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AI Bias Towards Assets and People

Introduction

Over the last few years, AI has transformed industries across the globe by reshaping the financial sector. It revolutionized efficiency typically in investment techniques by identifying hidden patterns, adapting strategies, and predicting future trends in response to changing market conditions. Taherdoost, H. and Drazenovic, G. (2024) confirms the increase in the financial market from the minimization of human error and how investment firms can optimize their returns in exciting areas of investment such as the stock market. The existing financial AI systems have significantly transformed machine learning models for individuals and institutional entities to allocate capital and obtain maximized financial benefits. In the investment field, stock prices are affected by the market, the economy, and politics. Although the AI instruments in the financial sector help the economy prosper by managing investments in the global market efficiently, the gap between wealthy disparity represents limited access to certain groups. Despite the advancement in investment opportunities, AI models in finance perpetuate biases against smaller businesses and minority groups that lead to skewed-investment decisions towards larger corporations and dominant groups. The over-reliance on data raises the major concern of unequal access to capital and growth opportunities, disproportionately benefiting advantaged groups. There are also ethical concerns about the lack of transparency and the consequences of market

volatility. Neglecting certain asset classes, sectors and segments of the market may result in rapid increases in prices, destabilizing the economy. AI bias also limits economic opportunities for underserved markets leading to unequal financial outcomes and higher chances of financial crisis. The goal of the U.S. economy and its investment and finance field is to achieve stable economic growth while maintaining equity for individuals. Therefore, there is a critical need for regulatory policies and ethical framework to promote financial inclusion and reduce income inequality. This review is to synthesize on the infrastructure necessary within the model to develop an equitable and ethical development in AI while fostering economic growth, then conceptualize on factors in the political field, such as the manipulation by the connections to the higher positions in the government, that contribute to the issue.

Methods

In this literature review, I utilized Northeastern University Library's ScholarOne Search database for online and global sources. The search engine keywords and phrases included 'AI bias in finance', 'AI in investment decisions', 'minority groups', 'AI impact on US market', 'Stock market bias', 'disadvantage to global assets', and 'stock market political connection' to gain a deeper understanding of how both assets and people can be negatively impacted, then look for solutions to mitigate the risks. I decided to focus specifically on the investment field and stock market/exchange and diversified AI use for predicting stock movements, automating financial advisors, or forecasting financial decisions for firms. Financial advice has been more accessible, affordable, personalized, and efficient with its solutions. Shiva, A. (2023) explains how AI streamline financial planning processes has advanced to a point where robo-advisors (automated investing services) have been innovated for stock investment, managing almost $3 trillion world-wide. Prediction for making investment decisions all aim at identifying a trend on

the market and forecasting future price behavior. In recent years, financial advisors and institutions' reliance on AI have increased tremendously as new applications of AI have been created in a short amount of time. Due to that reason, my search range was from 2018 to 2024 to keep up with the current news and understand AI's reliance on historical trends. While I aimed to narrow my focus in the US economy in the investment field, financial markets are highly interconnected, driven by globalization. For this literature review to use similar empirical studies to reveal patterns of AI bias, I aimed to add more supporting evidence of AI contribution towards unequal access to growth opportunities in a different sector such as home valuations, etc. AI is based on technical analysis that is widely analyzed in scientific research; therefore, the understanding of the inner works of machine learning techniques was crucial to analyze the different approaches to employing more sophisticated machine learning techniques. I aim to understand the correlation of how neglecting underrepresented groups and market segments eventually impacts the global economy's financial well-being. There is a clear trend where AI's predictive analysis relies on historical data and favors the return of more profit. It is critical to provide a competitive edge in a rapidly evolving market while keeping the economy stable and contributing to financial inclusion. This review aims to explain how AI's bias disrupted the market in the past, and from that, proposes new ways to transform investment strategies into inclusive and equitable ones.

Overview of Findings

Leveraging the previously mentioned keywords and phrases in Northeastern University's ScholarOne Search, the results returned different aspects of detailed structure on AI's impact on financial investments. I have reviewed nine articles: two were academic and research-based scientific journals about in-depth knowledge of machine learning and six were

narrative/literature reviews. They produced studies with two main focuses: scientific research on the inner workings of machine learning and analysis of what regulations and policies could be implemented. Many of the articles consisted of qualitative research describing the structure, benefits, and negative impacts on the financial market and business processes from AI bias. Many studies presented diagrams of components instead of quantifiable numbers and interviews from credible researchers. Some results provided quantitative research such as the percentage of underrepresented populations affected with bias. To understand the inner workings of AI algorithms and the common effects, the search results consist of AI effects on institutions in different regions such as China, Spain, etc. and provide AI bias in different sectors such as home valuations, HR recruitment, and criminal justice. A journal that was considered an outlier, focused on political connections and favorability towards big corporate decisions in China, instead of the U.S. This includes political views and focuses on the vulnerability of middle/small firms to fraud and manipulation due to the lack of connection between the wealthy and dominant group with immense power. However, this journal contributes to the opportunity to conceptualize a new perspective in this review about how AI bias may be connected and controlled by the higher power. The virtuous cycle of big corporations advancing and creating inequality formulates questions for further research. In general, the common focus of the sources was the relationship between AI bias and lack of access to underrepresented groups and de-valuing assets. Another article consisted of surveys of the median net worth of families over the years as the ethical risks of AI systems from not accounting the unique needs of individuals. These findings focused on different components of how machine learning is internally structured as well, and how it leads to flawed investment strategies. The common themes and issues from the lack of transparency and fairness of AI are analyzed across the literature review. The following

themes include the neglection of segments of market, limitation of economic opportunities for underrepresented groups, and disruption towards global market due to price volatility, all stemming from discriminatory recommendations and asset allocation.

Neglection of Segments of Market

AI-driven investment models based on training data contribute to neglection of specific assets and markets. The inner workings of algorithms and pattern recognition are very complex; however, AI algorithms follow similar strategies that can redirect them in the simplest ways. Svetlova, E. (2022) explains an example scenario when "human traders stop understanding markets ... and thus stop acting; machines interpret the lack of buyers as 'bad sentiment' and continue to sell at lower prices, enhancing volatility and systemic risks." Humans understand less due to the opaqueness of applied AI, which disadvantages specific markets at the same time. The concerns of lack of transparency and fairness driven by AI bias were prevalent across the literature. Lack of transparency leads to unequal access to capital and growth opportunities, presenting more exposure to certain assets. The larger the size in a firm, the higher AI sensitivity to liquidity condition is (Bahoo, S., Cucculelli, M., Goga, X., Mondolo, J., 2024). This leads to over-allocation of resources to large-cap and well-established stocks while easily ignoring less familiar or smaller sectors. As financial instruments rely heavily on past data to identify asset trends, it can undervalue specific areas and enhance volatility. The lack of transparency of AI-driven trading algorithms and limited data on diversified market behaviors would cause a similar crash in the financial markets like the one on March 16, 2020, when "most important world indices dropped by 12-13%, including Dow Jones Industrial Average," as the COVID-19 pandemic heightened (Svetlova, E., 2022). These findings highlight the need to diversify asset

allocations by AI-driven algorithms to prevent disruption to the financial markets and the global economy as a whole.

Limitation of Economic Opportunities for Underrepresented Groups

As AI bias neglects segments of the market, it also limits economic opportunities for underserved markets leading to unequal financial outcomes. Brotcke, L. (2022) addresses the concern about the heavy reliance of AI on past trends and historical human biases, resulting in misrepresentation of the population and errors in sample or collection of data. The failure of AI capturing less-represented segments coincides with underprivileged communities (Alvarez, J. M., Colmenarejo, A. B., and Elobaid A., 2024). Lack of transparency of AI-based recommendations raises issues of justice, fairness, and responsibility, even perpetuating racial and gender biases. To understand the underlying components of the historical trends and data behind the machines, some literature reviews found research examples. Dennehy, D., Gupta, M., and Parra, C.M. (2022) explained that the specific COMPAS, an AI-based recommender software, labeled Blacks as a higher risk offender as convicted criminals compared to Whites even though there was so statistical fact that they re-offended. The authors also gave another example of Amazon's recruitment tool favoring men over women for technical jobs. From a broader perspective, it is easily noticeable that algorithms and machine learning are impacted by society's implicit biases and IS scholars have not investigated this specific issue relating to individuals' cultural values. Neal, M., Young, C., and Zhu, L. (2024) proposed the need of the Government Administration's attention to advocate for protection against algorithmic discrimination. As we rely on and integrate AI and technologies into our daily lives, it is crucial to ensure that automated systems are used and designed in an equitable way. There are agencies that develop voluntary AI risk management framework, such as Activities of National Institute of

Standards and Technology, that focus on equality and addressing issues on harmful bias and discrimination (Neal, M., Young, C., & Zhu, L., 2024). However, all the reviews do commonly put importance on employing more sophisticated machine learning techniques that accurately assess the errors.

Disruption in a Broader Scale

AI's common issue of executing an accurate foresight leads to the disruption of the global economy. Neglecting certain asset classes sectors results in rapid increases in prices, destabilizing the economy. AI bias on liquidity crunch and price collapse can highly expose societal groups to unemployment, poverty, home loss, and deterioration of health (Svetlova, E., 2022). To prevent the turbulence of financial markets, Brotcke, L. (2022) emphasizes the importance of addressing data bias directly instead of laws and regulations. The important focus is on how necessarily aligned are the ethics and laws with each other. In support of the argument, the regulatory initiatives place legal responsibility on agents who design and apply algorithms in investing and trading (Svetlova, E., 2022).

This literature review aims to reconceptualize the information analyzed by the research, and how the politics may be integrated into AI data bias as well. In a hedge fund industry, "a program can find out that CEO's tweets are more informative than annual reports" as the central source of information about companies (Svetlova, E., 2022). AI algorithms analyze news trends and media presented in a variety of forms and this makes me question how interconnected the government can be with AI data and AI bias. Through the conducted empirical analysis, Lai, C., Li, Q., and Wang, J. (2024) proved that firms with strong political connections in China received protection from punishment and advantages for private ownerships. This supports that correlation between stronger political connection and power does exist.

Conclusion

Current research has shown that AI-biased recommendations in the business field impact the decisions of which assets to focus on and benefit specific groups of people. As AI in trading execution and asset management is on the rise, the common concern addressed across the literature reviews was harmful bias on underrepresenting specific societal groups and market segments. This can easily disrupt the global market. To achieve the goal of stable economic growth globally and maintain equity for individuals, the authors have mentioned the efforts of agencies and organizations working to prevent harmful bias and inequality. Given AI's highly disruptive nature, it is becoming increasingly pervasive in our society. Transformative technology affects all aspects of our daily lives.

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