The Financial Revolution: Insights into the Economic Behavior of Young Adults

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

When John McCarthy coined the term Artificial Intelligence in 1955 at a conference at Dartmouth, he planted a powerful seed to gestate in the minds of the greatest scientists and technological mavens (Haenlein & Kaplan, 2019). Since the adoption of machine learning, the market economy has valued individuals' data tremendously. For example, the company Credit Karma was acquired by Intuit in 2020 for $7.1 billion. Credit Karma, like other credit score companies, sells its user data to banks (Trelewicz, 2017, p. 10). How can a company be valued at and sold for $7.1 billion when its primary form of revenue is selling data to banks? The answer: the demand for individual data is high and has become a stable avenue for profit-making. Focusing on the lucrative opportunities of data mining, companies have failed to recognize the pernicious consequences to their users, such as data privacy and security risks.

This paper aims to understand the potential impairments to society—namely the exploitation of consumers' psychology through machine-learned optimized features. My technical topic addresses the ethical and technical issues with assessing accountability when autonomous agents make decisions with adverse consequences. The extensive use of autonomous agents, in my technical topic, in the realms of behavioral and market economics bears a relevant yet tangential relationship to this research paper. Specifically, I will analyze how society's democratization of finance has increased the ease with which young adults incur debt and participate in risky behavior. The widening access to finance, I will argue, is causally linked to industries' overemphasis on data fitting and machine learning. This paper analyzes various peer-reviewed and literary sources pertaining to FinTech and behavioral economics and general historical financial statistics. Moreover, I have meticulously delineated the factors contributing to the gradual increase of debt over time. The theoretical framework and lens through which I will

analyze these detrimental factors is the Social Construction of Technology (SCOT). As technology and computing power have evolved, so, too, has society. Our progression was not engendered without unintended side effects, however.

SCOT Framework

Social constructivism theory asserts that since humans form society and forge technology, technology is a product of social construction (Bijker, et. al, 2012). Specifically, cultural factors, such as values, beliefs, and power dynamics, play a crucial role in shaping technology and its impact on society. Bijker, et. al (2012) contend that "a problem is defined as such only when there is a social group for which it constitutes a problem" (p. 414). For example, the phenomenon of wealth inequality is not inherent in nature, but rather a product of historical and current economic policies, as well as power differentials. The wealth gap around the world is one such problem created by the groups it both benefits and harms. Leveraging successful wealth-building strategies, such as prudent investments, could alleviate debt burdens for future generations. Although the application of wealth-maximization theory (Obenberger, 1994) to investment decision-making is theoretical, it can provide a valuable framework for informed wealth management. Investors, though, do not achieve these ends by just one set of means. Decision-making procedures differ among individuals. Neumann and Morgenstern made four key assumptions about the behavior of agents in defining wealth-maximization theory: investors are rational, selective among complex choices, risk-averse (all else being equal), and wealth-maximizing (Obenberger, 1994). With so many choices and opportunity costs in the current financial markets, investors, particularly young adults, can become overwhelmed.

The emergence of a technology-based economy and widening economic stratification result from social and historical processes, not naturally predetermined outcomes (Keister, 2000). According to Yale Professor Robert Shiller, finance democratization increases financial literacy, leading to better decisions. The implementation of inclusive financial services that are not constrained by income or wealth can reduce the gap between individuals, promoting equality (Tan, 2021). Yet financial technology is designed and implemented by actors who are influenced by factors such as economic incentives, regulatory frameworks, and user feedback. Keister (2000) asserts that the adoption and diffusion of these innovations is also influenced by community factors, such as cultural norms, institutional practices, and power relations. In this context, the perceived benefits of financial technology in enhancing access, transparency, and affordability reflect the values and interests of certain social groups and may be unevenly distributed across different segments of society. Recognizing the various dimensions of financial technology and the ways in which it is shaped by complex relations can reduce economic inequalities.

Background

From the 1970s to the 2000s, both unsecured and student loan debts have increasingly contributed to young adult indebtedness. The amount of debt relative to the total economic resources of young adults, that is, the debt burden, has increased appreciably over time (Houle, 2014). Those identified in lower social classes, moreover, are disproportionately affected, as they are more likely to have incurred uncollateralized debt. With meticulous advertisements tailored to each individual through machine learning and an ever increasing arsenal of consumer goods from which to choose, it can be easy for young adults to spend money on items that yield utility in the present, disregarding the opportunity cost of saving the capital for the future. Present bias

is a well-documented behavioral tendency characterized by a preference for immediate gratification over larger, delayed rewards. This trait is observed in a significant portion of the population, with a particular prevalence among individuals with lower levels of income and education (Thaler & Sunstein, 2009).

While credit is a powerful tool to facilitate additional opportunities for many individuals, it increases financial risk for young adults (Houle, 2014). Therefore, debt must be handled properly to avoid adverse consequences in the future. Over the last century, the wealth inequality gap has been expanding (Keister, 2000). The overall rise in wealth over the period from 1989 to 1998 was predominantly realized by the top 20% wealthiest households. In particular, the top 1% wealthiest realized 53% of the wealth gain over that period (Obenberger, 1994). Obenberger's research method utilized data collected via a questionnaire from a random sample of individual investors with substantial positions in Fortune 500 companies to analyze the investing decisions and behavior of those individuals. The use of a randomized sample in the research method further boosts the study's ethos as it reduces sampling bias and provides an accurate representation of the population. The way in which the sample was constructed increases the validity of the findings, and the researcher employed stringent measures to establish that as little statistical assumptions were violated as possible. The study's results illuminate considerable disparities in both the income and wealth of United States citizens during the late 20th century. Specifically, the observation that the wealthiest 1% of households garnered more than 50% of the wealth increase over one decade implies that the economic advantages accrued during that period were not equitably distributed, which has significant implications for access to education, healthcare, and geographic mobility.

Analysis through SCOT

On June 12, 2020, twenty year-old Alexander Kearns committed suicide. His parents found a note on his computer: Kearns had incurred a negative balance of $730,165 trading options on the app Robinhood (Klebnikov, 2021). With the advancement of financial technology over the past three decades—online banking in the 1990s, mobile wallets in the 2000s, banking chatbots and zero-commission trading apps like Robinhood in the 2010s—financial access has become greatly democratized, increasing the ease with which retail investors can exchange money and access the financial markets. The COVID-19 pandemic facilitated the interest of new, young investors who were "armed with government stimulus checks" (Tan, 2021). The influx of government capital into the market economy increased the disposable income with which young adults could invest. Corporations like Apple and Google have focused on augmenting the iOS and Android operating systems—increasing simplicity with pretty, clean interfaces. As a result, apps like Robinhood can easily exploit user psychology, enticing them to invest, trade, and incur risk with the prospect of 'zero-commission' trades, although there is no such thing as a free lunch. Indeed, Robinhood sells their users' order flows to High-Frequency Trading (HFT) firms like Citadel Securities, as the HFT firms front-run orders, driving the price away from the user's initial order, thus increasing trading costs indirectly. Gamification of investing has also reinforced the desire to achieve one's financial goals (Tan, 2021). The Graphical User Interface (GUI) of Robinhood is a major catalyst in the recruitment and continued use of users, employing gamification techniques such as colorful stock and profit graphs, in-app rewards, and simplified, easy-to-use interfaces to incentivize continuous engagement with the platform, ultimately leading to increased usage and user retention. Robinhood allows new investors to trade options immediately, disguising the vast risks involved by keeping the process minimal. In fact, CEO of Berkshire Hathaway Warren Buffett, asserted "They don't make money unless people do things,

and they get a piece of them. They make a lot more money when people are gambling than when they are investing." Buffett's insight reveals the reality, driven by the greed of financial intermediaries, in which inexperienced investors make impulsive decisions and engage in risky financial behavior, ultimately harming investors' long-term financial prospects. Although FinTech—the evolution of finance effectuated by new technologies—has been a powerful accelerator in the widespread use of trading and exchange of virtual money, there is a predatory relationship between platforms like Robinhood and its users.

Many young adults in particular also fall victim to the high percent return lure of speculation in equities, options, cryptocurrencies, and NFTs. NFTs or non-fungible tokens are digital assets that contain unique cryptographic signatures, making them non-cloneable. The markets on which NFTs trade are unregulated, which means that there are no financial intermediaries as there are in other financial markets, vastly increasing uncertainty in transactions. Each trade is performed in an auction setting on websites such as OpenSea and Rarible, where Gas fees could cost as much as hundreds of dollars for each sale (Kong & Line, 2021). Young, inexperienced traders gamble with high-risk, high-reward securities that, eventually, lead most speculators to lose money, incur vast margin debt, and—in the worst case—become overwhelmingly depressed, as in the case of Kearns. My theoretical framework employs social constructivism: society itself—namely leaders in governments and corporations—facilitated the evolution of FinTech. This societal trend advanced hand-in-hand with the increased susceptibility of the young adult population to act rashly, an exploitation of their higher risk tolerance. The progression of society's reliance on AI and Big Data is evident, and it affects the lives of all young adults every day. The typical spending behavior of young adults as demonstrated by behavioral economics reveals the grave dangers of having access to an

excess of choices from which to choose, many of which are geared by business owners to entice risky spending and gambling (Sironi, 2016).

The unequal distribution of economic resources and opportunities in society, in concert with companies prioritizing profit maximization over privacy and consumer welfare, has perpetuated social hierarchies in the United States. The democratization of financial access has created opportunities for retail investors to access financial markets. However, the influx of novice young investors has demonstrated that they are easily exploited in these competitive markets. Indubitably, the gamification of investing and the lure of high-percent returns have worsened the wealth divide.

Discussion

The FinTech industry has experienced a significant growth in recent years and has relied heavily on users' data to gain an edge, raising stark concerns about ethical issues including security data privacy, and ownership. Firms like Robinhood and Meta collect and store vast amounts of sensitive data, which could expose users to various risks such as cyberattacks, identity theft, or unauthorized access. Clandestine data practices undermine user confidence and contribute to a lack of trust in the industry. The utilization of these opaque methods may be ascribed to the dearth of regulatory frameworks that would provide oversight for data collection, usage, and manipulation in the financial technology sector (Borne, 2020).

To address these ethical concerns, firms must implement robust data protection policies to safeguard users' data from malicious actors, ensuring data confidentiality and integrity. Furthermore, firms must exhibit transparency by informing users about the intricacies of data collection, processing, and utilization. This transparency serves to cultivate trust amongst users,

amplifying faith in the cloud industry (Borne, 2020). Regulatory authorities perform a significant role in monitoring and enforcing compliance with data policies to ensure that firms prioritize the welfare of their users over profits.

Utilitarianism emphasizes the greatest happiness for the greatest number of people (Sinnott-Armstrong, 2022). In the contemporary business arena, prioritizing profits over user welfare would likely result in net negative consequences for users and consumers. The enforcement of data privacy edicts can augment trust with user bases. If positive sentiment increases and customers believe their personal information is adequately protected, trust in certain services and products will increase. This increased usage, in turn, provides a long term competitive advantage to those firms that exemplify the principles of utilitarianism.

One potential rebuttal to the importance of implementing effective data protection policies is that it may hinder innovation and expansion of the burgeoning technology sector, hindering economic growth. A utilitarian might posit that any deceleration of economic growth implies detrimental ramifications for society at large. Strict data usage requirements could stifle innovation in the FinTech industry and impede its growth (Anagnostopoulos, 2018). The regulatory burden of compliance, moreover, may limit flexibility corporations by preventing them from exploring new data-reliant statistical models. Excessive regulation has the potential to facilitate market fragmentation and increase costs for firms, reducing their ability to compete and invest in research and development (Anagnostopoulos, 2018). While these are valid arguments, the majority of the research suggests that data protection policies can promote innovation and long term growth. Effective laws encourage companies to implement more advanced cybersecurity measures, leading to increased consumer confidence and business growth (Prasad & Perez, 2020). By protecting sensitive data, firms can reduce the likelihood of data breaches,

which can be costly and damaging to a company's reputation. In short, rather than impeding growth, confidentiality guidelines can promote innovation, build consumer trust, and effectuate long-term success for firms in the technology industry.

The social construction of technology (SCOT) theory can help explain the ethical concerns raised by the reliance on user data in the FinTech industry. SCOT posits that technology is shaped by social factors such as user needs and values, rather than being inherently determined by technical factors (Pinch & Bijker, 1987). In the case of FinTech, the ethical concerns around data privacy and security have emerged due to a lack of regulatory frameworks and transparency in data practices. Firms like Robinhood and Meta have prioritized profits over user welfare, reflecting the values and interests of their stakeholders. To address these concerns, firms must prioritize user welfare by implementing robust data protection policies and exhibiting transparency in data practices. Regulatory authorities play a critical role in monitoring and enforcing compliance to ensure user data is safeguarded. By prioritizing utilitarian principles of the greatest happiness for the greatest number of people, firms can build consumer trust, promote innovation, and effectuate long-term success. While there may be arguments against strict data protection policies, the evidence suggests that they can promote innovation, build consumer trust, and protect firms from costly data breaches. Therefore, firms must prioritize user welfare over profits to create a sustainable and trustworthy FinTech industry.

The SCOT framework provides a robust analytical lens to understand the ethical challenges arising from the methods by which data is handled in the FinTech industry. Interpretative flexibility, one factor of SCOT, is the notion that technology can be understood and manipulated in various ways depending on the perspectives and values of the stakeholders. It highlights the ambiguity surrounding technology and the necessity for diverse perspectives to

comprehend its advantages and disadvantages. Data collection and usage can have both positive and negative outcomes, as previously argued, signaling the significance of ethical deliberation. Moreover, the SCOT factor of closure emphasizes the potential for power dynamics to sway debates on data ethics, highlighting the significance of inclusive decision-making processes. The role of social groups and networks is crucial in shaping the discourse surrounding data ethics, underscoring the need for responsible engagement and transparent communication. Overall, SCOT provides a comprehensive framework to navigate the ethical complexities of the FinTech industry, promoting a more ethical and sustainable future for the industry.

Conclusion

The ethical and technical issues associated with autonomous agents making decisions with adverse consequences necessitate a better understanding of the potential harms to society resulting from the exploitation of consumers' psychology. Additionally, the democratization of finance can be directly linked to society's overemphasis on data and machine learning. A critical analysis of FinTech and behavioral economics reveals that the prevalence of risky financial behavior among young adults can be traced back to the Social Construction of Technology theory, evolving with the advent of new technology and computing power. It is imperative to recognize these unintended side effects of progress.

I have explored society’s exploitation of users through painstakingly engineered applications. The tendency for companies like Robinhood and OpenSea to take advantage of young adults is a powerful feedback loop that must be scrutinized via the underlying incentives behind those companies and the behavioral economics of the users. To fully elucidate the

preferences of companies, users, and the economy at large, a nuanced examination of the ethical implications of these systems will promote a more equitable and responsible use of technology.

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