial markets have historically been quick to adapt to rapid developments since the onset of the technological revolution. Derivative markets are no exception, as the ability of technology to outsource the manual labor of mathematical predication, derivative pricing, trade execution, and mitigating market risk has only improved with each generational turn. The internet created a digital derivative marketplace, substantially increasing the market volume, and technologies such as cloud processing allowed for exponentially increased access and storage for historical and predicted derivative market data. We are now in the midst of a similar derivative technology revolution - Artificial Intelligence is revolutionizing contemporary approaches to derivative trading. Experts predict that AI will have an outsized impact in shaping the industry with each passing year due to the societal rise of the popularity of AI following the release of OpenAI's ChatGPT and new entrepreneurial endeavors that aim to capture the growing market of financial applications for novel AI research. This capstone essay explored the current and predicted impacts of AI in three cases related to the derivatives market: futures pricing, retail investor accessibility, and Generative AI as an enabling technology.

AI, as it relates to the derivatives market, operates within the past, the present, and the future. It can analyze historical data and trends to predict derivative pricing better than nearly every model that has come before and is becoming increasingly powerful. Presently, it offers a personalized and accessible toolkit to retail derivative investors that are actively able to compete with the profit margins of even large institutional investors. Moving forward, the impacts of AI and Generative AI, in particular, are predicted to open new derivative markets in developing areas, creating exciting new avenues for investment much quicker than could previously be achieved. With the rise of entrepreneurial technology ventures in the derivatives space and increased job opportunities for AI at large institutional firms, the market has accepted AI as a transformative technology poised to shape the future of the global derivatives landscape.