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ANALYZING THE POTENTIAL NEGATIVE RAMIFICATIONS OF THE SEC'S PROPOSED PREDICTIVE DATA ANALYTICS RULE TO MAIN STREET INVESTORS

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On the Impacts of the SEC's Predictive Analytics Rule: A Quantitative Assessment

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On July 26, 2023, the Securities and Exchange Commission (SEC) proposed new regulations on technologies that use predictive data analytics.[1] With technological progress, such as predictive data analytics, the transaction costs associated with accessing financial markets are lowered.

Predictive data analytics is challenging to define. In general, it consists of a potentially large set of tools that can be used to guide portfolio decisions. Over time, the tools have become less expensive to access because of economic, financial and computer technological advancements. Such advancements are available to all potential investors. In other words, Main Street investors have access to investment advice that is less expensive to produce. So, what previously had been costly to provide to small investors has now become a tool that more financial advisors can use because they have access to better statistical tools using the most advanced economic and financial theories.

In this report, we examine how the rule affects the households for whom the transaction costs are too high to use a broad array of financial instruments. The report begins by reporting the most recent data on the distribution of households holding stocks, including changes in the distribution going back to 2016.

Next, we examine research that predicts the quantitative impact that changes in transaction costs have on asset holdings. We can convert this change into foregone returns if the proposed rule is implemented.

In evaluating the median level of stock holdings, we consider a Main Street household as the unit of observation. With the lower cost of analysis, the median household will increase their stock holdings.

[1] See p. 25 of the Securities and Exchange Commission, 17 CFR Parts 240 and 275 [Release nos 34-97990, IA 6353, File no. S7-12-23. The web address is: https://www.sec.gov/files/rules/proposed/2023/34-97990.pdf. In an August 10, 2023 summary, Skadden, Arps, Slate, Meagher and Flom, LLP offered the following: "The proposed rules announced July 26, 2023 are intended to prevent a broker-dealer or an investment adviser from using "predictive data analytics" (PDA) and similar technologies, which includes AI, in a manner that results in the firm placing its own interests above those of the investors. The SEC is concerned that a firm might use these technologies when engaging or communicating with its investors to optimize the firm's revenues or to generate behavioral prompts or social engineering to change investor behavior in a manner that benefits the firm but is to the detriment of the investor." (Authored by Ken D. Kumayama, Stuart, De. Levi, Anna Rips, Resa K. Schlossberg and found at web address: https://www.skadden.com/insights/publications/2023/08/sec-proposes-new-conflicts#:~:text=overview.above%20those%20of%20it%20investors .)

Using the median household in the United States as a reference point and the increase in households holding stock because of predictive data analytics, the median Main Street household could reduce their returns by $785. After aggregating, the sum across Main Street households could be as high as $1.485 billion in foregone stock returns.

1. Survey of Consumer Finance: Evidence on Portfolios of Main Street Investors

The Federal Reserve Board released the results from their 2022 Survey of Consumer Finance. In this section, some of the key findings are reported.[2]

Table 1 reports the percentage of households directly holding types of financial instruments for 2019 and 2022. The median holdings are also reported. The survey results show that a minuscule fraction of U.S. households have direct bond holdings. There has been a significant increase in the fraction of households directly holding stocks, increasing from 15 percent of households to 21 percent. Both pooled investment funds and retirement accounts are means by which households can hold stocks and bonds in their portfolios. We see a 2.5-percentage-point increase in the fraction of households using pooled investment funds and a 3.8-percentage-point increase in the fraction of households taking part in retirement accounts.

Table 1

Category	**Pct holding**			**Median value**	**(thous of $)**
	2019	2022		2019	2022
Bonds	1.1	1.1		140.3	210.4
Stocks	15.2	21		29	15
Pooled Investment funds	9	11.5		127.5	150
Retirement accounts	50.5	54.3		75.3	86.9

One particular notable change involves the median value of asset categories. We see increases in the median holding for each category except stocks. Between 2019 and 2022, the value held by the median holder decreased from $29,000 to $15,000. This extraordinary event owes to the sharp decline in stock values that occurred because of the COVID-19 pandemic. The value of stocks also reflects some

[2] Aladangady, Aditya, Jesse Bricker, Andrew C. Chang, Sarena Goodman, Jacob Krimmel, Kevin B. Moore, Sarah Reber, Alice Henriques Volz, and Richard A. Windle (2023). *Changes in U.S. Family Finances from 2019 to 2022: Evidence from the Survey of Consumer Finances.* Washington: Board of Governors of the Federal Reserve System, October.

combination of a larger fraction of households owning stocks and holding a lower *level* of these new entrants in stocks.

Stock ownership is also achieved through pooled investment funds and retirement accounts that allow for indirect stock ownership. By accumulating funds, both accounts divide the transaction costs associated with stock ownership across individual buyers meaning that stock ownership becomes less costly compared with individual purchases. The Survey of Consumer Finances also reports the sum of direct and indirect participation in stock ownership. By 2022, 58 percent of households owned stocks when we include direct and indirect ownership. The fraction of households participating is up from 52 percent in 2016 and 53 percent in 2019.

The survey reports that stock ownership varies across the income distribution. For households in the bottom half of the income distribution, only 34 percent own stocks. In this report, we refer to households in the bottom half of the income distribution as Main Street households.[3] For households in the 50^{th}-90^{th} percentile of the income distribution, 78 percent reported stock ownership. For the top income decile, 95 percent own stocks either directly or indirectly. In each income category, the 2022 fraction owning stocks is up compared with the 2019 fraction of households. The median value of direct and indirect stocks owned increased for each income category compared with 2019 values. For the bottom half of the income distribution, the median value increased $1,100. For households in the 50^{th}-90^{th} percentile of the income distribution, the median value of stocks increased $6,800 and the top decile reported a gain of $99,700. As a percent of median value, the bottom half reported a 9.6 percent increase compared with the median value in 2019. Households with incomes in the 50^{th}-90^{th} percentile reported a 14.7 percent increase while those in the top income decile reported a 19.6 percent increase in the median value of stocks owned either directly or indirectly.

2. Predictive Data Analytics: Impacts on Investment Advice

With these data, we turn to an analysis of predictive data analytics. If predictive data analytics are a form of technological progress that reduces the transaction costs associated with stock ownership, it makes sense that Main Street households would benefit the most. Transaction costs are like a fixed fee to participate. Lower-income households take this fixed fee into account when calculating the return on an

[3] The definition of Main Street investors is report specific. As the reader will see in the quantitative analysis, the bottom half of the income distribution corresponds most closely to the group defined in the theoretical research cited.

asset. So, if the fee becomes smaller because of technological progress, and correspondingly the return on stocks increases for Main Street households, then a larger fraction of households will participate. Arguably, technological progress can account for some of the changes in stock-market participation between 2019 and 2022. The question is, how does predictive data analytics affect the percentage and what is the projected dollar value in asset returns to a median household in the bottom half of the income distribution?

3. Costs of SEC's Predictive Data Analytics Rule

In this section, we quantify the costs to Main Street investors that are incurred if the SEC's predictive data analytics rule is implemented. We compute these costs as projected losses borne by investors in the bottom half of the income distribution. The logic is straightforward. The availability of predictive data analytics lowers the expected costs, which in turn induces a larger fraction of Main Street households to invest in stocks. The technological advance does not make these investors wealthier. Rather, the lower transaction costs result in a larger fraction investing the median amount of existing wealth into stocks. Thus, to measure the treatment effect, we compute the difference between the expected return on stocks and the expected return on transaction accounts.

The first step is to get a measure of the number of U.S. households that would invest in stocks because of the lower transaction costs associated with predictive data analytics. In 2022, there were 131.2 million households in the United States. Therefore, there are $0.5 \times 131.2 = 65.6$ million households in the bottom half of the income distribution that year. Research by Dhital and Haslag (2022) shows that a 0.1 percentage point decline in the average cost of accessing credit results in a 2.5 percentage point decrease in the fraction of people using transaction accounts.[4] Note that these people are not wealthier, they are simply substituting existing savings for another type of asset. For purposes of this calculation, we assume that there is a 2.5 percentage point increase in the fraction of those in the bottom half of the income distribution holding stocks either directly or indirectly. Thus, $0.025 \times 65.6 = 1.64$ million households would switch from holding transaction accounts to holding stocks because of a 0.1 percentage point reduction in the costs of acquiring stocks. We assume the reduction in the transaction cost occurs because of the use of predictive data analytics.

[4] Dhital, Saroj and Joseph H. Haslag, 2022, Financial Innovations in a World with Limited Commitment," unpublished manuscript.

To compute the annual costs incurred by households, we assume that the size of additional stock holdings will be equal to the median level indicated in the 2022 Survey of Consumer Finances. In other words, $12,500 is substituted from transaction accounts to stocks. Suppose the average annual return on stocks is seven percent and the average annual return on transaction accounts is zero. This means that the average interest foregone is $875. To get a sense of the aggregate interest foregone, multiply by 1.64 million households. The arithmetic tells us that the amount of interest foregone could be as large as $1.435 billion if predictive data analytics are restricted.

4. Summary

In this report, the goal is twofold. First, we want to use the most recent data on stock ownership by income groups. The households in the bottom half of the income distribution own stock both directly and indirectly. The evidence shows that 34 percent of Main Street households hold stock. The median stock value for this group is $12,500. The data tell us that Main Street households are participating in stock ownership.

Second, we want to quantify the impact that limiting predictive data analytics could have. Our starting point is that predictive data analytics lowers the transaction costs of processing market information. As such, a rule that limits predictive data analytics effectively lowers the return on stocks and fewer Main Street households will choose stock ownership. Our numerical analysis shows the benefits of predictive data analytics could raise the fraction of Main Street households owning stocks from 34 to 36.5 percent. When evaluated at the median level of stock holdings, each Main Street household foregoes $785 if the rule is implemented. After aggregating, the added Main Street households are foregoing $1.485 billion in stock returns. There are also gains to households in the upper half of the income distribution that we did not compute.

Overall, Main Street investors have quantifiable losses that are associated with the SEC's rule to limit predictive data analytics. A basic economic principle holds: consumers lose when government regulation stifles technological progress, which curtails new product development. Here, the new product is financial advice that is not produced by financial advisors because of the SEC rule.

Technical Appendix
Use of Predictive Data Analytics on Minority and Low- and Middle-Class Investing
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A.1 Introduction

Predictive data analysis, a cornerstone of data science, has emerged as a powerful tool for empowering minority and low- to middle-class investors, providing valuable insights into future market trends. By utilizing advanced statistical models and algorithms to analyze historical data, predictive data analytics aids individuals in making informed investment decisions, mitigating risks, and maximizing returns. This approach is pivotal in empowering marginalized communities in the intricate world of investments and fostering economic inclusivity.

A.2 Historical Context of Financial Inclusion

Historically, minority and low to middle-class individuals have faced barriers in accessing and navigating investments due to educational disparities and systemic challenges. Efforts are being made to address these disparities and create a more equitable economic landscape. Predictive data analytics, coupled with intelligent automation, has revolutionized accessibility and decision-making in financial markets, democratizing opportunities for wealth creation among a broader range of investors. These tools empower individuals from diverse backgrounds to confidently participate in the financial markets, fostering inclusivity and equity.

A.3 Understanding Predictive Data Analytics

Predictive data analysis, a vital aspect of data science, involves using historical data, statistical algorithms, and machine learning models to predict future outcomes or trends.

Predictive data analysis enables informed decision-making by uncovering hidden patterns and relationships within vast datasets. In the realm of investing, it plays a crucial role in analyzing market data, economic indicators, and financial metrics. Machine learning algorithms process extensive data, identifying trends and patterns that may elude human analysts. Predictive data analysis empowers investors to navigate complex financial markets with data-driven insights.

A.4 Leveraging Predictive Data Analytics for Financial Inclusion

Integrating technology in investment decision-making has significantly reduced the cost of seeking financial advice for minorities and individuals from low to middle-income backgrounds. Traditional

financial advice was often expensive, making it difficult for those with limited resources to manage their investments effectively. Robo-advisors have emerged as a cost-effective solution, utilizing algorithms to assess an individual's financial situation and providing tailored advice at a fraction of the cost of traditional financial advisors. Additionally, technology has democratized access to financial education, distilling complex trends into understandable information disseminated through user-friendly platforms. This empowerment through knowledge enables more informed investment decisions, promoting financial growth and stability at a significantly reduced cost.

Intelligent Automation (IA) integration in investment decision-making revolutionizes opportunities for minorities and low to middle-class individuals. Historically, personalized investment advice was inaccessible due to excessive costs, favoring the affluent. IA tools, especially AI-driven robo-advisors, democratize financial expertise by offering tailored guidance at affordable rates. This accessibility enhances financial literacy for minorities and lower-income groups, enabling them to make informed investment decisions and accumulate wealth.

Additionally, IA expands investment horizons by identifying diverse avenues aligning with investors' goals. These tools optimize portfolios, uncover untapped sectors, and offer micro-investing opportunities, lowering barriers to entry. IA levels the field, ensuring marginalized communities actively participate in wealth-building activities and secure their financial futures.

A.5 Potential Regulation Implications of Government Regulatory Agencies Oversight

The challenges and critiques related to regulatory oversight in investment decision-making for minorities and low to middle-income individuals are multifaceted. One key challenge lies in these communities' need for enhanced financial education. Regulatory policies are often complex and challenging to grasp, making it difficult for individuals with limited financial literacy to navigate investment opportunities. Without proper guidance, they may make uninformed decisions or fall victim to fraud, hindering their financial stability and growth.

Additionally, there is a concern about potential biases within regulatory frameworks. If regulatory agencies lack diversity or fail to address systemic biases, their policies might inadvertently perpetuate existing inequalities. For example, traditional credit scoring methods might disadvantage minorities and low-income individuals due to historical disparities in credit access. Moreover, overly stringent regulations, although intended for investor protection, can stifle innovation and entrepreneurship in communities needing economic growth. Striking a balance between safeguarding investors and fostering an environment conducive to investment and economic growth is imperative.

A.6 Conclusion

The challenges surrounding regulatory oversight in investment decision-making for minorities and low to middle-income individuals are complex and multifaceted. One major issue is the lack of financial education within these communities, making it difficult for individuals with limited financial literacy to navigate intricate investment opportunities. Concerns arise due to potential biases within regulatory frameworks; if regulatory agencies lack diversity or fail to address systemic biases, their policies might perpetuate existing inequalities. For example, traditional credit scoring methods might disadvantage minorities and low-income individuals.

Moreover, overly stringent regulations, although intended for investor protection, can stifle innovation and entrepreneurship in communities needing economic growth. Striking a balance between safeguarding investors and fostering an inclusive and transparent environment is imperative, emphasizing equitable access to opportunities while ensuring investor safety.

Regulatory agencies must continually reassess their policies, emphasizing inclusivity and fairness to avoid hindering the very communities they aim to support. This dynamic approach ensures that regulatory measures promote financial inclusivity, enabling minorities and low-income individuals to actively participate in wealth-building activities, thereby fostering a more equitable and prosperous society.

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