

OUTSOURCING VOTING TO AI: CAN CHATGPT ADVISE INDEX FUNDS ON PROXY VOTING DECISIONS?

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ABSTRACT

Released in November 2022, Chat Generative Pre-training Transformer (“ChatGPT”), has risen rapidly to prominence, and its versatile capabilities have already been shown in a variety of fields. Due to ChatGPT’s advanced features, such as extensive pre-training on diverse data, strong generalization ability, fine-tuning capabilities, and improved reasoning, the use of AI in the legal industry could experience a significant transformation. Since small passive funds with low-cost business models generally lack the financial resources to make informed proxy voting decisions that align with their shareholders’ interests, this Article considers the use of ChatGPT to assist small investment funds, particularly small passive funds, in making more accurate and informed proxy voting decisions.

This Article proposes that small passive funds can improve their proxy voting accuracy and personalization by leveraging advanced AI language models such as ChatGPT. This would enable them to better serve their shareholders and navigate the competitive market. To test ChatGPT’s potential, the author conducted an experiment using a zero-shot GPT-4 model to generate detailed proxy voting guidelines and applied them to a real-world proxy statement. The model successfully identified conflicts of interest in the election of directors and generated comprehensive guidelines with weight for each variable. However, the model also identifies some of ChatGPT’s

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limitations, such as token limitations, long-range dependencies, and likely ESG inclination. Additionally, this Article recognizes that investment funds may face other challenges when outsourcing voting decisions to AI, such as data and algorithm biases, cybersecurity and privacy concerns, and regulatory uncertainties.

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INTRODUCTION

ChatGPT was hugely popular when it launched in November 2022, and its popularity continues to grow.¹ In fact, it reached 100 million

1. See Chris McKay, *OpenAI's Revenue Skyrockets to \$1.3 Billion Annualized Rate*, MAGINATIVE (Oct. 12, 2023), <https://www.maginative.com/article/openais-rev>

monthly active users within just two months, becoming “the fastest-growing consumer application in history.”²

As a chat bot for its underlying models, ChatGPT is trained through a two-step process: pre-training and fine-tuning.³ In the pre-training phase, the model learns to generate text by predicting the next word in a sentence, given the previous words.⁴ This is done using an extensive dataset that includes a diverse range of topics and knowledge up until very recently.⁵ During the fine-tuning phase, the model is further refined on a more specific dataset.⁶ This dataset may include demonstrations of correct behavior and comparisons to rank different responses.⁷ This helps the model adapt its learned knowledge to generate contextually relevant responses and perform specific tasks.⁸

enue-skyrockets-to-1-3-billion-annual-rate/ [https://perma.cc/HA9U-L4J5] (reporting that the revenue of Open AI, ChatGPT’s developer, has been accelerating recently compared to the summer).

2. Krystal Hu, *ChatGPT Sets Record for Fastest-Growing User Base - Analyst Note*, REUTERS (Feb. 2, 2023, 7:33 AM PST), <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/> [https://archive.ph/Pgfu9].

3. See Marco Ramponi, *How ChatGPT Actually Works*, ASSEMBLYAI (Dec. 23, 2022), <https://www.assemblyai.com/blog/how-chatgpt-actually-works/> [https://perma.cc/5HLQ-2MXP].

4. *Id.* (“In fact, their objective function is a probability distribution over word sequences (or token sequences) that allows them to predict what the next word is in a sequence . . .”).

5. See Alan D. Thompson, *What’s in My AI?*, LIFE ARCHITECT (Mar. 2022), <https://lifeearchitect.ai/whats-in-my-ai/> [https://perma.cc/35HM-EQAE] (the training dataset for ChatGPT consisted of at least 753.4GB of text data). ChatGPT’s knowledge cutoff date has been extended. See Lance Whitney, *ChatGPT is No Longer as Clueless About Recent Events*, ZDNET (Nov. 7, 2023, 7:03 AM), <https://www.zdnet.com/article/chatgpt-is-no-longer-as-clueless-about-recent-events/> [https://perma.cc/78YX-JJE5].

6. See Ramponi, *supra* note 3.

7. *Id.*

8. See *id.*; see also Molly Ruby, *How ChatGPT Works: The Model Behind the Bot*, TOWARDS DATA SCI. (Jan. 30, 2023), <https://towardsdatascience.com/how-chatgpt-works-the-models-behind-the-bot-1ce5fca96286> [https://perma.cc/SK38-FR3B].

On its initial launch, ChatGPT was powered by GPT-3.5, a large language model (“LLM”)⁹ which has as many as 175 billion parameters.¹⁰ On March 14, 2023, OpenAI launched GPT-4, and stated it is much superior to GPT-3.5 because GPT-4 is a multimodal model, so it can respond to both text and images.¹¹ Additionally, GPT-4 performs better in reasoning and complex problem solving and produces less factual errors.¹² Users can access a GPT-4 powered version of ChatGPT by accessing the plus service, which costs \$20 per month.¹³ Further, GPT-4 API is publicly available, so developers can create custom applications and integrate GPT-4 into various platforms, including those tailored for the legal industry.

ChatGPT’s versatile capabilities have been shown in a variety of fields. For example, ChatGPT has been used to draft emails,¹⁴ assist professors in creating syllabi and handouts, help students finish tasks,¹⁵

9. A LLM is an AI model used in natural language processing that can process and generate large amounts of text; they are trained on massive datasets of text and can perform a wide range of tasks, such as language translation, text summarization, and question answering. See Moveworks, *AI Term Glossary*, <https://www.moveworks.com/us/en/resources/ai-terms-glossary> [<https://perma.cc/7L2K-XCMN>] (last visited Nov. 14, 2023); see also Ben Lutkevich, *Artificial Intelligence Glossary: 60+ Terms to Know*, TECHTARGET (June 27, 2023), <https://www.techtargget.com/whatis/feature/Artificial-intelligence-glossary-60-terms-to-know> [<https://perma.cc/J6TX-9WGT>].

10. See Long Ouyang et al., *Training Language Models to Follow Instructions with Human Feedback*, ARXIV:2203.02155 [CS.CL] (Mar. 4, 2022), <https://arxiv.org/abs/2203.02155> [<https://perma.cc/4PQM-EC36>] (this paper presents “InstructGPT” (GPT 3.5)).

11. See Will Douglas Heaven, *GPT-4 Is Bigger & Better than ChatGPT—but OpenAI Won’t Say Why*, MIT TECH. REV. (Mar. 14, 2023), <https://www.technologyreview.com/2023/03/14/1069823/gpt-4-is-bigger-and-better-chatgpt-openai/> [<https://perma.cc/ZGZ3-2HMC>]; see also OpenAI, *GPT-4 Technical Report*, ARXIV:2303.08774 at 4, 14, 58 (last revised Mar. 27, 2023), <https://arxiv.org/abs/2303.08774v3> [<https://perma.cc/XM5S-WKYG>].

12. *Supra* note 11.

13. See OpenAI, *Introducing ChatGPT Plus*, OPENAI BLOG (Feb. 1, 2023), <https://openai.com/blog/chatgpt-plus> [<https://perma.cc/35AY-JTYK>].

14. See Kif Leswing, *ChatGPT Is Being Used to Automatically Write Emails: Microsoft, Salesforce and TikTok Creators Are Hopping on the Trend*, CNBC (Mar. 8, 2023), <https://www.cnbc.com/2023/03/08/chatgpt-is-being-used-to-write-emails-big-companies-are-embracing-it.html> [<https://perma.cc/V8BC-9FXK>].

15. See Carolyn Chun, *Why Some College Professors Are Adopting ChatGPT AI as Quickly as Students*, CNBC (Apr. 17, 2023, 1:24 AM EDT), <https://www>.

and provide financial professionals with guidance on selecting stocks.¹⁶ ChatGPT's intelligence is so advanced that some experts predict that highly skilled jobs may be significantly impacted by the introduction and development of ChatGPT.¹⁷

The legal industry has already adopted the use of AI models in various ways.¹⁸ Law firms and lawyers have used AI to review contracts, conduct e-discovery, and perform legal research.¹⁹ AI has also been used to analyze the behavior of individual lawyers and judges, and even predict the outcomes of legal cases.²⁰ However, these legal AI models typically only engage in a specific task and cannot perform tasks outside of their programmed functions. For example, a legal AI model that is designed to review contracts such as Lawgeex²¹ is not capable of analyzing judges' decisions like Westlaw's Lex Machina.²²

[cnbc.com/2023/04/02/why-college-professors-are-adopting-chatgpt-ai-as-quickly-as-students.html](https://www.cnbc.com/2023/04/02/why-college-professors-are-adopting-chatgpt-ai-as-quickly-as-students.html) [https://perma.cc/66M5-LNZT].

16. See Cody Willard, *Opinion: ChatGPT and Bard Are Telling this Hedge-Fund Manager to Avoid AI Stocks Now*, MARKETWATCH (Apr. 8, 2023, 10:40 AM ET), <https://www.marketwatch.com/story/chatgpt-and-bard-are-telling-this-hedge-fund-manager-to-avoid-ai-stocks-now-71424c5f> [https://perma.cc/K3XG-HQCU].

17. See Edward W. Felten et al., *How Will Language Modelers Like ChatGPT Affect Occupations and Industries?* 7–8 (Apr. 17, 2023), <https://ssrn.com/abstract=4375268> [https://perma.cc/D8VP-EVNE] (finding telemarketers and post-secondary teachers in English, foreign language, and history are among the occupations most exposed by ChatGPT); see also Tyna Eloundou et al., *GPTs Are GPTs: An Early Look at the Labor Market Impact Potential of Large Language Models* (Mar. 27, 2023) (OpenAI, OpenResearch & the Univ. of Pa., Working Paper), <https://arxiv.org/pdf/2303.10130.pdf> [https://perma.cc/8WFM-NV8U] (“findings reveal that around 80% of the US workforce could have at least 10% of their work tasks affected by the introduction of” ChatGPT and ChatGPT-like AIs, “while approximately 19% of workers may see at least 50% of their tasks impacted”; “higher-income jobs may face greater exposure to” AI models like ChatGPT).

18. See Matthew Stepka, *Law Bots: How AI Is Reshaping the Legal Profession*, BUS. L. TODAY (Feb. 21, 2022), <https://businesslawtoday.org/2022/02/how-ai-is-reshaping-legal-profession/> [https://perma.cc/9CL8-QUFW].

19. See *id.*

20. *Id.*

21. See LAWGEEX, <https://www.lawgeex.com/platform/> [https://perma.cc/ZY5B-KAGB]. Lawgeex is designed exclusively to review contracts. *Id.*

22. See LEX MACHINA, *About Lex Machina*, <https://lexmachina.com/about/> [https://perma.cc/4RRY-P6HC] (last visited Apr. 11, 2023) (“Every day, our . . . engine scans millions of pages of litigation information to create valuable insights on courts, judges, law firms, lawyers, and parties.”).

While other AI models are limited to a specific task, ChatGPT is not so limited because it has a strong generalization ability.²³ This ability refers to ChatGPT's capacity to apply the general knowledge and patterns it has learned during training to complete a wide variety of tasks and problems such as natural language understanding, question-answering, text generation, machine translation, and more.²⁴

In addition, ChatGPT allows for fine-tuning, a technique where a pre-trained GPT model is adapted to a specific task or dataset, such as question-answering, language translation, or text classification.²⁵ Fine-tuning improves performance on the specific task while preserving the model's generalization ability.²⁶ This saves users' time and resources by avoiding the need to train an AI model from scratch. Fine-tuning a GPT model can also provide ChatGPT with current data, improving its ability to perform specific tasks with an enhanced level of expertise as compared to the general model.²⁷

ChatGPT's above-mentioned exceptional intelligence is a result of its internal mechanisms and model. The term "Transformer" within ChatGPT's name refers to a particular type of neural network architecture²⁸ that was first introduced in 2017²⁹ and is now widely used as the basis for many state-of-the-art natural language processing

23. See Partha Pratim Ray, *ChatGPT: A Comprehensive Review on Background, Applications, Key Challenges, Bias, Ethics, Limitations and Future Scope*, 3 INTERNET OF THINGS & CYBER-PHYS. SYS. 121 (2023).

24. *Id.* ("By training on a large corpus of text data, the model learns to recognize and generalize patterns in language, such as syntax, grammar, and semantics.").

25. *Id.* ("After pre-training, the GPT model can be fine-tuned on a specific downstream task by providing it with a smaller labeled dataset, which is used to update the model's weights and biases to better fit the task at hand.").

26. *Id.*

27. *Id.* (chronicling how GPT models evolve with being fine-tuned).

28. A neural network architecture is a computational model employed in machine learning that draws inspiration from the biological structure and function of the human brain. See Pragati Baheti, *The Essential Guide to Neural Network Architectures*, V7 LABS: DEEP LEARNING (Mar. 2, 2023), <https://www.v7labs.com/blog/neural-network-architectures-guide> [<https://perma.cc/G9FQ-K7EF>]. Neural networks are constructed of multiple interconnected layers of nodes or neurons, which function to process and convert data inputs. See *id.* The architecture of a neural network denotes the precise configuration and organization of these layers, along with the number of nodes contained in each layer. See *id.*

29. See Vaswani et al., *Attention Is All You Need*, ADVANCES IN NEURAL INFO. PROCESSING SYS. 30, at 1 (2017).

(“NLP”)³⁰ models, including ChatGPT. Transformers are specifically designed to perform sequence-to-sequence tasks³¹ with greater efficiency than traditional methods. This is made possible through a mechanism known as self-attention.³²

Self-attention is a key component of transformer models that enables them to weigh the importance of different words in a given text sequence.³³ By assigning varying weights to different parts of the input, the self-attention mechanism allows the model to capture long-range dependencies³⁴ and context more effectively than previous architectures. This results in a deeper understanding of the text and the ability to generate more coherent and contextually relevant responses.

Due to ChatGPT’s advanced features, such as extensive pre-training on diverse data, strong generalization ability, fine-tuning capabilities, and improved reasoning, the application of ChatGPT could transform the use of AI in the legal industry. In fact, many lawyers deem ChatGPT is and can and should be applied to legal work.³⁵ This Article proposes using ChatGPT to assist small investment funds, especially small passive funds, in making more accurate and informed proxy voting decisions.

30. NLP is a discipline within artificial intelligence and computational linguistics that aims to enable computers to comprehend, interpret, and produce human language. *See supra* note 9. It involves creating algorithms and models that can process and manipulate significant volumes of natural language data, including but not limited to written text, spoken words, and sign language (a form of visual language that utilizes various hand gestures, facial expressions, and body movements to convey meaning). *See id.*

31. Sequence-to-sequence (“Seq2Seq”) tasks are a class of machine learning problems utilized in NLP. *See id.* They entail the mapping of an input sequence to an output sequence via an encoder and decoder model. *See id.* For instance, in machine translation, an input sequence would be a sentence in one language, and the output sequence would be the corresponding sentence in another language. *See id.*

32. *See* Vaswani et al., *supra* note 29.

33. *Id.* at 2.

34. Dependencies refer to the interdependence between the input and output variables of a model. *Id.* Specifically, the output or prediction of a model is dependent on the input variables, also known as features. *Id.* Long-range dependencies refer to the relationships between words or phrases that are far apart from each other in a sentence. *Id.*

35. *See* Thomson Reuters, *New Report on ChatGPT & Generative AI in Law Firms Shows Opportunities Abound, Even as Concerns Persist*, THOMSON REUTERS (Apr. 17, 2023), <https://www.thomsonreuters.com/en-us/posts/technology/chatgpt-generative-ai-law-firms-2023/> [<https://perma.cc/4T6E-JG42>] (finding a majority of surveyed lawyers think ChatGPT can and should be applied to legal work).

This Article is divided into three broad parts, and Part 1 consists of three sections. The first section of Part 1 describes the rise of passive funds in the U.S. and its implications for corporate governance. The second section explores the practice of outsourcing proxy voting decisions including the practice of “robovoting.” Finally, the third section outlines the transition to personalized voting.

Part two, comprised of three sections, delves into an experiment to test ChatGPT’s potential to make more accurate and informed proxy voting decisions. In the experiment, the author (1) prompted ChatGPT’s GPT-4 Zero-Shot model to generate detailed proxy voting guidelines and weigh each variable and (2) applied those generated guidelines to a real-world proxy statement to test the model’s accuracy. The first section outlines the regulations surrounding proxy statements and discusses building and modifying corporate governance scoring and voting recommendation models using ChatGPT. The second section discusses the results of the experiment when ChatGPT is fine-tuned with Institutional Shareholder Services (“ISS”) proxy voting guidelines. The third section focuses on the process of fine-tuning ChatGPT to create personalized corporate governance evaluation and proxy recommendation models that align with the varying priorities of different investment funds.

Part 3 explores four categories of challenges that investment funds may face when outsourcing voting decisions to AI, particularly ChatGPT. The first section explores fine-tuning and iterating of the model to optimize its performance for proxy voting decisions, which requires substantial resources, expertise, and tradeoff. The second section examines the potential biases that could arise in the model’s data and algorithm, such as data bias, method bias, and socio-cultural bias. The third section lays out cybersecurity and privacy concerns that could arise when sensitive data is fed into ChatGPT without proper policies and cybersecurity methods in place to prevent data leaks. And finally, the fourth section looks at regulatory uncertainties that pose a significant challenge for investment funds that want to use ChatGPT for proxy voting decisions. Addressing these challenges is necessary for investment funds to effectively use ChatGPT and other AI tools for corporate governance evaluation and proxy voting decisions.

I. FROM ROBOVOTING TO PERSONALIZED VOTING

A. THE RISE OF PASSIVE FUNDS AND CHANGING CORPORATE GOVERNANCE

The rapid growth of passive funds, particularly index funds, is transforming the U.S. stock market structure. These funds have consistently attracted significant capital inflows.³⁶ By the end of 2021, passive funds owned 16% of the U.S. stock market capitalization, surpassing the 14% ownership of actively managed funds.³⁷ Even more remarkably, according to scholarly estimates, passive investors' ownership of the U.S. market reached 33.5% in 2021, further illustrating the substantial presence of passive stock ownership in the U.S. stock market.³⁸

Passively managed funds, also known as passive funds, are investment funds that seek to replicate the performance of a specific market index, such as the S&P 500 index.³⁹ Unlike actively managed funds, which involve active decision-making by fund managers to select securities and create portfolios with a view to beating the market, passive funds do not involve active management.⁴⁰ Instead, they track the

36. See Gaurav Dogra, *Global ETFs Saw Record Inflows in 2021*, REUTERS (Jan. 21, 2022, 8:52 AM PST), <https://www.reuters.com/markets/europe/global-markets-etf-graphic-2022-01-21/> [<https://archive.is/7oJHG>].

37. See Steve Johnson, *Passive Fund Ownership of US Stocks Overtakes Active for First Time*, FIN. TIMES (June 6, 2022), <https://www.ft.com/content/27b5e047-5080-4ebb-b02a-0bf4a3b9bc08> [<https://perma.cc/6CUV-G5J7>].

38. See Alex Chinco & Marco Sammon, *The Passive-Ownership Share Is Double What You Think It Is* (Sept. 4, 2023), <https://www.alexchinco.com/double-what-you-think-it-is.pdf> [<https://perma.cc/Q7MQ-HYU2>] (aggregating the stock ownership of index funds and direct indexers—holders of the iShares Russell 1000 ETF and state pension funds that have positions directly indexed to the Russell 1000 and concluding the 37.8 percentage of passive ownership of the U.S. stock market could be an understatement).

39. See Matthew Blume, *Active vs. Passive Investing – Which Is Right for You?*, NASDAQ (May 18, 2021, 1:37 PM EDT), <https://www.nasdaq.com/articles/active-vs.-passive-investing-which-is-right-for-you-2021-05-18> [<https://archive.is/8o4dC>]; see also Charles Stein, *Active or Passive Investing? The Debate Explained*, BLOOMBERG QUICKTAKE (May 17, 2017), <https://www.bloomberg.com/professional/blog/active-passive-investing-debate-explained/> [<https://perma.cc/GD2A-MXTR>]; BARCLAYS, *What Are Active and Passive Funds?*, <https://www.barclays.co.uk/smart-investor/investments-explained/funds-etfs-and-investment-trusts/what-are-active-and-passive-funds/> [<https://perma.cc/Q8DW-CFP7>] (last visited Apr. 10, 2023).

40. See *supra* note 39.

performance of a specific index and aim to match the index's overall market performance.⁴¹

Index funds are passive funds that hold a diversified portfolio of stocks or other securities that closely mirror the composition of the underlying index.⁴² For example, an equity index fund may track the S&P 500 index, and investors' returns would be equal to the performance of the S&P 500 index itself.⁴³ If an investment fund is traded on an exchange like a stock and "can be bought and sold throughout the day",⁴⁴ it is called an exchange traded fund ("ETF").⁴⁵ "Most ETFs are index funds."⁴⁶

Vanguard offered the world's first index fund-Vanguard S&P 500 Index Fund.⁴⁷ Aiming to raise \$150 million, the fund merely gathered \$11 million following its initial public offering in 1976.⁴⁸ However, the fund's net assets have now surpassed \$800 billion.⁴⁹ The first ETF, SPDR S&P 500 ETF Trust, was offered by State Street Global Advisors ("SSGA") in

41. *Id.*

42. See SEC Off. of Inv. Educ. & Advoc., *Investor Bulletin: Index Funds*, INV. ALERTS & BULLETINS (Aug. 6, 2018), https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_indexfunds [<https://archive.is/RZrDM>].

43. *Id.* Please note that some index funds invest in the entire index they track, while others invest in a representative sample of the index. *Id.* Index fund managers also need to rebalance their portfolios from time to time to ensure that they track the index closely. *Id.* Rebalancing means index fund managers sell overweight stocks and buy underweight ones. See BlackRock, *Equity Index Rebalances*, iSHARES, <https://www.blackrock.com/au/intermediaries/ishares/equity-index-rebalances> [<https://perma.cc/D374-B5AY>] (last visited Nov. 10, 2023).

44. Kim Porter, *What's the Difference Between ETFs and Index Funds?*, BUS. INSIDER (Jul. 12, 2022, 2:31 PM), <https://www.businessinsider.com/personal-finance/etf-vs-index-fund> [<https://perma.cc/VUF5-ZV9L>].

45. See Mary Mannion, *ETFs vs. Index Funds: Which One Is Better for You?*, J.P. MORGAN WEALTH MGMT. (Feb. 15, 2023), <https://www.chase.com/personal/investments/learning-and-insights/article/etfs-vs-index-funds> [<https://perma.cc/RF9F-TZ3L>]; see also Porter, *supra* note 44.

46. *ETFs vs. Mutual Funds: A Comparison*, VANGUARD: INV. RES. & EDUC., <https://investor.vanguard.com/investor-resources-education/etfs/etf-vs-mutual-fund> [<https://perma.cc/86UL-STVH>] (last visited Apr. 10, 2023). There are also active ETFs, primarily bond ETFs. *Id.*

47. See Burton G. Malkiel, *'Trillions' Review: The Rise and Rise of the Index Fund*, WALL ST. J. (Oct. 20, 2021, 11:53 AM ET), <https://www.wsj.com/articles/trillions-robin-wigglesworth-book-review-john-c-bogle-vanguard-rise-of-the-index-fund-11634745118> [<https://perma.cc/K4D8-YGPJ>].

48. *Id.*

49. See *Vanguard 500 Index Fund (VOO)*, YAHOO! FIN., <https://finance.yahoo.com/quote/VOO/> [<https://archive.is/1t64y>] (last visited Apr. 14, 2023).

January 1993.⁵⁰ This ETF also tracks the S&P 500 index, and now has over \$370 billion in net assets,⁵¹ remaining the biggest ETF in the world.

Passive funds charge far lower fees than active funds.⁵² In 2021, the asset-weighted average expense ratio of active equity funds was 0.68%, while the expense ratio of index equity funds was as low as 0.06%.⁵³ There could be two main reasons why passive funds charge such low fees. First, passive funds typically track an index and do not offer active management like stock picking.⁵⁴ This business model means that they do not require the same level of research and analysis of individual stocks and companies as active funds.⁵⁵ Second, passive fund firms often provide index funds tracking the same index.⁵⁶ This means that they have to compete with each other for investors, so they keep lowering fees to stay attractive.

50. See Jack Pitcher, *The First ETF Launched 30 Years Ago, Revolutionizing Investing*, WALL ST. J. (Jan. 22, 2023, 8:00 AM ET), <https://www.wsj.com/articles/the-first-etf-launched-30-years-ago-revolutionizing-investing-11674343914> [<https://perma.cc/5JGN-GBQ3>].

51. See *SPDR S&P 500 ETF Trust (SPY)*, YAHOO! FIN., <https://finance.yahoo.com/quote/SPY/> [<https://perma.cc/2FLQ-ZQPZ>] (last visited Apr. 14, 2023).

52. See Inv. Co. Inst., *Mutual Fund Expense Ratios Down Sharply from a Quarter Century Ago* (Mar. 24, 2022), <https://www.ici.org/news-releases/22-news-trends> [<https://perma.cc/BC79-XNSA>]. Expense ratios equal the fund's net operating expenses divided by the fund's net assets. *Id.*

53. See *Morningstar Finds Investors Saved Nearly \$6.9 Billion from Falling Fees in 2021*, MORNINGSTAR, INC. (Jul. 12, 2022), <https://newsroom.morningstar.com/newsroom/news-archive/press-release-details/2022/Morningstar-Finds-Investors-Saved-Nearly-6.9-Billion-From-Falling-Fees-in-2021/default.aspx> [<https://perma.cc/2AGP-TLG9>]. However, according to Morningstar, the asset-weighted average fee ratios of active funds and index funds in 2021 were 0.6% and 0.12%, respectively. See *id.* But in either estimate, passive funds' average expense ratio was far lower than that of active funds. See *id.*

54. See Kent Thune, *Index Funds: What They Are and How They Work*, SEEKING ALPHA (Mar. 28, 2023), <https://seekingalpha.com/article/4436649-what-is-an-index-fund#what-is-an-index-fund> [<https://perma.cc/F89F-DTSJ>] (arguing index fund managers do not buy and sell the fund's investment securities until the index changes, which is infrequent). "Due to the low number of trades, and because there is no need to research and analyze securities, the operational costs of an index fund are extremely low." *Id.*

55. See *id.*

56. See *Largest ETFs: Top 100 ETFs by Assets*, VETTA FI <https://etfdb.com/compare/market-cap/> [<https://perma.cc/5TAY-MM9K>] (last visited Apr. 10, 2023) (the world's three largest ETFs all track the S&P 500 index).

The three biggest ETF managers are BlackRock, Vanguard, and SSGA, collectively dubbed the “Big Three.”⁵⁷ Each of them has trillions of dollars in assets under management (“AUM”),⁵⁸ and dominates the ETF management business.⁵⁹ The Big Three possessed a quarter of the ownership of S&P 500 companies in 2019, and such ownership is projected to reach 40% within two decades.⁶⁰

The rise of passive funds has been reshaping the corporate governance landscape.⁶¹ Since investment funds hold legal ownership of the stocks in their portfolio companies, while funds’ investors are the beneficial owners, these funds act as fiduciaries for their investors. Therefore, they have a responsibility to act in the best interests of these investors when casting votes with their shares.⁶² This fiduciary duty extends to proxy voting. In 2003, the Securities Exchange Commission (SEC) issued a rule that requires fund managers to adopt policies and procedures to ensure that the adviser votes proxies in the best interests of clients.⁶³ In July 2019, the SEC issued an interpretation further clarifying fund managers’ fiduciary duties to the investors.⁶⁴ These duties include continuing engagements with funds’ investors.⁶⁵

57. See Dorothy S. Lund & Adriana Robertson, *Giant Asset Managers, the Big Three, and Index Investing* (Mar. 31, 2023) (USC CLASS Research Paper No. 23-13), <https://ssrn.com/abstract=4406204> [<https://perma.cc/53LK-3FRW>] (“A robust literature describes the incentives and stewardship practices of the “Big Three” asset managers . . .”).

58. See *World’s Top Asset Management Firms*, ADV RATINGS, <https://www.advratings.com/top-asset-management-firms> [<https://perma.cc/GH9N-JYXG>] (last visited Mar. 31, 2022).

59. See Lucian A. Bebchuk & Scott Hirst, *The Specter of the Giant Three*, 99 B.U. L. REV. 721, 730 (2019) (finding only five of the world’s largest 50 ETFs are not managed by the Big Three).

60. *Id.* at 721.

61. See Marcel Kahan & Edward B. Rock, *Index Funds and Corporate Governance: Let Shareholders Be Shareholders*, 100 B.U. L. REV. 1771 (arguing “[u]nlike advisers to active funds, however, advisers to index funds lack indirect, flow-based incentives to acquire information, and they benefit less from spillover knowledge gathered by analysts for the purpose of making investment decisions”).

62. See, e.g., SEC v. Cap. Gains Rsch. Bureau, Inc., 375 U.S. 180, 275, 284 (1963) (holding investment advisers have a fiduciary duty to their clients and must act in their clients’ best interests).

63. SEC Proxy Voting by Investment Advisers Rule, 17 C.F.R. § 275.206(4)–(6).

64. See SEC, Commission Interpretation Regarding Standard of Conduct for Investment Advisers, 17 C.F.R. Part 276, Release No. IA-5248 (July 12, 2019).

65. See *id.*

With the ascent of institutional investors,⁶⁶ especially index funds, the notion of investment stewardship has become well-known.⁶⁷ The notion of investment stewardship refers to engagement with public companies to promote corporate governance practices consistent with encouraging long-term value creation for shareholders in the company.⁶⁸ Since investment funds are the legal shareholders of their portfolio companies and vote their shares on behalf of fund investors, these investors do not have a direct say in the companies they beneficially own. In response, such funds declare they employ investment stewardship to create long-term value for their investors.⁶⁹

The tools for investment stewardship includes private engagement with management of portfolio companies and proxy voting.⁷⁰ Vanguard claims its investment stewardship team “has a clear, consistent, and compelling mandate” to serve as the “voice for our investors” and “promote long-term value creation at the companies in which Vanguard-

66. See James Chen, *Institutional Investor: Who They Are and How They Invest*, INVESTOPEDIA (Nov. 22, 2021), <https://www.investopedia.com/terms/i/institutional-investor.asp> [<https://perma.cc/85Z7-2APY>]. An institutional investor is a company or organization that invests money on behalf of other people such as asset managers. *Id.*

67. See Jessica Hamlin, *Stewardship Is Becoming Fundamental to Investing — And Managers Need to Keep Up*, INSTITUTIONAL INV. (Aug. 3, 2021), <https://www.institutionalinvestor.com/article/2bswsjynb6yav80jxlibk/corner-office/stewardship-is-becoming-fundamental-to-investing-and-managers-need-to-keep-up> [<https://perma.cc/KG8B-GW2S>] (citing a Accenture report finding “80 percent of asset managers believe stewardship models provide opportunities to create value and deliver strong performance for shareholders”).

68. See generally Barbara Novick et al., *The Investment Stewardship Ecosystem*, HARV. L. SCH. FORUM ON CORP. GOVERNANCE (July 24, 2018), <https://corp.gov.law.harvard.edu/2018/07/24/the-investment-stewardship-ecosystem/> [<https://perma.cc/7FLH-VPWR>].

69. See John Wilson, *Enhancing Investment Stewardship*, PERFORMANCE MAG., Issue 39 (Oct. 3, 2022), <https://www.deloitte.com/lu/en/pages/investment-management/articles/enhancing-investment-stewardship.html> [<https://perma.cc/9N6K-CQCM>]:

The concept of investment stewardship is borne out of the philosophy that intervention is required to ensure that assets maintain or enhance their value over time, or at least do not decline due to neglect or mismanagement. As stewards of clients’ money, investment firms can use their influence to maximize long-term value through formalized or targeted inventions with investee companies.

70. See *supra* note 66 and accompanying text.

advised funds invest.”⁷¹ BlackRock states, “[i]nvestment [s]tewardship is part of how BlackRock fulfills its fiduciary responsibility to our clients to advance their long-term economic interests.”⁷²

However, scholars have cast doubt on passive funds’ commitment to investment stewardship.⁷³ Professors Lucian Bebchuk and Alma Cohen have identified two agency problems for institutional investors: under-spending on stewardship and excessive deference to managers of corporations.⁷⁴ While these two agency problems are found in both active and index funds, they are more pronounced for index funds.⁷⁵ For example, if index funds devote resources to increase the value of any particular corporation, any benefit realized by that particular corporation would also be realized by all the index funds tracking the same index.⁷⁶ Therefore, index funds are not incentivized to expend these resources because that effort will not help them perform any better than other index funds.⁷⁷

Agency problems arise from the misalignment of interests between managers and shareholders.⁷⁸ Investment fund firms like BlackRock and Vanguard have the ability to opportunistically maximize the interests of their fund managers at the expense of the index funds they manage.⁷⁹ They can do so by extracting interests from their shareholders directly, or by

71. *Stewardship in Action: A Voice for Investors*, VANGUARD <https://www.vanguard.com.au/personal/about-us/investment-stewardship/stewardship-in-action>[<https://perma.cc/35UR-MR7X>] (last visited Apr. 11, 2023).

72. *BlackRock Investment Stewardship*, BLACKROCK, <https://www.blackrock.com/corporate/about-us/investment-stewardship/insights/2022-global-principles> [<https://archive.is/FOsx3>] (last visited Apr. 11, 2023).

73. See Lucian A. Bebchuk et al., *The Agency Problems of Institutional Investors*, 31 J. ECON. PERSP. 89, 90 (2017).

74. See *id.*

75. *Id.*

76. *Id.* at 97–98.

77. *Id.*

78. See Mark Anson et al., *Aligning the Interests of Agents and Owners: An Empirical Examination of Executive Compensation*, IVEY BUS. J. (May/June 2004), <https://iveybusinessjournal.com/publication/aligning-the-interests-of-agents-and-owners-an-empirical-examination-of-executive-compensation/> [<https://perma.cc/SKT4-MHQ5>].

79. See Bernard S. Sharfman, *Opportunism in Shareholder Voting and Engagement of the “Big Three” Investment Advisers to Index Funds*, 48 J. CORP. L. 463, 463, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3995714 [<https://perma.cc/F9X3-LSYU>].

economizing on expenses for shareholder services.⁸⁰ For instance, BlackRock's global stewardship team, the largest of the Big Three, is made up of 45 people to cover 85 voting markets.⁸¹ The team's 21 U.S.-based stewardship managers are partly responsible for engagement with and proxy voting for approximately 4,000 U.S. public companies.⁸²

Professors Lucian Bebchuk and Scott Hirst also provide empirical evidence demonstrating agency problems in connection with passive funds.⁸³ They find serious underinvestment in investment stewardship of the Big Three.⁸⁴ BlackRock, Vanguard, and SSGA deploy 45, 21, and 12 stewardship personnel in their global stewardship team and devote 0.15%, 0.18%, and 0.14% of their annual fees and expenses to investment stewardship, respectively.⁸⁵ If the Big Three allocate their stewardship budget proportionally to each \$1 billion position in U.S. companies, BlackRock, Vanguard and SSGA would allocate \$4,762, \$1,895, and \$2,147 respectively.⁸⁶

To make informed voting decisions, a stewardship manager has hundreds of pages of materials to read, including the company's annual report and proxy statement, proposals of management and shareholders, and views of the company's board of directors and third-party analysts' report.⁸⁷ This heavy workload makes the Big Three's stewardship expenses look more constrained.

As for engagements with management of portfolio companies, the situation becomes more dire. Big Three's stewardship teams barely spend time and resources engaging with their portfolio companies' management; "From 2017 through 2019, the average proportion of portfolio companies with [which the Big Three had] no engagement[s] were 88.9% for BlackRock, 94.2% for Vanguard, and 94.5% for SSGA."⁸⁸ With such limited resources allocated to stewardship and rare engagements with their portfolio companies, stewardship teams of the Big

80. *Id.* at 471 ("This (collection action) problem is manifested in the form of the Big Three voting almost all their shares even though they are also uninformed.").

81. *Id.* at 472.

82. *Id.*

83. Lucian A. Bebchuk & Scott Hirst, *Index Funds and the Future of Corporate Governance: Theory, Evidence, and Policy*, 119 COLUM. L. REV. 2029, 2029 (2019).

84. *See id.*

85. *Id.* at 2077–78.

86. *Id.* at 2080.

87. *Id.* at 2081.

88. *Id.* at 2086.

Three may not make informed, well-advised proxy voting decisions for all of their portfolio companies.

Due to the Big Three's lack of sufficient investment in stewardship, they are reluctant to actively bring about significant changes at both the firm and regulatory levels. Between 2014 and 2018, approximately 1,500 shareholder proposals were submitted to companies in the Russell 3000 index; however, none of these proposals were submitted by the Big Three.⁸⁹ Meanwhile, for the SEC's proposed 80 rule changes during 1995-2018, each of the Big Three submitted comments to less than 10% of these proposals.⁹⁰

Given the Big Three's significant positions in many companies, market-wide governance reforms—even with small effects on each company—could significantly benefit their portfolios. An important reason why the Big Three are so passive to effect changes in corporate governance could be that the Big Three profit substantially from managing 401(k) plans of many of their portfolio companies.⁹¹ Effecting corporate governance changes in favor of shareholder rights could risk jeopardizing their relationship with corporate management and losing the lucrative business to manage 401(k) plans.⁹²

An empirical paper examining large investment funds' voting on UK's Financial Times-Stock Exchange 350 companies also finds that large investment funds are highly deferential to corporate management, and reluctant to challenge board of director's proposal on the corporation's business plan and operation in voting.⁹³ However, effecting substantial changes in corporations also should garner index funds'

89. *Id.* at 2104 (finding that the Big Three were active in supporting proposals consistent with their proxy voting guidelines). This finding supports Gilson and Gordon's argument that institutional investors are "rationally reticent"—willing to respond to governance proposals but not to propose them. See Ronald J. Gilson & Jeffrey N. Gordon, *The Agency Costs of Agency Capitalism: Activist Investors and the Revaluation of Governance Rights*, 113 COLUM. L. REV. 863, 864 (2013).

90. Bebchuk & Hirst, *supra* note 83, at 2107–08.

91. See Lucian A. Bebchuk & Scott Hirst, *Big Three Power, and Why it Matters*, 102 B.U. L. REV. 1547, 1589 (2022).

92. *Id.*

93. See Suren Gomtsian, *Different Visions of Stewardship: Understanding Interactions Between Large Investment Managers and Activist Shareholders*, 22 J. CORP. L. STUD. 151 (2022) (finding that institutional investors' stewardship focuses on amending corporations' articles of incorporation, bylaws, and corporate governance guidelines, and ESG matters such as prompting sustainability).

support. Absent passive investors' support, activists may not win the battle against incumbent management.⁹⁴

In summary, index funds' staggering ownership of their portfolio companies and low expense ratio could give rise to a mismatch of incentives. Index funds are most likely to be apathetic to improve their portfolio companies' governance—for purposes of keeping low cost—even though an overall increase in corporate integrity would benefit index funds the most.⁹⁵ Developing a cost-effective method to analyze the voluminous materials necessary for making informed proxy voting decisions could improve index fund firms' investment stewardship and provide new momentums to improve corporate governance.

B. OUTSOURCING PROXY VOTING DECISIONS

This section will discuss how index funds conduct proxy voting with limited resources. Proxy voting is often associated with investment stewardship.⁹⁶ Vanguard⁹⁷ and BlackRock⁹⁸ both stress that proxy voting is a key component of investment stewardship. As proxy voting is central to index funds' investment stewardship, it is worth studying more carefully.

As noted earlier, a key feature of passive funds' business model is low-fee low-cost.⁹⁹ Even the Big Three have devoted limited resources to investment stewardship.¹⁰⁰ Thus, to keep the fees and costs low, they may lack financial incentives to cast personalized votes like actively managed funds.¹⁰¹ Meanwhile, devoting resources to improving the value of a

94. *Id.* at 194–95 (finding activist shareholders fail to mobilize institutional investors beyond ESG and general corporate governance matters). Institutional investors are unlikely to vote in line with activist shareholders on proxy contests, changing composition of incumbent boards, and business-related matters. *Id.*

95. Leo E. Strine, Jr., *The Delaware Way: How We Do Corporate Law and Some of the New Challenges We (and Europe) Face*, 30 DEL. J. CORP. L. 673, 673, 689 (2005).

96. Novick et al., *supra* note 68.

97. Vanguard, *supra* note 71 (“Vanguard funds’ voice and vote are the most important levers we have . . . We evaluate proposals and vote proxies on behalf of each of our funds at public company shareholder meetings around the world.”).

98. BlackRock, *supra* note 72 (stating BlackRock does investment stewardship “through engaging with the companies our clients are invested in, voting proxies for those clients who have given us authority”).

99. *See supra* notes 52–53 and accompanying text.

100. *See supra* notes 82–84 and accompanying text.

101. *See* Giovanni Strampelli, *Are Passive Index Funds Active Owners? Corporate Governance Consequences of Passive Investing*, 55 SAN DIEGO L. REV. 803, 852 (2018)

single company in their portfolio barely influences the overall performance of the index that the index fund tracks.¹⁰² If the costs of conducting thorough research and making informed voting decisions cannot be outweighed by the benefits, passive funds may not elect to devote resources to these activities.¹⁰³

Additionally, passive funds often lack the expertise required to analyze all their portfolio companies and make specific voting decisions.¹⁰⁴ This is because passive funds' portfolios are widely distributed across various industries, making it difficult to maintain a deep understanding of each company's unique characteristics.¹⁰⁵

As a result, passive fund managers may have limited incentives in analyzing unique characteristics of individual securities within an index and may not allocate resources to gather security-specific information relevant to each security. Instead, they may rely on the efforts of active investors to obtain and use such information, effectively free riding on active managers' efforts.¹⁰⁶

As index funds lack resources, personnel, expertise, and financial incentives to make personalized decisions on corporate governance matters of their portfolio companies, these funds rely on proxy advisory firms to vote proxies instead.¹⁰⁷ This reliance, a practice called "robovoting," occurs when fund managers automatically vote in line with recommendations of proxy advisory firms such as ISS and Glass Lewis, rather than independently evaluating proposals presented to them before

("Anecdotal and empirical evidence provides limited conclusions but suggests passive investors tend to adopt a low-cost investment strategy to reduce costs associated with engagement with investee companies, thereby keeping their fees low.").

102. Dorothy S. Lund, *The Case Against Passive Shareholder Voting*, 43 J. CORP. L. 493, 511 (2017); see also Peter Iliev & Michelle Lowry, *Are Mutual Funds Active Voters?*, 28 REV. OF FIN. STUD. 446, 469 (2014) (finding funds rationally assess the net benefits of voting and only devote the necessary resources to make an informed vote when the net benefits are sufficiently large).

103. See Iliev & Lowry, *supra* note 102, at 447.

104. See Vladyslav Sushko & Grant Turner, *The Implications of Passive Investing for Securities Markets*, BIS Q. REV., Mar. 2018, at 119–20.

105. *Id.*

106. *Id.* at 119.

107. Paul Rose, *Robovoting and Proxy Vote Disclosure*, Nov. 13, 2019, at 1, <https://ssrn.com/abstract=3486322> [<https://perma.cc/L2GH-DSET>] ("Accepting the fact that proxy advisors play an important role in reducing costs for asset managers who must vote shares consistent with their fiduciary duties to beneficial owners . . .").

voting.¹⁰⁸ In 2020, 114 institutional investors, collectively managing more than \$5 trillion in assets, voted in line with recommendations of proxy advisory firms 99.5% of the time.¹⁰⁹

ISS and Glass Lewis together account for more than 90% of the proxy advisory business, with ISS's market share exceeding 60%.¹¹⁰ They provide proxy advisory services to clients by recommending voting "for," to approve a proposal put forward by the board or shareholder, or "against/withhold," to disprove or express concerns on a proposal.¹¹¹ They issue annual proxy voting guidelines to announce their stance and recommendations on each issue on ballot.¹¹² ISS drafts its guidelines by a survey of institutional issuers and corporations, roundtable discussions, and comments from corporate governance stakeholders.¹¹³

Institutional investors with smaller assets are more likely to rely on proxy advisory firms' services.¹¹⁴ A recent study by Chong Shu finds that funds providing index products are 6% more likely to robovote than non-

108. *Id.*

109. Paul Rose, *Proxy Advisors and Market Power: A Review of Institutional Investor Robovoting* 10 (Ohio State Legal Stud. Research Paper No. 631, Apr. 22, 2021), <https://ssrn.com/abstract=3851233> [<https://perma.cc/PU4K-F8C6>].

110. See Kevin Chuah et al., *Another Link in the Chain: Uncovering the Role of Proxy Advisors*, SHAREACTION, Aug. 2019, at 4, <https://cdn2.assets-servd.host/shareaction-api/production/resources/reports/Another-Link-in-the-Chain-Uncovering-the-Role-of-Proxy-Advisors.pdf> [<https://perma.cc/5QBJ-22X5>].

111. See ISS Governance, *Procedures & Policies (Non-Compensation) Frequently Asked Questions* 14 (July 25, 2023), <https://www.issgovernance.com/file/policy/active/americas/US-Procedures-and-Policies-FAQ.pdf> [<https://perma.cc/LYH7-ZN2C>] ("U.S. director elections will usually allow three valid vote options (VVOs): "For;" "Abstain;" and one contrary option: either "Withhold" or "Against.").

112. See Jan Krahnen et al., *The Controversy Over Proxy Voting: The Role of Asset Managers and Proxy Advisors*, HARV. L. SCH. F. ON CORP. GOVERNANCE (Jan. 30, 2023), <https://corpgov.law.harvard.edu/2023/01/30/the-controversy-over-proxy-voting-the-role-of-asset-managers-and-proxy-advisors/#5> [<https://perma.cc/D94W-HV2Y>] ("They produce two types of recommendations: general voting recommendations on an issue-by-issue basis for each firm based on their 'general guidelines', updated annually prior to the proxy season . . .").

113. See James R. Copland et al., *The Big Thumb on the Scale: An Overview of the Proxy Advisory Industry* 3 (Stanford Univ. Graduate Sch. of Bus., Research Paper No. 18-27, May 30, 2018), <https://ssrn.com/abstract=3188174> [<https://perma.cc/7YBX-LWM4>].

114. See Chong Shu, *The Proxy Advisory Industry: Influencing and Being Influenced* 16 (USC Marshall Sch. of Bus. Research Paper, June. 08, 2023), <https://ssrn.com/abstract=3614314> [<https://perma.cc/AA6X-MXP2>].

indexers.¹¹⁵ Shu also finds that larger funds are less inclined to robovote with ISS recommendations.¹¹⁶ In conclusion, Shu finds practices of robovoting have become increasingly prevalent among ISS customers, and “smaller investors and those offering index fund products are more likely to be robo-voters.”¹¹⁷ This finding suggests that passive index funds, especially those with small assets and cost-sensitive business models, are more likely to outsource their proxy voting decisions to advisory firms due to their inability or unwillingness to maintain extensive in-house corporate governance teams.¹¹⁸

In addition to small institutional investors, huge institutional investors with independent voting guidelines also vote overwhelmingly in line with proxy advisory firms. For instance, Vanguard has proxy voting guidelines in place,¹¹⁹ yet still often votes in line with recommendations of proxy advisory firms.¹²⁰ In 2019 and 2020, Vanguard voted in line with ISS 94% of the time and Glass Lewis 86% of the time on almost 800,000 proposals.¹²¹ As 79% or \$5.7 trillion of Vanguard’s AUM are index assets, Vanguard’s proxy voting practices substantiate Shu’s claim that index fund firms are inclined to defer to

115. *Id.* at 36 (Panel B of tbl. 8).

116. *Id.*

117. *Id.* at 3, 15, 23. Shu finds that “the proportion of ISS customers who almost exclusively follow its recommendations increased from 7 percent in 2007 to 23 percent in 2021. *Id.* During the same period, the percentage of Glass Lewis customers practicing robo-voting grew from 0 percent to 9 percent” and that “smaller investors and those offering index fund products are more likely to be robo-voters.” *Id.* at 3. Shu reports the regression results in Table 8 Panel B at 36. He finds funds with lower net assets and higher exposure to index funds are more likely to robo-vote with the ISS. *Id.*

118. See Rose, *supra* note 107, at 9; see also Iliev & Lowry, *supra* note 102, at 459–60 (finding smaller passive funds are more likely to vote in line with proxy advisors’ recommendations, as the costs of doing self-informed voting outweigh the benefits).

119. See, e.g., Vanguard, *Proxy Voting Policy for U.S. Portfolio Companies* (effective Feb. 1, 2023), https://corporate.vanguard.com/content/dam/corp/advocate/investment-stewardship/pdf/policies-and-reports/us_proxy_voting_2023.pdf [<https://perma.cc/49KZ-VWH8>] (last visited Apr. 9, 2023).

120. See Vanguard, *Investment Stewardship: About Our Program*, https://corporate.vanguard.com/content/dam/corp/advocate/investmentstewardship/pdf/perspectives-and-commentary/IS_about_our_program_092021_online.pdf [<https://perma.cc/A7CZ-8D5G>] (last visited Apr. 9, 2023) (“[W]e consult a wide variety of third-party research providers, such as Institutional Shareholder Services, Glass Lewis, and Equilar.”).

121. Rose, *supra* note 107, at 12.

recommendations of proxy advisory firms.¹²² In summary, both huge players like Vanguard as well as small index fund firms have been seen to exercise deference to proxy advisory firms. Of course, there are differences in percentage of voting in alignment with proxy advisory firms' recommendations between these two types of fund firms in different sizes.

C. PROBLEMS WITH OUTSOURCING VOTING TO PROXY ADVISORY FIRMS

Due to the high demand for proxy voting by institutional investors, proxy advisory firms may not be able to provide tailored recommendations to all investors.¹²³ Limited resources of proxy advisors could result in varying quality of their recommendations. When ISS is busy, the quality of its proxy advice is patchy.¹²⁴ Even worse, ISS's recommendations could make significant factual and analytical errors. Additionally, ISS could use a one-size-fits-all standard to make recommendations without considering the specific legal requirements of different states or the unique circumstances of individual firms.¹²⁵

122. See *supra* note 115 and accompanying text.

123. See ISS, *About ISS*, <https://www.issgovernance.com/about/about-iss/> [<https://perma.cc/3ATG-JCZB>] (last visited Nov. 20, 2023). "ISS'[s] 3,000 employees operate worldwide across 25 global locations in 15 countries. Its approximately 3,400 clients include many of the world's leading institutional investors who rely on ISS'[s] objective and impartial offerings, as well as public companies focused on ESG and governance risk mitigation as a shareholder value enhancing measure." *Id.* Put differently, on average, each ISS employee is serving 1.1 of the company's clients. See *id.*

124. See Ana M. Albuquerque et al., *Are ISS Recommendations Informative? Evidence from Assessments of Compensation Practices* (Oct. 5, 2020), <https://ssrn.com/abstract=3590216> [<https://perma.cc/X8MB-MFRB>] (finding ISS recommendations are associated with future industry-adjusted accounting performance, but only for non-December fiscal year-end firms, suggesting that ISS activities may be value-added to shareholders if they are not exposed to high levels of workload compression).

125. See Frank M. Placenti, *Are Proxy Advisors Really the Problem?*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REGUL. (Nov. 7, 2018), <https://corpgov.law.harvard.edu/2018/11/29/the-realities-of-robo-voting/> [<https://perma.cc/F7W7CAP6>] (the author analyzed supplemental proxy filings reporting errors in recommendations of ISS and Glass Lewis). The hyperlink to accompanying tabulated results is https://accfcorgov.org/wp-content/uploads/2018/10/Analysis-of-Proxy-Advisor-Factual-and-Analytical-Errors_October-2018.pdf [<https://perma.cc/U9SY-8XPW>].

Meanwhile, the supply-demand disequilibrium of proxy advice could also cause proxy advisors' recommendations to be biased. In situations where there is high demand for proxy advice and where funds with profit-maximization objectives are unwilling to pay for high-quality advice, the recommendations of advisory firms will be closely aligned with preferences of socially responsible investors, even if they only represent a small percentage of total investors.¹²⁶ A possible explanation to these two firms' inclination is that they both provide ESG consulting services in addition to proxy advisory services.¹²⁷ They could benefit from advocating for ESG in proxy advising and ESG consulting.¹²⁸

This phenomenon is particularly evident in the case of ISS. ISS recommendations hold significant influence over passive funds' proxy voting decisions. These recommendations could potentially direct ISS's client funds towards socially responsible objectives. This would result in a divergence from the voting outcomes that would have been attained through passive funds' self-informed voting where passive fund managers read and research the proxy materials beforehand and vote on their own.¹²⁹

Meanwhile, ISS and Glass Lewis can exert strong influence on proxy voting results. While a comprehensive study finds that while only 55% of institutional investors indicate proxy advisory firms help them make more informed voting decisions, the actual voting outcomes suggest

126. See John G. Matsusaka & Chong Shu, *A Theory of Proxy Advice when Investors Have Social Goals* 32 (USC Marshall Sch. of Bus. Research Paper, Apr. 6, 2021), <https://ssrn.com/abstract=3547880> [<https://perma.cc/7V7H-SPDP>].

127. See ISS, *ISS ESG*, <https://www.issgovernance.com/esg/> [<https://perma.cc/GD3X-NHLZ>] (last visited Apr. 13, 2023); see also Pallavi Sharma, *Glass Lewis Launches ESG Scores and Data to Give Investors Insights Needed for Informed Voting and Engagement Decisions* (Feb. 7, 2022), <https://www.glasslewis.com/press-release-esg-profile/> [<https://perma.cc/HTM5-F5UP>].

128. See Bryan Junus, *How Robo-Voting Affects ESG Initiatives for Financial Companies*, FIN. ADVISOR MAG. (Oct. 4, 2022), <https://www.fa-mag.com/news/how-robovoting-affects-esg-initiatives-for-financial-companies-69985.html> [<https://perma.cc/Y793-FP23>] (claiming ISS and Glass Lewis have apparent conflict of interest because they "both advocate for ESG services and profit from ESG activities, while also advising shareholders how to vote on ESG proxy measures").

129. See John G. Matsusaka & Chong Shu, *Does Proxy Advice Allow Funds to Cast Informed Votes?* (USC Marshall Sch. of Bus., Research Paper) (forthcoming), <https://ssrn.com/abstract=3866041> [<https://perma.cc/BWJ3-LZUB>]. The article also finds that Glass Lewis's recommendations do not favor social goals and align more closely with the voting outcomes when funds read the proxy materials and cast their votes on their own. *Id.*

otherwise.¹³⁰ Institutional investors are significantly more likely to vote in alignment with proxy advisory firms' recommendations on various governance issues, particularly on matters such as say-on-pay proposals and proxy contests for corporate control.¹³¹ In 2017, ISS's negative recommendations could decrease institutional investors' votes in support of proxy contests by 73%, say-on-pay proposals by 27.7%, elections of directors by 18.3%, and employee equity compensation plans by 17.4%.¹³²

Another research study also confirms negative ISS recommendations can decrease the votes in favor of say-on-pay proposals¹³³ by about 25%.¹³⁴ Such influence is particularly strong in companies with substantial institutional ownership, where such ownership is widely dispersed and held by institutions with small stakes or high turnover.¹³⁵ Put differently, small institutional investors are more likely to rely on ISS to vote proxies instead of performing independent research on ballot matters.¹³⁶

Former Vice Chancellor of Delaware Court of Chancery Leo Strine, Jr. vividly described the importance of ISS's recommendations for institutional investors' voting decisions:

[P]owerful CEOs come on bended knee to Rockville, Maryland, where ISS resides, to persuade the managers of ISS of the merits of their views about issues like proposed mergers, executive compensation, and poison pills. They do so because the CEOs recognize that some institutional investors will simply follow ISS's advice rather than do any thinking of their own.¹³⁷

The foregoing research on real-world evidence has demonstrated that index funds, regardless of their sizes, are predominantly inclined to rely on recommendations of proxy advisory firms to vote their shares. Particularly, small passive funds are more likely to be affected by robovoting. The evidence at least in part contradicts a theoretical

130. See Copland et al., *supra* note 113, at 4.

131. *Id.*

132. *Id.* at 4, exhibit 1.

133. See Nadya Malenko & Yao Shen, *The Role of Proxy Advisory Firms: Evidence from a Regression-Discontinuity Design*, 29 REV. FIN. STUD. 3394 (2016).

134. See *id.*

135. See *id.*

136. *Id.* at 3397.

137. Strine, Jr., *supra* note 95, at 688.

proposition that passive funds would make self-informed voting and be active on corporate governance matters.¹³⁸

But proxy advisors' recommendations could be biased, and not necessarily serve the best interests of small passive funds and their shareholders. Consequently, robovoting with flawed recommendations could cause unintended consequences for small passive funds and their shareholders.¹³⁹ This is particularly true for ISS recommendations.¹⁴⁰ All in all, small funds may face a dilemma: either outsourcing their proxy voting decisions to proxy advisors to save costs but risking uncertain service quality and potential economic consequences; or conducting self-informed voting at higher costs to improve the quality of their voting decisions and better serve their shareholders.

D. THE TRANSITION TO PERSONALIZED VOTING

This Article discussed empirical evidence that both small and large passive funds underspend on investment stewardship and rely on proxy advisors' recommendations,¹⁴¹ but there may be notable distinctions between them. Because of economies of scale, large passive funds, especially the Big Three, can internalize costs associated with investment stewardship more easily than their small counterparts. Consequently, the Big Three can do more independent research on proxy statements than small funds and do not automatically vote in line with proxy advisory firms like ISS or Glass Lewis.¹⁴²

138. See Jill E. Fisch et al., *The New Titans of Wall Street: A Theoretical Framework for Passive Investors*, 168 U. PA. L. REV. 17, 71 (2019) (“[P]assive funds need to exercise their governance rights in an informed manner to promote firm value.”). “Passive investors must do this by relying on voice, rather than exit” and finding passive investors have shown an increased interest in corporate engagements, ‘particularly market-wide initiatives such as improving corporate governance.’” *Id.*

139. See David F. Larcker et al., *Outsourcing Shareholder Voting to Proxy Advisory Firms*, 58 J.L. & ECON. 173 (2015) (confirming that proxy advisory firms' recommendations have a substantive impact on say-on-pay voting outcomes, and finding outsourcing of voting to proxy advisory firms may have the unintended economic consequence of inducing boards of directors to make compensation decisions that decrease shareholder value, i.e., causing the companies' stock prices to fall).

140. *Id.* at 42.

141. See Bebchuk & Hirst, *supra* note 59.

142. See Alon Brav et al., *Corporate Governance Implications of the Growth in Indexing* 26 (Eur. Corp. Governance Inst., Working Paper No. 849/2022, Mar. 2023), <https://ssrn.com/abstract=4222402> [<https://perma.cc/ZE8R-FM4J>].

Large index funds' efforts to increase a specific corporation's value within the index can benefit the index as a whole and, in turn, all index funds tracking the index. Despite small funds' freeriding, large funds' devotion to resources for self-informed voting and exceptional voting performance signals to investors that the funds are resourced, engaged, and focused on long-term value.¹⁴³ Such signaling could further reinforce the strength of large funds, and help them make more inroads into smaller funds' edge.¹⁴⁴

Market competition could be a driving force for small funds to adopt self-informed proxy voting similar to their larger competitors. In addition, regulatory, academic, and practical trends also pressure small funds to make personalized voting instead of robovoting.

In November 2022, the SEC adopted rules that amended Form N-PX, imposing enhanced reporting duties on institutional investors with respect to their proxy voting.¹⁴⁵ The Form N-PX is required to be filed annually by every registered management investment company¹⁴⁶ to report their most recent 12-month proxy voting records.¹⁴⁷ The revised Form N-PX mandates that registrants must report their votes in a manner that aligns with a specified list of categories as detailed in the amended form.¹⁴⁸ Among all the 14 categories that registrants are required to report, director elections, corporate governance, environmental or climate and compensation are noteworthy.¹⁴⁹ Meanwhile, investment companies'

143. See Brian L. Connelly et al., *Signaling Theory: A Review and Assessment*, 37 J. MGMT. 39, 43 (2011) (reviewing signaling theory, and finding firms by continually paying interest and dividends to signal that they are of good-quality, and that such signaling influences outsiders' perception of the firms' quality).

144. See Pei-Gi Shu et al., *The Reputation Effect of Venture Capital*, 36 REV. QUANT. FIN. & ACC. 533 (2011) (finding that better reputation could lead to better business opportunities).

145. Enhanced Reporting of Proxy Votes by Registered Management Investment Companies; Reporting of Executive Compensation Votes by Institutional Investment Managers, Investment Company Act Release No. 33-11131, 67 Fed. Reg. 78, 770 (Dec. 22, 2022).

146. 15 U.S.C. §§ 80a-4, 80a-5 (defining investment company and a registered management investment company).

147. 17 C.F.R. § 270.30b1-4.

148. 17 C.F.R. § 274.129 (2022).

149. *Id.* These 14 categories are: director elections; Section 14A say-on-pay votes; audited-related; investment company matters; shareholder rights and defenses; extraordinary transactions; capital structure; compensation; corporate governance; environmental or climate; human rights or human capital/workforce; diversity, equity and inclusion; other social issues; other. *See id.*

votes should be disclosed quantitatively, which means the number of shares voted and how those shares were voted should be disclosed.¹⁵⁰ If the votes were cast in multiple manners (e.g., both for and against), funds will be required to disclose the number of votes in each manner.¹⁵¹

The SEC stated that these enhanced disclosure requirements on funds' voting practices will help investors identify votes of interest and compare voting records.¹⁵² This would allow investors to understand the voting patterns of funds more easily on various issues and to choose funds that align more closely with their investment preferences and principles. This regulatory change could pressure investment funds to vote proxies in a more personalized way than simply robovoting.

Academics and practitioners have proposed solutions to better align investment funds' proxy voting decisions with the interests and preferences of their investors.¹⁵³ For instance, Professors Jill Fisch and Jeff Schwartz propose an informed intermediary approach in which index fund managers act like elected representatives.¹⁵⁴ In other words, index fund managers—cast their votes independently, but before voting, they should consult with and seek input from their shareholders.¹⁵⁵

Pass-through voting, referred to as the "Voting Choice" program by BlackRock,¹⁵⁶ or the "proxy voting choice" program by Vanguard and SSGA,¹⁵⁷ is also touted as a means to democratize proxy voting for voters

150. *See id.*

151. *Id.*

152. Press Release No. 2022-198, SEC, *SEC Adopts Rules to Enhance Proxy Voting Disclosure by Registered Investment Funds and Require Disclosure of "Say-on-Pay" Votes for Institutional Investment Managers* (Nov. 2, 2022), <https://www.sec.gov/news/press-release/2022-198> [<https://archive.is/INbv1>].

153. *See* Jill E. Fisch & Jeff Schwartz, *Corporate Democracy and the Intermediary Voting Dilemma*, 102 TEX. L. REV. (forthcoming 2023), <https://ssrn.com/abstract=4360428> [<https://perma.cc/U7GM-2CHE>].

154. *See id.*

155. *See id.*

156. *See* Joud Abdel Majeid et al., *BlackRock to Expand Proxy Voting Choice to Its Largest ETF*, HARV. L. SCH. F. ON CORP. GOVERNANCE (July 21, 2023), <https://corpgov.law.harvard.edu/2023/07/21/blackrock-to-expand-proxy-voting-choice-to-its-largest-etf/> [<https://perma.cc/3G46-YGQY>].

157. *See* Vanguard, *Empowering Everyday Investors through Proxy Voting Choice* (Feb. 1, 2023), <https://investor.vanguard.com/investor-resources-education/article/empowering-everyday-investors-through-proxy-voting-choice> [<https://perma.cc/X8CL-CGPK>]; *see also* SSGA, *State Street Global Advisors to Extend Proxy Voting Choice to ETFs and Mutual Funds* (May 22, 2023), <https://newsroom.statestreet.com/press->

whose shares are beneficially owned by index fund companies.¹⁵⁸ In this system, a fund provider like BlackRock allows investors in their fund products to cast their pro-rata votes based on either in-house or third-party recommendations, rather than delegating their proxy voting decisions to the fund provider's stewardship team.¹⁵⁹

Professors Jill Fisch and Jeff Schwartz have critically assessed the efficacy of pass-through voting.¹⁶⁰ They contend that such a system might lead to low voter turnout.¹⁶¹ Moreover, the one-size-fits-all approach may not effectively represent the diverse interests of proxy voters.¹⁶² Additionally, small investors might not possess the nuanced expertise required to vote on intricate matters, such as a merger bid.¹⁶³

In effect, pass-through voting *per se* may not become an antidote to democratizing proxy voting.¹⁶⁴ The crux of the issue with pass-through voting is the potential for a collective action problem among small investors. This problem arises when many investors have the right to vote, but no individual voter believes their vote will influence the outcome.¹⁶⁵ As a result, there is little incentive for any one investor to delve deep into the issues and make well-informed voting decisions.¹⁶⁶ The collective action problem for pass-through voting is more acute as “the costs of locating and transmitting information to widely scattered beneficiaries would be substantial”, meanwhile the benefits small investors gain from such information might not justify these costs.¹⁶⁷

releases/press-release-details/2023/State-Street-Global-Advisors-to-Extend-Proxy-Voting-Choice-to-ETFs-and-Mutual-Funds/default.aspx [https://perma.cc/L2Q2-Z2E2].

158. Majeid et al., *supra* note 156 (quoting Salim Ramji, Global Head of iShares and Index Investments at BlackRock, who commented, “[t]hese efforts have spurred innovation in the proxy voting ecosystem, catalyzing an industry movement to further shareholder democracy”).

159. *See id.*

160. Fisch, *supra* note 153, at 40–45.

161. *Id.* at 41.

162. *Id.* at 42.

163. *Id.* at 42–43.

164. *Id.* at 60 (“The alternative receiving the most attention—pass-through voting—is also the most problematic. Paradoxically, the probable result of returning voting power to individual shareholders would be to disenfranchise them.”).

165. *See* Frank H. Easterbrook & Daniel R. Fischel, *Voting in Corporate Law*, 26 J.L. & ECON. 395, 402 (1983).

166. *Id.*

167. *Id.* at 426.

A possible solution to overcome the collective action problem is to aggregate the shares and the attached votes held by small investors.¹⁶⁸ However, BlackRock is doing the exact opposite by returning voting decisions to individual investors.¹⁶⁹ BlackRock's pass-through voting initiative does not help alleviate the collective action problem faced by small investors.¹⁷⁰ Empirical evidence shows that BlackRock's investors are lukewarm to this program: only a minor percentage of investors with BlackRock's index equity assets have engaged with the Voting Choice program.¹⁷¹ Because the program extends to most of BlackRock's institutional clients, including a large number of global funds,¹⁷² BlackRock may anticipate larger institutional investors to be the primary users of this program.

The theory of the collective action problem and the outcomes of BlackRock's Voting Choice program suggest that smaller investors often rely on fund managers to make informed voting decisions. Simply shifting this responsibility back onto small investors could hinder their ability to effectively exercise their voting rights and represent their interests in the companies they invest in. Therefore, fund managers should diligently fulfill their fiduciary duties to their funds' investors. For instance, they could personalize their proxy voting decisions to align with the preferences and interests of their shareholders.

But there are also arguments opposing small funds making personalized, self-informed voting.¹⁷³ For instance, Professor Gordon contends that firm-specific engagement is undesirable for both passive funds and investors.¹⁷⁴ For funds, serious engagement is costly and contravenes with their low-cost business model, and passive funds will not benefit from these engagements as they cannot over or under weigh specific stocks in their portfolios.¹⁷⁵ Meanwhile, passive funds' portfolios

168. See *id.* at 402.

169. See *Empowering Investors through BlackRock Voting Choice*, BLACKROCK, <https://www.blackrock.com/corporate/about-us/investment-stewardship/blackrock-voting-choice#blackrock-voting-choice-policies> [<https://perma.cc/CL3M-3QSY>] (last visited Aug. 10, 2023).

170. See *id.*

171. See *id.*

172. See *id.* (93% of BlackRock's institutional clients and more than 650 global funds have become eligible for this Voting Choice initiative).

173. See Jeffrey N. Gordon, *Systematic Stewardship*, 47 J. CORP. L. 627, 643 (2022).

174. See *id.*

175. See *id.*

are formed without any firm-specific research.¹⁷⁶ For investors, as portfolios of index funds are so diversified to an entire index that firm-specific risks would be diversified away.¹⁷⁷ Gordon argues that only systemic risks, especially climate risks, financial, and social stability risks would significantly affect index funds' risk-adjusted returns.¹⁷⁸ In conclusion, he suggests that passive funds' engagements should focus on mitigating market-wide systemic risks, instead of firm-specific risks.¹⁷⁹ He names this type of investment stewardship as "systemic stewardship".¹⁸⁰

Professors Kahan and Rock put forward arguments about why systemic stewardship could fall short.¹⁸¹ They argue that systemic stewardship implicates a tradeoff for fund managers between a firm's value and their portfolio's value.¹⁸² Under current corporate law, fiduciaries owe fiduciary duties to serve the best interests of all their shareholders, including small shareholders.¹⁸³ Meanwhile, index fund managers typically manage a broad array of distinct portfolios for various clients, and they owe fiduciary duties to each of these clients.¹⁸⁴ The "tradeoff" strategy that would benefit some portfolios at the expense of other portfolios would conflict with these fiduciary duties as well as with the core multi-client multi-portfolio business model.¹⁸⁵

This argument holds true for funds within a fund family. The systemic stewardship approach requires an index family focus merely on systemic risks, disregarding differing interests of investors of its funds.¹⁸⁶

176. *See id.*

177. *See id.*

178. *See id.* at 652–58.

179. *See id.* at 658–66.

180. *Id.*

181. *See* Marcel Kahan & Edward B. Rock, *Systemic Stewardship with Tradeoffs* (N.Y.U. L. & Econ. Rsch., Working Paper No. 22-01, Nov. 2021), <https://ssrn.com/abstract=3974697> [<https://perma.cc/5C46-TX5X>].

182. *See id.* at 5.

183. *See id.* This Article argues that fiduciaries managing a firm should advance the interest of all shareholders of this particular firm. This Article calls this proposition as corporate law's single firm focus ("SFF") and "egalitarian" focus.

184. *Id.* at 21–22.

185. *See id.* at 22–23.

186. *See* Gordon, *supra* note 173. This Article argues that climate change risk, financial stability risk, and social stability risk are candidates for systemic steward to apply. However, when a fund family adopts a uniform policy for voting on these issues, it essentially requires all funds in the family to view and vote on these matters in a similar

However, within an index fund family, different index funds may have varying interests, and an action that benefits one fund might be detrimental to another. For instance, Vanguard provides 82 ETFs, including Vanguard Energy ETF and Vanguard ESG U.S. Stock ETF.¹⁸⁷ If Vanguard adopts a unitary voting position to require energy companies dramatically reduce emissions and banks stop financing new fossil fuel projects,¹⁸⁸ investors in Vanguard ESG ETF could benefit and those in Vanguard Energy ETF could be financially hit. However, legally, Vanguard acts as a fiduciary for investors in both ETFs, who may have differing interests when Vanguard are voting proxies.¹⁸⁹

But systemic stewardship falls even shorter across fund families. If all index fund families uniformly identify and address systemic risks in the same way, it implies that they all share identical interests and preferences. They should vote in the same manners that address climate change and other systemic risks. However, if small funds do so, they would risk being more marginalized. Index funds are essentially providing similar products that track an index (or a commodity) and cannot offer unique features. Such a business model of index funds leads to a concentration of capital among those who can make the fees as low as possible, illustrated by ETFs' falling expense ratio.¹⁹⁰

Small players and new entrants should be very innovative to grab market share from the towering Big Three.¹⁹¹ Personalized voting is a

way. Otherwise, each fund in this family would exercise individual discretion, and there would be no family-wise policy on addressing these risks.

187. See *All ETFs*, VANGUARD, <https://investor.vanguard.com/investment-products/list/etfs> [<https://perma.cc/9FXB-KD3X>] (last visited Apr. 14, 2023).

188. See Saijel Kishan, *Big Banks Told to Phase Out Financing of New Fossil-Fuel Projects*, BLOOMBERG (Jan. 24, 2023, 7:00 AM PST), <https://www.bloomberg.com/news/articles/2023-01-24/wall-street-faces-calls-from-investors-to-cut-fossil-fuel-financing?sref=CMlh25pt> [<https://archive.is/mHAJD>].

189. See Sean J. Griffith & Dorothy S. Lund, *Conflicted Mutual Fund Voting in Corporate Law*, 99 B.U. L. REV. 1151, 1182–86 (2019) (defining this conflict as “uniform policy conflict”). Uniform policy conflict occurs when many funds within a fund family cast votes for all its funds in line with a one-size-fits-all family-wide voting policy, disregarding the distinct interests of investors in each individual fund. See *id.*

190. See Investment Company Institute & Morningstar, *supra* note 33.

191. See Katherine Greifeld, *Big Three's Grip on \$6.7 Trillion ETF Market Slips for a Sixth Year*, BLOOMBERG NEWS (Dec. 14, 2022, 10:25 AM PST), <https://www.bnnbloomberg.ca/big-three-s-grip-on-6-7-trillion-etf-market-slips-for-a-sixth-year-1.1859357> [<https://archive.is/vmNNy>] (reporting that firms launching new ETFs are

strategy that signals to investors that a fund pays close attention to the interests and opinions of its shareholders.¹⁹² Adopting this approach could improve the reputation of index funds that offer personalized voting by highlighting their commitment to shareholder engagement.¹⁹³ This is particularly important for small funds to differentiate themselves in a crowded market of similar investment products.

The ambition of index funds to surpass their competitors, combined with regulatory initiatives like the SEC's amendment to Form N-PX, and academic calls for more responsible voting by index funds, jointly support the idea that investment funds should embrace personalized voting. This strategy aims to align their voting choices closely with the interests of their shareholders. On one hand, personalized voting is crucial for funds within a fund family so that fund managers can fulfill their fiduciary duties to all shareholders. On the other hand, it also enables small fund firms to align their proxy voting with their shareholders' interests and preferences, and to achieve better visibility, optics, and reputation in the competitive market.

II. OUTSOURCING VOTING DECISIONS TO AI

Prior studies have demonstrated that passive funds, especially small passive funds, have been outsourcing their proxy voting to proxy advisory firms, a practice also called robovoting.¹⁹⁴ Using AI models could be a potential solution to address the limitations of robovoting become apparent and small funds face growing pressure to make personalized, well-informed voting decisions. However, training a specialized LLM from scratch can be time-consuming and costly.¹⁹⁵ For example, it is

racing to provide innovative products such as single-stock ETFs and maturity-specific bond funds).

192. See Hsuan-Chi Chen & Christine W. Lai, *Reputation Stretching in Mutual Fund Starts*, 34 J. BANKING & FIN. 193 (2010) (finding new equity funds launched by reputable fund managers who exhibiting one-year performance persistence can attract capital inflows and perform better in the short run). Even activist shareholders need to grab attention and build reputation. See Travis L. Johnson & Nathan Swem, *Reputation and Investor Activism: A Structural Approach*, 139 J. FIN. ECON. 29 (2021) (finding reputation-building incentives explain 20% of activist investors' campaign initiations and 19% of their proxy fights).

193. See *supra* note 192.

194. See, e.g., Shu, *supra* note 114; see also Rose, *supra* note 107.

195. See Jamiel Sheikh, *Bloomberg Uses its Vast Data to Create New Finance AI*, FORBES (Apr. 5, 2023, 01:36 PM), <https://www.forbes.com/sites/jamielsheikh/2023>

estimated that training Bloomberg's finance LLM model, BloombergGPT, required 53 days and cost over \$2.7 million.¹⁹⁶ In comparison, fine-tuning ChatGPT is a cost-effective option, as it is already pre-trained and can be customized to suit specific needs.¹⁹⁷

A. USING ZERO-SHOT CHATGPT MODEL TO ANALYZE PROXY
STATEMENTS AND MAKE VOTING RECOMMENDATIONS

Before beginning the review of the experiment and discussion of using ChatGPT to make proxy voting recommendations, this section will outline the regulations surrounding proxy statements.

1. *Proxy Statement Regulations*

Under Section 14(a) of the Exchange Act, reporting companies must provide shareholders with proxy materials and file proxy statements with the SEC before holding shareholder meetings.¹⁹⁸ The SEC has created Schedule 14A to specify the information that must be included in a proxy statement: details about matters to be voted on and information about the company's management, board of directors, and the company's financial performance.¹⁹⁹

In November 2021, the SEC issued "universal proxy rules" that require reporting companies to use universal proxy cards in contested director elections.²⁰⁰ A universal proxy card is a single proxy card that lists all the director nominees from both the management and dissident shareholders.²⁰¹ Dissident shareholders can use the universal proxy card

/04/05/the-chatgpt-of-finance-is-here-bloomberg-is-combining-ai-and-fintech/?sh=76dac93e3081 [https://perma.cc/668V-EMNW].

196. See *id.*

197. See *Pricing*, OPENAI, <https://openai.com/pricing/> (last visited Apr. 11, 2023). Fine-tuning ChatGPT using the priciest model costs \$0.0300 per 1,000 tokens to train and \$0.1200 per 1,000 tokens to generate answers. *Id.* This means that it costs users \$40 to train the model with 1 million English words of data, and \$160 to generate 1 million English words (1,000 tokens roughly equals 750 English words). *Id.*

198. 15 U.S.C. § 78n(a).

199. 17 C.F.R. § 240.14a-101.

200. Universal Proxy, Investment Company Act Release No. 34-93596, 86 Fed. Reg. 68330 (Nov. 17, 2021).

201. See M. Ridgway Barker, *The Universal Proxy Card - What It Is, What To Expect*, WITHERS WORLDWIDE (Jan. 27, 2023), <https://www.withersworldwide.com/engb/insight>

if they solicit at least 67% of voting shares and meet certain procedures contained in Rule 14a-19.²⁰² Under the old rules, shareholders could only vote for the director nominees of the company or the dissident shareholder.²⁰³ The new rules give shareholders more choice and allow them to vote for director nominees they believe are best qualified, regardless of who nominated them.²⁰⁴

A reporting company typically files Form DEF 14A for annual meetings, mergers, or contested elections for directors.²⁰⁵ Meanwhile, shareholders of reporting companies can submit their proposals for inclusion on the companies' proxy statements pursuant to Rule 14a-8.²⁰⁶

2. *Experiment with ChatGPT to Generate a General Model to Evaluate Corporate Governance*

Prompts are crucial in guiding the response generation of ChatGPT for specific tasks and inquiries. In essence, a prompt is a concise text fragment that furnishes context and instructions for ChatGPT to generate a response. The length and complexity of a prompt may vary depending on the task's nature, ranging from a single sentence to several paragraphs. The prompts in this Article require ChatGPT to act as if it is a corporate governance expert with experience in providing proxy advice.²⁰⁷

Initially, ChatGPT's GPT-4 model was prompted to provide its opinion on generating proxy recommendations, including the factors that should be considered and their corresponding weightage. In response, ChatGPT states that it evaluates each issue and assigns appropriate weights to them, with the goal of promoting effective corporate governance and enhancing long-term shareholder value. Additionally,

/read/the-universal-proxy-card-what-it-is-what-to-expect [https://perma.cc/PJM4MZP4].

202. 17 C.F.R. § 240.14a-19.

203. See Barker, *supra* note 201.

204. *Id.*

205. See *SEC Forms Guide*, LEXIS SEC. MOSAIC, <https://www.lexissecurityiesmosaic.com/resourcecenter/SEC%20Forms%20Guide.pdf> [https://perma.cc/SBP2SC EQ] (last visited Apr. 11, 2023).

206. 17 C.F.R. § 240.14a-8.

207. The prompts used in this Article draw inspiration from Alejandro Lopez-Lira & Yuehua Tang, *Can ChatGPT Forecast Stock Price Movements? Return Predictability and Large Language Models* 7–9 (Apr. 6, 2023), <https://ssrn.com/abstract=4412788> [https://perma.cc/T2DS-9DK8].

ChatGPT is asked to construct a regression model based on the variables and weights it provides. The model is as follows:

$$\begin{aligned} \text{Governance Score} = & \beta_0 + 0.2 * \text{Board Composition} + 0.2 * \text{Executive} \\ & \text{Compensation} + 0.15 * \text{Shareholder Rights} + 0.15 * \text{ESG Factors} + \\ & 0.1 * \text{Proxy Access} + 0.05 * \text{Auditor Independence} + 0.1 * \text{M\&A} \\ & \text{Proposals} + 0.05 * \text{Shareholder Proposals} \end{aligned}$$

This model is intended to evaluate and score a corporation's overall corporate governance like ISS's Governance QualityScore service, rather than providing specific recommendations.²⁰⁸ Through further prompts, ChatGPT provided a breakdown and weightage for each independent variable in the regression model mentioned earlier. For example, with respect to board composition, the following regression model is generated:

$$\begin{aligned} \text{Board Composition} = & \beta_0 + 0.3 * \text{Board Independence} + 0.3 * \text{Diversity} \\ & + 0.25 * \text{Skills and Expertise} + 0.05 * \text{Board Size} + 0.05 * \text{Director} \\ & \text{Tenure} + 0.05 * \text{Committee Structure} \end{aligned}$$

A more detailed version of the model includes a breakdown of each independent variable:

$$\begin{aligned} \text{Board Composition} = & \beta_0 + 0.3 * (0.5 * \text{Independent Directors} + 0.3 * \\ & \text{Independent Committees} + 0.2 * \text{Independent Board Chair or Lead} \\ & \text{Director}) + 0.3 * (0.4 * \text{Gender Diversity} + 0.4 * \text{Ethnic Diversity} + \\ & 0.2 * \text{Other Forms of Diversity}) + 0.25 * (0.2 * \text{Financial Expertise} + \\ & 0.2 * \text{Industry Expertise} + 0.2 * \text{Technology Expertise} + 0.2 * \text{Legal} \\ & \text{and Regulatory Expertise} + 0.2 * \text{Strategic Planning Expertise}) + 0.05 \\ & * (1.0 * \text{Number of Directors}) + 0.05 * (0.5 * \text{Average Tenure} + 0.5 * \\ & \text{Tenure Diversity}) + 0.05 * (0.5 * \text{Committee Composition} + 0.5 * \\ & \text{Committee Performance}) \end{aligned}$$

This breakdown provides a more granular evaluation of a company's Board Composition. As we can see from the model, ChatGPT breaks down Board Composition into Board Independence, Diversity, Skills and Expertise, Board size, Director Tenure, and Committee Structure. Furthermore, ChatGPT breaks down Board Independence into Independent Directors (the proportion of independent directors on the board), Independent Committee (requiring critical board committees-

208. See *Governance QualityScore*, ISS ESG, <https://www.issgovernance.com/esg/ratings/governance-qualityscore/> [<https://perma.cc/9E9G-3UAT>].

audit, compensation, and nominating to be composed mainly or entirely of independent directors), and Independent Board Chair or Lead Director. After identifying the factors, ChatGPT also assigns weight to each variable, reflecting how ChatGPT weighs the relative importance of each variable in the overall model.²⁰⁹

Investment funds must exercise caution if they wish to build models or request ChatGPT to build models based on guidelines written and weights assigned by ChatGPT. This is because the variables may include both numeric and categorical variables.²¹⁰ For instance in this Model, ChatGPT assigns a weight of 15% to shareholder rights, with 40% allocated to voting rights and 25% to anti-takeover provisions.²¹¹ The sub-variables of voting rights and anti-takeover provisions, such as one-share, one-vote principle, supermajority vote requirements, poison pills, and staggered board, are all categorical and can be constructed as dummy variables²¹² during modelling. The coefficients for supermajority vote requirements,²¹³ poison pills,²¹⁴ staggered board,²¹⁵ and other antitakeover

209. See *infra* Appendix. Please note, the test may not be reproduced as the results are randomly generated.

210. A categorical variable is a type of variable used in statistics that represents data in categories or groups. It takes on a limited number of values belonging to a specific category or group and is often represented by labels or names.

211. See *infra* Appendix 1.

212. A dummy variable is a binary variable used in statistical models to represent the presence or absence of a categorical feature. See H. Alkharusi, *Categorical Variables in Regression Analysis: A Comparison of Dummy and Effect Coding*, 4 INT'L J. EDUC. 202 (2012) (applying the dummy variable in regression model categorical variables). It is coded as either 0 or 1, and it is commonly used in regression analysis to model the effect of a categorical predictor on the dependent variable. See *id.*

213. Supermajority vote requirements necessitate more votes than a majority (often 2/3 or 3/4 of voting shares) to approve critical company decisions. See Brett H. McDonnell, *Committing to Doing Good and Doing Well: Fiduciary Duty in Benefit Corporations*, 20 FORDHAM J. CORP. & FIN. L. 19, 31 (2014).

214. Poison pills are a strategic deterrent that permit current shareholders to acquire additional shares at a discount, thereby devaluing the prospective acquirer's shareholdings. See Terrence J. Gallagher, *The Activist Board and Corporate Governance*, 2 FORDHAM J. CORP. & FIN. L. 59, 64 n.35 (1997).

215. Staggered board refers to a mechanism of director elections where board members are chosen at different times, creating a delay in potential hostile control of the board. See generally Lucian Arye Bebchuk et al., *The Powerful Antitakeover Force of Staggered Boards: Theory, Evidence, and Policy*, 54 STAN. L. REV. 887, (2002) (discussing staggered boards). These mechanisms are all forms of antitakeover provisions, used to impede undesirable takeovers of the target. See *id.*

provisions²¹⁶ could be negative to reflect their adverse impact on shareholder rights. After a sequence of prompts, the ChatGPT-generated regression model for shareholder rights with a dissection of voting rights and anti-takeover provisions is:

$$\begin{aligned} \text{Shareholder Rights} = & 0.4 * (0.7 * \text{One Share One Vote_dummy} - 0.3 \\ & * \text{Supermajority Vote Requirements_dummy}) + 0.25 * (-0.4 * \text{Poison} \\ & \text{Pills_dummy} - 0.4 * \text{Staggered Board_dummy} - 0.2 * \text{Other} \\ & \text{AntiTakeover Measures_dummy}) + 0.2 * \text{Shareholder Engagement} + \\ & 0.1 * \text{Shareholder Voting Mechanisms} + 0.05 * \text{Board} \\ & \text{Accountability}^{217} \end{aligned}$$

In the above experiment, ChatGPT's GPT-4 model generated positive coefficients for anti-takeover-related variables without human intervention.²¹⁸ This indicates that ChatGPT requires human oversight to ensure accurate modeling. Additionally, the experiment confirms that even the most advanced GPT model is not proficient in mathematical computations, as ChatGPT made errors when calculating coefficients for dissected variables (but this miscalculation could also result from long-range dependencies).

In addition to the complex modelling process, the functional limitations of using zero-shot ChatGPT models, including the most advanced GPT-4, to generate the above models are also apparent. ChatGPT's token limits restrict users to inputting a limited number of words at a time. Moreover, the problem of long-range dependencies remains significant, as ChatGPT can forget the weights assigned to each variable in previous dialogues that occurred thousands of words ago. As a result, ChatGPT must be prompted again with the weights ChatGPT has assigned.

The experiment goes one step further by testing whether ChatGPT can generate proxy voting recommendations based on the regression model it has produced. In this experiment, ChatGPT is prompted to

216. Antitakeover provisions are deployed by the target to impede undesirable takeover bids. *See id.*

217. For all the dummy variables, 1 denotes if the company has such a provision in place, and 0 denotes otherwise.

218. Moreover, ChatGPT initially failed to identify categorical variables. However, after being prompted to construct dummies for such variables, it was able to recognize eight categorical variables. Nevertheless, some of these variables were not entirely categorical in nature.

provide recommendations on whether shareholders should vote “for” or “withhold/against” proposals included on a proxy card.

3. *Experiment with Bank of America 2022 Proxy Statement*

The data from the proxy statement filed in March 2022 by Bank of America (“BOA”)²¹⁹ is used for this experiment. There are seven proposals on the BOA’s DEF 14A form filed with the SEC.²²⁰ The first is a proposal for election of directors.²²¹ ChatGPT recommends shareholders vote for all the nominees nominated by BOA, in line with the recommendation of BOA’s board. ChatGPT has concluded that the board displays a robust level of diversity,²²² and each board nominee demonstrates exceptional expertise and experience. However, ChatGPT points out that the independence of a nominee, Frank P. Bramble, could be compromised as two of his companies were acquired by BOA.²²³

BOA’s board recommended voting against: Proposal 5, which requests a civil rights audit; Proposal 6, which proposes stopping BOA from financing new fossil fuel supplies; and Proposal 7, which requests BOA to disclose charitable donations.²²⁴ However, ChatGPT recommends that shareholders vote for these proposals. ChatGPT’s disagreement with BOA’s board on ESG matters indicates that, at least in this experiment, ChatGPT assigned significant value to ESG ideas.

However, in this experiment, the limitations of tokens and the problem of long-range dependencies once again impede a more detailed analysis. Proposal 2 regarding executive compensation is lengthy and contains various tables and charts that ChatGPT is currently unable to recognize.²²⁵ As a result, the experiment fails to produce a conclusive recommendation from ChatGPT.

219. See BOA Corp., Proxy Statement (Form DEF 14A) (Mar. 7, 2022).

220. *Id.*

221. *Id.*

222. ChatGPT observed that the board nominees exhibit diversity in terms of gender and race, with five women and individuals from diverse backgrounds, and the tenure of each nominee varies. Meanwhile, ChatGPT’s analysis does not consider the age of each nominee.

223. BOA Corp., *supra* 219, at 14 (“Mr. Bramble . . . having held leadership positions at two financial services companies acquired by our company (MBNA Corporation, acquired in 2006, and MNC Financial Inc., acquired in 1993).”).

224. *Id.* at 87–99.

225. BOA Corp., *supra* note 219, at 54.

However, an update to this experiment demonstrates how far ChatGPT has progressed in just a few months. OpenAI rolled out ChatGPT’s multi-modal capabilities in September 2023 to all ChatGPT’s subscribed users.²²⁶ Later, OpenAI provided an integrated interface that allows users to generate and analyze pictures, analyze data and codes within a single webpage.²²⁷ Users now have the capability to upload a PDF document to ChatGPT and inquire about text, images, and numerical formulas contained within the document.

This Author updated this experiment by uploading the BOA proxy statement to ChatGPT and prompting ChatGPT to analyze the information about executive compensation in its Proposal 2 (say-on-pay). In this instance, the Author asked ChatGPT whether the amount and component of BOA’s executive compensation is reasonable, and the voting recommendation of this proposal.

Graph 1: Summary BOA’s Executive Compensation Table²²⁸

Executive compensation

Summary compensation table

The following table shows compensation paid, accrued, or awarded with respect to our named executive officers during the years indicated:

2021 Summary compensation table⁽¹⁾

Name and principal position ⁽²⁾	Year	Salary (\$) ⁽³⁾	Bonus (\$) ⁽⁴⁾	Stock awards (\$) ⁽⁵⁾	Non-equity incentive plan compensation (\$)	Change in pension value and nonqualified deferred compensation earnings (\$) ⁽⁶⁾		All other compensation (\$) ⁽⁷⁾	Total (\$)
Brian T. Moynihan Chair and Chief Executive Officer	2021	1,500,000	0	21,395,424	0	565,990	267,755	23,729,169	
	2020	1,500,000	0	23,525,808	0	673,974	240,789	25,840,571	
	2019	1,500,000	0	23,575,105	0	632,250	331,858	26,039,213	
Alastair M. Borthwick Chief Financial Officer	2021	666,667	4,133,333	6,114,076	0	1,327	41,470	10,956,873	
Paul M. Donofrio Vice Chair (Former Chief Financial Officer)	2021	1,000,000	5,800,000	5,826,527	0	200,548	42,139	12,869,214	
	2020	1,000,000	4,400,000	6,559,458	0	172,084	41,742	12,173,284	
	2019	1,000,000	4,800,000	6,560,949	0	182,239	52,124	12,595,312	
James P. DeMare President, Global Markets	2021	666,667	5,200,000	10,311,814	0	0	41,369	16,219,850	
Matthew M. Koder President, Global Corporate and Investment Banking	2021	666,667	5,800,000	19,205,303	0	0	40,054	25,712,024	
Thomas K. Montag Former Chief Operating Officer	2021	1,250,000	8,300,000	9,401,821	0	0	142,131	19,093,952	
	2020	1,250,000	7,100,000	10,522,429	0	0	20,000	18,892,429	
	2019	1,250,000	7,700,000	10,524,788	0	0	20,000	19,494,788	

226. See Cecily Mauran, *ChatGPT Rolls Out Voice and Image Capabilities*, *Mashable* (Sept. 25, 2023), <https://mashable.com/article/openai-chatgpt-voice-chat-multimodal-image-capabilities> [<https://perma.cc/8XVL-4TER>].

227. See Kristi Hines, *New Version of ChatGPT Gives Access to All GPT-4 Tools at once*, *SEARCH ENGINE J.* (Oct. 29, 2023), <https://www.searchenginejournal.com/new-version-of-chatgpt-gives-access-to-all-gpt-4-tools-at-once/499607/> [<https://perma.cc/FKY4-XSUR>].

228. BOA Corp., *supra* note 219, at 70.

The multi-modal GPT-4 demonstrates ChatGPT's ability to read and understand spreadsheets with various items and numbers and can correlate BOA's executive compensation with its financial and stock performance. As a consequence, ChatGPT replies to the prompts with convincing reasoning:

The compensation of Bank of America's executives is closely tied to the corporation's financial performance and strategic goals. The Compensation and Human Capital Committee employs a balanced and disciplined approach to decide executive compensation, considering a variety of performance and governance inputs. These considerations include financial measures such as net income, revenue, earnings per share, return on assets, and non-financial measures like customer satisfaction, digital adoption, risk management culture, and ESG leadership.

In 2021, the company reported a record net income of \$32.0 billion, a significant increase from \$17.9 billion in 2020. Revenue was up 4% to \$89.1 billion,²²⁹ driven by growth in non-interest income, primarily in investment and brokerage services, and investment banking fees. There was a net provision benefit of \$4.6 billion, reflecting macroeconomic and credit quality improvement, and net charge-offs improved by 46%, resulting in a historically low net charge-off ratio. The bank also grew deposits by \$269 billion to \$2.1 trillion and increased loans by \$51 billion. Additionally, the total shareholder return was above the primary competitor group average on a 1-year, 3-year, 5-year, and 10-year basis.

Brian T. Moynihan, the CEO, received a total compensation of \$32.0 million in 2021, which is an increase from the previous year's compensation of \$24.5 million. A significant portion (95.3%) of Moynihan's compensation was variable and linked directly to the company's performance. Additionally, half of his variable pay was awarded as performance-restricted stock units, contingent on meeting performance standards over a subsequent three-year period.

The executive compensation program at Bank of America is structured to reward Responsible Growth and is designed to align executive officer and shareholder interests with a mix of salary, incentives, and benefits paid over time. The compensation awarded to the executives, particularly the CEO, reflects the strong financial performance and achievement of strategic goals by the corporation in 2021. This design has been consistent for over nine years and has received high shareholder support, averaging 94.2% during that

229. BOA Corp., *supra* note 219, at 56.

period,²³⁰ which indicates a clear alignment of executive compensation with the corporation's financial performance and shareholder interests.

In sum, the multi-modal zero-shot GPT 4 finds that: (1) BOA's executive compensation, notably CEO Brian T. Moynihan's \$32.0 million in 2021, is largely based on the company's financial performance and strategic objectives; (2) the practices of BOA board's Compensation and Human Capital Committee are principled and reasonable; and (3) the bank's executive compensation program aligns with shareholder interests, consistently receiving strong shareholder support with an average approval rate of 94.2% over nine years. As such, ChatGPT recommends voting for this proposal.

Though ChatGPT's reasoning is convincing, it miscalculates BOA CEO Brian T. Moynihan's 2021 compensation. According to Graph 1, Mr. Moynihan's compensation in 2021 and 2020 was about \$23.7 million and \$25.9 million, respectively, instead of \$32 million and \$24.5 million calculated by ChatGPT. Meanwhile, the percentage of his compensation linked to BOA's stock performance should be 93.7% instead of 95.3%. However, ChatGPT correctly presents the information of BOA's financial performance and shareholders' nine-year average approval rate for BOA board's say-on-pay proposal.

A possible explanation to the above experimental results could be that ChatGPT excels at logical reasoning based on texts, while does relatively poorly in numerical calculations. BOA's financial performance and shareholders' approval rate for say-on-pay proposals in preceding nine years are expressly provided in the texts of BOA's 2022 DEF 14A.²³¹ By contrast, Mr. Moynihan's compensation component has to be extracted and calculated from a table. This could be the reason that caused the chasm of ChatGPT's above performance.

In conclusion, the zero-shot ChatGPT model, especially GPT-4, is a useful tool for writing long and detailed proxy voting guidelines, as well as detecting potential conflicts of interest that could compromise the independence of a director nominee. Additionally, its effectiveness as a dependable proxy advisor, previously hampered by token limitations and difficulties in managing long-range dependencies, has markedly improved through successive iterations. This progress highlights its

230. *Id.* at 55.

231. *See id.*

potential, and further experiments can be conducted to explore the extent of its capabilities.

To enable ChatGPT to read PDFs and overcome the limitations on token input, one possible solution is to extract the text from the PDFs and split it into smaller chunks. Users can use Python libraries such as PyPDF2, pdfrw, or pdfplumber to extract text from PDF files or use non-programming PDF-to-text tools.²³² Next, users should divide the text into meaningful sections such as paragraphs or sections to ensure that the context is preserved.²³³ Once the text has been chunked, the ChatGPT model can be run repeatedly on each text chunk until all the chunks have been processed. Finally, the outputs can be combined into a single, coherent response. This process is also necessary for fine-tuning ChatGPT models.

Investment funds can request modifications to ChatGPT's corporate governance evaluation and proxy recommendation guidelines, as well as corresponding models. These changes may include adding or deleting variables and adjusting the weights assigned to each variable. However, investment funds should continually monitor the process and provide responses, feedback, and performance reviews of the recommendations generated by the zero-shot ChatGPT model. Otherwise, the results may not be accurate, reliable, or in line with industry standards.

While the zero-shot ChatGPT model can be helpful, it might not offer professional-level proxy voting advice. Like lawyers, ChatGPT requires specialized training with domain-specific data to comprehend the rationale and methodologies involved in delivering high-quality proxy voting advice. Therefore, it is essential to fine-tune ChatGPT for a more specialized and personalized approach, ensuring its reliability in providing proxy voting advice.

The Author conducted a non-controlled experiment in which the author fine-tuned the GPT-3.5 text-davinci-003 model using BOA's 2022 proxy statement and proxy voting guidelines generated by the zero-shot ChatGPT's GPT-4 model (Appendix 1) as datasets.²³⁴ After fine-tuning,

232. See Aditya Kekare et al., *Techniques for Detecting and Extracting Tabular Data from PDFs and Scanned Documents: A Survey*, 7 INT'L RSCH J. ENG'G & TECH. 415, 416 (2020) (PyPDF2); see Ben De Koning, *Extracting Sections From PDF-Formatted CTI Reports* (July 8, 2022) (Bachelor Thesis, University of Twente, The Netherlands) (on file with University of Twente) (pdfplumber).

233. See Dhanashree, *How to Extract Text from PDF Using Python?*, NANONETS (Apr. 5, 2023), <https://nanonets.com/blog/extract-text-from-pdf-file-using-python/> [<https://perma.cc/4RFH-DJH8>].

234. See *infra* Appendix 1.

the author prompted the fine-tuned text-davinci-003 model to assume the role of an experienced corporate governance expert and to make recommendations for or against all proposals in BOA's proxy statement, disregarding any suggestions from the board and relying solely on voting guidelines. The recommendations generated by the fine-tuned model are as follows:

Table 1: Recommendations of BOA Board, Zero-Shot GPT-4 and Fine-Tuned Davinci-3²³⁵

Proposal	Subject Matter	BOA Board	Zero-Shot GPT-4	Fine-Tuned Davinci-3
1	Electing directors	For	For	For
2	Approving executive compensation (say on pay)	For	For	For
3	Ratifying appointment of independent registered public accounting	For	For	For
4	Ratifying Delaware Exclusive Forum Provision in Bylaws	For	For	For
5	Shareholder proposal requesting civil rights and nondiscrimination audit	Against	For	For
6	Shareholder proposal requesting adoption of policy to cease financing new fossil fuel supplies	Against	For	Against

235. The subject matter of each proposal was also summarized by the fine-tuned text-davinci-3.

7	Shareholder proposal requesting report on charitable donations	Against	For	For
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When asked why the fine-tuned model recommended voting against Proposal 6, the model responded, “Proposal 6 is a shareholder proposal requesting adoption of a policy to cease financing new fossil fuel supplies. Voting against this proposal is a way to express opposition to the use of fossil fuels and to support the transition to renewable energy sources.”²³⁶ The fine-tuned model accurately summarized the content of Proposal 6, but its recommendation contradicted its stated purpose. This outcome highlights some cognitive limitations of GPT-3.5, as the zero-shot GPT-4 model did not make such an error.

At the same time, this suggests that the voting proxy guidelines generated by GPT-4 are biased towards ESG considerations. This inference is drawn from the fact that the fine-tuned model, directed to bypass the opinions of the BOA board and base its recommendations solely on guidelines produced by GPT-4, supported all three shareholder proposals that advocated for ESG issues. It should be noted that since the fine-tuned model is based on GPT-3.5, it does not fully demonstrate the capabilities of GPT-4, making the results not directly comparable. Additionally, due to the limited scope of the fine-tuning datasets, the results may exhibit bias.

B. FINE-TUNING CHATGPT WITH THE ISS MODEL

Given the significance of ISS in providing guidance to institutional investors on voting proxies, it would be helpful to begin this section by creating a voting model based on ISS’s proxy voting guidelines. These guidelines are updated and released on an annual basis, and the latest proxy voting guidelines for U.S. incorporated companies was published in December 2022, effective for meetings on or after February 1, 2023.²³⁷

These guidelines display ISS’s framework for making recommendations. The guidelines classify proxy voting issues into seven categories: (1) board of directors, (2) audit-related issues, (3) shareholder

236. BOA Corp., *supra* note 219, at 93.

237. United States Proxy Voting Guidelines Benchmark Policy Recommendations (Dec. 13, 2022), <https://www.issgovernance.com/file/policy/active/americas/US-Voting-Guidelines.pdf> [<https://perma.cc/22U3-U3SM>].

rights and defenses, (4) capital and structuring, (5) compensation, (6) social and environmental issues, and (7) other routine matters.²³⁸ Each category consists of numerous subcategories. For instance, with respect to the board of directors, ISS guidelines consider composition, responsiveness, accountability, and other issues, including the size of the board, term limits, and retirement age of directors.²³⁹ The guidelines provide general recommendations for each issue.²⁴⁰ For complicated issues, the guidelines list specific facts and circumstances worth considering when shareholders cast their votes.²⁴¹ Overall, the guidelines are very concrete and specific. However, the complexity of the guidelines could make it difficult for funds to follow them without thorough understanding and analysis.

Although ISS's proxy voting guidelines are publicly available, the voting recommendation model it uses is proprietary, and the specific parameters and coefficients used to evaluate the weight of each issue are not disclosed to the public.²⁴² In fact, ISS's process for updating its voting guidelines has been criticized for its lack of transparency and representativeness.²⁴³

But ISS's recommendations can be accessed on ISS Voting Analytics database.²⁴⁴ The database contains two sets of voting records: Company Vote Results, which covers proxy voting results for Russell 3000 companies; and Fund Vote Results, which covers the voting records of individual funds within the top 100 mutual fund families, extracted from Form N-PX filings.²⁴⁵ For detailed information, the database

238. *Id.*

239. *Id.* at 9–23.

240. *See generally id.*

241. *See generally id.*

242. *See generally id.*

243. *See* David F. Larcker et al., *And then a Miracle Happens!: How Do Proxy Advisory Firms Develop Their Voting Recommendations?* (Rock Ctr. for Corp. Governance at Stanford Univ. Closer Look Series: Topics, Issues & Controversies in Corporate Governance and Leadership, No. CGRP-31, Feb. 25, 2013), <https://ssrn.com/abstract=2224329> [<https://perma.cc/A39G-DANV>] (arguing that too few participants are involved in the ISS data collection process, and that the composition of the respondent pool is not well disclosed). Additionally, ISS's survey design contains errors that are “likely to confuse and/or bias respondents.” *Id.*

244. *Voting Analytics Data*, HARVARD BUS. SCH., <https://www.library.hbs.edu/find/databases/voting-analytics-data> [<https://perma.cc/NN8A-Q27P>] (last visited Apr. 11, 2023).

245. *Id.*

provides the identities of companies, descriptions of ballot items, shareholder meeting dates, management and ISS recommendations, and the number of “for” and “withhold/against” votes, among other items.²⁴⁶

We can assess the effectiveness of the ISS model by observing market reactions to ISS recommendations. We can evaluate how the market reacts to ISS recommendations by looking at changes in stock prices after a company’s proposals have been voted on.²⁴⁷

If voting on proposals follows ISS guidance and leads to an increase in the company’s stock price, or if voting against ISS advice results in a stock price decrease, it indicates the effectiveness of the ISS model, as the market responds favorably to its recommendations.²⁴⁸ However, if the stock price falls after voting in accordance with ISS recommendations, or rises when voting against them, this could suggest that the ISS model might be adversely affecting the company’s value, evidenced by the market’s negative reaction to ISS recommendations.²⁴⁹

Market reactions to ISS recommendations can be influenced by various factors other than the recommendations themselves, such as general market conditions, macroeconomic indicators, or company-specific news. To obtain a more accurate and precise evaluation of the market reactions to ISS recommendations, investment funds may consider employing difference-in-difference (“DiD”) regression to control for compounding factors.²⁵⁰

246. Tao Li, *Outsourcing Corporate Governance: Conflicts of Interest Within the Proxy Advisory Industry*, 64 MGMT. SCI. 2951, 2956 (2018), <https://doi.org/10.1287/mnsc.2016.2652> [<https://archive.is/etRkM>].

247. CRSP US STOCK DATABASES, <https://www.crsp.org/products/research-products/crsp-us-stock-databases> (CRSP US Stock Databases is a widely used database to track changes in stock prices of US companies).

248. See Larcker et al., *supra* note 139, at 192–95 (to gauge market reactions to ISS recommendations). The authors use average daily adjusted return for the 30 days before and the 30 days after a company’s 8-K filing date to measure market reactions. *Id.*

249. See *id.*

250. See Michael Lechner, *The Estimation of Causal Effects by Difference-in-Difference Methods*, 4 FOUNDS. & TRENDS ECONOMETRICS 165 (2011) (for a general survey of DiD); see also Matheus Facure, *The Difference-in-Differences Saga*, CAUSAL INFERENCE FOR THE BRAVE & TRUE (2022), <https://matheusfacure.github.io/python-causality-handbook/24-The-Diff-in-Diff-Saga.html#the-difference-in-differences-saga> [<https://perma.cc/RV7W-S2ZB>] (applying DiD with Python). DiD regression compares the changes in outcomes for a treatment group (e.g., companies that received ISS recommendations) to changes in outcomes for a control group (e.g., companies that did not receive ISS recommendations) over time. See Michael Lechner, *The Estimation of Causal Effects by Difference-in-Difference Methods*, 4 FOUNDS. & TRENDS

The Author began personalizing his GPT models based on ISS policies by parsing ISS proxy voting guidelines, processing and normalizing available ISS Voting Analytics data, matching ISS recommendations to corresponding proposals and final voting results and calculating the market reactions to each ISS recommendation. Then the next step was to fine-tune the ChatGPT model to create a personalized model based on ISS principles and methodologies and the market reactions to ISS recommendations.

The dataset was then divided into separate training and validation sets for model fine-tuning and evaluation. A commonly used practice is to allocate 80% of the data for training and 20% for validation.²⁵¹ After fine-tuning ChatGPT, investment funds can use the personalized model to generate voting recommendations for proposals in both the validation set and real-world proxy voting. Additionally, the model can be used to assess companies' corporate governance after incorporating more relevant data, such as financial information and media news.

Investment funds can evaluate the performance of their resulting models by calculating relevant performance metrics such as accuracy, F1-score,²⁵² or mean absolute error ("MAE").²⁵³ If they find the recommendations generated unsatisfactory, investment funds can provide

ECONOMETRICS 165 (2011) (for a general survey of DiD). By comparing these changes, DiD regression helps to isolate the causal effect of the treatment (ISS recommendations) on the outcome variable (market reactions) while accounting for other factors that might affect the outcome. *See id.*

251. *See* Ajitesh Kumar, *Machine Learning – Training, Validation and Test Data Set*, ANALYTICS YOGI (June 13, 2021), <https://vitalflux.com/machine-learning-training-validation-test-data-set/> [<https://perma.cc/22EV-FZPC>].

252. Thomas Wood, *What Is the F-score?*, DEEPAI, <https://deepai.org/machine-learning-glossary-and-terms/f-score> [<https://perma.cc/F7FQ-KMZ6>] (last visited Nov. 14, 2023). The F1 score is a performance metric used to evaluate the accuracy of a model's predictions. *Id.* It considers both precision and recall, which measure the model's ability to make accurate positive predictions and correctly identify all positive instances, respectively. *Id.* The F1 score is the harmonic mean of precision and recall and ranges from 0 to 1, with higher values indicating better performance. *Id.*

253. MAE is a performance metric that measures the average difference between predicted and actual values of a dataset. *See, e.g.,* Anne Lundgaard Hansen & Sophia Kazinnik, *Can ChatGPT Decipher Fedspeak?* 7–8 (Fed. Rsrv. Bank, Mar. 24, 2023), <https://ssrn.com/abstract=4399406> [<https://perma.cc/2VQN-4U8C>] (showing examples of performance evaluation of general and fine-tuned ChatGPT models). It is commonly used in regression analysis to evaluate the accuracy of a model's ability to predict continuous values. *See id.* MAE is helpful when the magnitude of the error is significant, and the errors are not expected to cancel each other out. *See id.*

feedback to iterate the fine-tuned model. This can involve adding new data sources, removing irrelevant or outdated data, or adjusting the weighting of different data sources to better align with the investment funds' preferences.

Investment funds can improve the performance of their fine-tuned GPT models by adjusting the weighting of data sources used in the model training process. They can increase the weight of important data sources, such as executive compensation or board diversity, and decrease the weight of less relevant or reliable sources, like social media or news articles. Techniques like adjusting the learning rate, regularization term, or loss functions can be used for this purpose. The learning rate determines the size of model updates during training, while the regularization term prevents overfitting. The loss function measures the difference between predicted and true outputs and guides model optimization during training. Choosing appropriate values for these parameters is crucial for optimal model performance. After rounds of fine-tuning and iteration, the model will become increasingly accurate and useful for making voting recommendations.

This Article does not aim to serve as a manual for fine-tuning ChatGPT. Instead, it presents a framework that offers an idea of building a personalized model for generating voting recommendations for small investment funds by fine-tuning ChatGPT.²⁵⁴

Meanwhile, Glass Lewis provides proxy voting guidelines²⁵⁵ and a Proxy Paper® service²⁵⁶ similar to ISS Voting Analytics. Moreover, Glass

254. See generally OpenAI, *Fine-Tuning*, <https://platform.openai.com/docs/guides/fine-tuning/fine-tuning> [<https://archive.is/ZVMzp>] (last visited Apr. 11, 2023) (providing instructions for fine-tuning ChatGPT); see also Arjun Sha, *How to Train an AI Chatbot with Custom Knowledge Base Using ChatGPT API*, BEEBOM (July 29, 2023), <https://beebom.com/how-train-ai-chatbot-custom-knowledge-base-chatgpt-api> [<https://perma.cc/8MVY-EA46>] (providing a step-by-step guide for starting from scratch to fine-tune ChatGPT, including installing Python and necessary libraries). However, this particular fine-tuning process focuses on creating a bot for searching the training data. *Id.* If a user wants to leverage all the model's capabilities, the code should be modified as needed. *Id.*

255. See generally *2023 Policy Guidelines United States*, GLASS LEWIS & CO. (Nov. 2022), <https://www.glasslewis.com/wp-content/uploads/2022/11/US-Voting-Guidelines-2023-GL.pdf> [<https://perma.cc/69TZ-DVMV>].

256. See generally *Proxy Research – Proxy Paper®*, GLASS LEWIS & CO., <https://www.glasslewis.com/proxy-research-3/> [<https://perma.cc/7DDC-4H35>] (last visited Apr. 11, 2023).

Lewis is more ESG-neutral than ISS.²⁵⁷ Therefore, investment funds that focus less on ESG can consider using Glass Lewis's proxy voting principles and proxy voting recommendations as training data instead of ISS's.

C. FINE-TUNING PERSONALIZED MODEL FOR FUNDS WITH VARYING FOCUS

Sections A and B have discussed building and modifying corporate governance scoring and voting recommendation models using ChatGPT and fine-tuning these models with specific datasets.²⁵⁸ This subsection focuses on the process of fine-tuning ChatGPT to create personalized corporate governance evaluation and proxy recommendation models that align with the varying priorities of different investment funds.

For funds prioritizing financial returns, the fine-tuning process could emphasize factors that directly contribute to these objectives, such as portfolio companies' financial performance, business strategies, management's expertise, and risk management.²⁵⁹ Funds can provide proprietary data on these factors and retrain the model on this curated dataset to tailor ChatGPT accordingly.

Funds that are environmentally and socially conscious can fine-tune ChatGPT by emphasizing ESG factors. This may involve prioritizing factors such as climate-related issues, ethical business practices such as compliance with labor laws, and board diversity.²⁶⁰ These funds can

257. See Ohn G. Matsusaka & Chong Shu, *Robo-Voting: Does Delegated Proxy Voting Pose a Challenge for Shareholder Democracy?* app. at 14, tbl. 3 (Apr. 12, 2023), <https://ssrn.com/abstract=4564648> [<https://perma.cc/ZYZ6-5236>] (showing ISS robovoters are more concerned with ESG issues than Glass Lewis robovoters, or more ISS clients robovote on ESG proposals than Glass Lewis Clients).

258. See *infra* Parts A and B.

259. See Söhnke M. Bartram, *Corporate Risk Management as a Lever for Shareholder Value Creation*, 9 J. RISK FIN. 541 (2008), <https://doi.org/10.1111/1468-0416.00038> [<https://archive.is/U59rJ>] (demonstrating risk management on the firm level represents a means to increase firm value to the benefit of the shareholders).

260. See Syeda Humayra Abedin et al., *Environmental Performance and Corporate Governance: Evidence from Japan*, 15 SUSTAINABILITY 3273 (2023), <https://doi.org/10.3390/su15043273> [<https://archive.is/JL17J>] (finding a separate environmental management committee, a more diverse board, and a greater level of board independence improve the environmental performance of a firm); see also Valentina Lagasio & Nicola Cucari, *Corporate Governance and Environmental Social Governance Disclosure: A Meta-Analytical Review*, 27 CORP. SOC. RESP. & ENV'T MGMT. 1148

provide data related to real world ESG metrics more than just ESG scores,²⁶¹ industry-specific benchmarks, and relevant regulations²⁶² to retrain ChatGPT and generate customized recommendations that reflect their ESG priorities.

Both profit-focused and ESG-inclined funds can benefit from incorporating proprietary data and reputable public data sources, such as the Wall Street Journal or FactSet, in the fine-tuning process. This data may include fund-specific investment guidelines, internal research and analysis of portfolio companies, historical voting records and engagement efforts, sector-specific insights, and best practices.

Investment funds should periodically update their ChatGPT models to account for changing market conditions, regulations, and stakeholder expectations. This may involve adjusting weights assigned to different factors or retraining the model with updated proprietary and public data. By continuously refining the model, funds can ensure that their personalized corporate governance evaluation and proxy recommendation models remain effective and relevant.

In conclusion, ChatGPT exhibits potential in generating proxy voting guidelines and identifying potential conflicts of interest; however, the improvements in GPT-4 have greatly reduced the issues with token constraints and long-range dependencies that used to affect ChatGPT's competence as a proxy advisor. The improvements in GPT-4 have greatly reduced the issues with token constraints and long-range dependencies that used to affect ChatGPT's competence as a proxy advisor, but ChatGPT still faces challenges. Its performance in calculations can be unreliable, and it lacks the latest, nuanced knowledge about corporate governance. This could limit how useful it is in this role. To address these challenges, investment funds might consider fine-tuning ChatGPT using specialized datasets, such as ISS, Glass Lewis, or their proprietary proxy voting guidelines, along with market reactions and high-quality public

(2019), <https://doi.org/10.1002/csr.1716> [<https://archive.is/ZnvO2>] (finding board independence, board size, and women directorship visibly enhance corporations' ESG disclosure).

261. See Aneesh Raghunandan & Shiva Rajgopal, *Do ESG Funds Make Shareholder-Friendly Investments?*, 27 REV. ACCT. STUD. 822 (2022), <https://doi.org/10.1007/s11142-022-09693-1> [<https://archive.is/gN1Wt>] (finding ESG scores are correlated with the quantity of voluntary ESG-related disclosures but not with firms' compliance records or actual levels of carbon emissions).

262. See, e.g., Press Release, SEC, *SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors*, Press Release No. 2022-46 (Mar. 21, 2022), <https://www.sec.gov/news/press-release/2022-46> [<https://archive.is/zeil1z>].

and private data. This process enables the development of tailored models capable of producing more accurate and reliable corporate governance scoring and proxy voting recommendations for smaller funds. To ensure the ongoing relevance and precision of fine-tuned models, it is essential to consistently monitor, evaluate, and iterate on them.

III. CHALLENGES FOR OUTSOURCING VOTING DECISIONS TO AI

As AI continues to advance rapidly, so do its associated challenges. These challenges include model fine-tuning and iterations, data and algorithm biases, cybersecurity and privacy concerns,²⁶³ and regulatory uncertainties. Addressing these issues is crucial for investment funds intending to optimize the use of ChatGPT-like AI models for corporate governance evaluation and proxy voting decisions while also ensuring accuracy, fairness, and compliance with evolving regulations.

A. MODEL FINE-TUNING AND ITERATIONS

The initial challenge investment funds may encounter when fine-tuning ChatGPT for proxy voting decisions lies in the complexities of iterating and refining the model. The fine-tuning process entails several stages, including collecting specialized data relevant to the fund's objectives, cleaning and preprocessing the data to ensure its quality, and conducting iterative training sessions to optimize the model's performance.²⁶⁴ This fine-tuning process can be both demanding and time-consuming, as funds must devote substantial resources to data gathering, invest in technical expertise to manage the fine-tuning process, and allocate time to monitor and evaluate the model's performance.

Furthermore, funds need to consider the trade-offs between training time and model accuracy. On the one hand, longer training times can lead to better accuracy, as the model has more time to learn and identify

263. See Matthias Holweg et al., *The Reputational Risks of AI*, CAL. REV. MGMT. (Jan. 24, 2022), <https://cmr.berkeley.edu/2022/01/the-reputational-risks-of-ai/> [<https://perma.cc/C8SF-VUB3>] (finding privacy violations and algorithmic bias are the most prevalent of reputational impacts from AI failures).

264. See generally Arslan Mirza, *How to Build Your Own Custom ChatGPT Bot*, MEDIUM (Mar. 28, 2023), <https://levelup.gitconnected.com/how-to-build-your-own-custom-chatgpt-bot-cf4af959adcc> [<https://perma.cc/R8K9-RFTV>].

patterns²⁶⁵ in the data. On the other hand, longer training times can also be more costly in terms of time and resources. Investment funds also need to determine the optimal combination of input data and model parameters to achieve the desired results. Too much data that is not relevant to the fund's objectives can add noise into whole datasets, making it harder for the model to identify patterns and extract meaningful insights. While too few relevant data points can lead to inaccurate or incomplete results. Similarly, adjusting model parameters too much or too little can impact model accuracy and performance.

In summary, the intricacies of modeling iterations present significant challenges for investment funds looking to fine-tune ChatGPT for proxy voting decisions. This would require collaboration of skillful data scientists, financial experts, and programmers.

B. DATA AND ALGORITHM BIASES

AI models can exhibit different types of biases, such as data bias, method bias, and societal bias.²⁶⁶ Data bias can arise from sample inadequacy, sample selection bias, out-group homogeneity bias, and an algorithm's inability to anticipate counterfactual data.²⁶⁷ Sample selection bias occurs when the training data used to develop an AI model is not representative of the population it is intended to serve, which can lead to inaccurate predictions.²⁶⁸ Out-group homogeneity bias is the tendency to perceive individuals from groups other than one's own as more similar to each other, which can result in incorrect assumptions or decisions.²⁶⁹ The size and popularity of the training dataset could also cause biases.²⁷⁰

Method bias includes confusing correlation with causation, overgeneralization, and confirmation bias in hypothesis formulation and validation.²⁷¹ Confirmation bias refers to the tendency to favor information that confirms pre-existing beliefs or hypotheses while

265. A pattern is a sequence of events or features that repeat or are recognizable. In the context of machine learning, patterns are used to identify relationships between data points and make predictions based on those relationships.

266. See generally Shahriar Akter et al., *Algorithmic Bias in Data-Driven Innovation in the Age of AI*, 60 INT'L J. INFO. MGMT. 5 (2021).

267. See *id.* at 5.

268. See *id.*

269. See *id.*

270. See *id.* at 5–6.

271. *Id.*

undervaluing or disregarding information that contradicts them.²⁷² Socio-cultural bias embedded in datasets can lead to discriminatory outcomes for disadvantaged populations.²⁷³

These biases can affect the impartiality and accuracy of proxy voting recommendations generated by ChatGPT. Particularly, machine learning-driven AI models are often considered black boxes. This is because their complex algorithms and large amounts of data can make it difficult for users to interpret decisions made by the AI models.²⁷⁴ If ChatGPT's training data and algorithms contain biases, the recommendations it makes could be inherently biased and partial.

GPT-3.5's prototype GPT-3 has showed biases based on gender,²⁷⁵ race, and religion.²⁷⁶ As the experiment in Section 3.A has displayed, ChatGPT's zero-shot GPT-4 model has a propensity in favor of ESG causes. In fact, GPT-4 has accused of being politically left-leaning while maintaining a neutral façade.²⁷⁷ However, in this experiment, it does not appear to exhibit bias based on gender or race when providing recommendations for director nominees. It is important to note that this conclusion is drawn from a small sample in one experiment, and further experiments are necessary to thoroughly test whether ChatGPT is biased.

272. *Id.* at 6–7.

273. *Id.* at 7.

274. See Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, 31 HARV. J. L. & TECH. 898, 901–06 (2018).

275. See Lucy Li & David Bamman, *Gender and Representation Bias in GPT-3 Generated Stories*, PROC. OF THE THIRD WORKSHOP ON NARRATIVE UNDERSTANDING 48 (2021), <https://aclanthology.org/2021.nuse-1.5> [<https://perma.cc/SF8J-PL3Y>] (finding GPT-3 generated stories have female characters more likely to be associated with family and appearance, and less powerful than masculine characters); see also Tom B. Brown et al., *Language Models are Few-Shot Learners*, ARXIV (last revised July 22, 2020), <https://arxiv.org/abs/2005.14165> [<https://perma.cc/4W78-MK6W>] (finding 83% of 388 occupations tested were more likely to be associated with a male identifier, especially occupations signaling higher-education or requiring physical labor).

276. See *supra* note 275 and accompanying text. (finding ChatGPT-generated descriptions have racial and religious stereotypes).

277. See David Rozado, *The Political Biases of GPT-4: Things Are Not Always What They Seem*, ROZADO'S VISUAL ANALYTICS (Mar. 15, 2023), <https://davidrozado.substack.com/p/the-political-biases-of-gpt-4> [<https://perma.cc/2SC3-DXRY>].

C. CYBERSECURITY AND PRIVACY CONCERNS

In addition to biases in training data and models' algorithms, cybersecurity and privacy concerns could also result in investment funds being cautious on using ChatGPT to make proxy voting decisions. The occurrence of data leaks within the electronic giant Samsung highlights the privacy concerns associated with using ChatGPT for handling sensitive data.²⁷⁸ Samsung Semiconductor allowed its employees to utilize ChatGPT for coding, note-taking, and asking questions but failed to provide clear guidelines on what data could and could not be submitted.²⁷⁹ Consequently, highly sensitive information related to internal business practices, source codes, and top-secret methods were unknowingly submitted to ChatGPT on three separate occasions.²⁸⁰ This data has the potential to be leaked to other users, as ChatGPT records and learns from all conversations.²⁸¹

In response, Samsung has announced plans to develop its own internal ChatGPT-like AI service to protect against potential data breaches.²⁸² In the meantime, they imposed a limit on ChatGPT questions to 1024 bytes.²⁸³ In May 2023, one month following the exposure of sensitive data through leaks, Samsung implemented a company-wide prohibition on the use of ChatGPT and similar generative AI technologies on company-issued devices.²⁸⁴ The incident serves as an illustration that if data privacy concerns become insurmountable, there is a possibility of an outright ban on ChatGPT.

The process of interacting with and fine-tuning ChatGPT involves feeding it sensitive data. However, if there are no policies and cybersecurity methods in place to prevent data leaks, investment funds

278. *Id.*

279. *Id.*

280. *Id.*

281. *Id.*

282. *Id.*

283. See Jai Vijayan, *Samsung Engineers Feed Sensitive Data to ChatGPT, Sparking Workplace AI Warnings*, DARK READING (Apr. 11, 2023), <https://www.darkreading.com/vulnerabilities-threats/samsung-engineers-sensitive-data-chatgpt-warnings-ai-use-workplace> [<https://perma.cc/BT5X-KLQF>]. The accidents of data leakage were firstly reported by The Economist Korea on March 30, 2023. See KOREAN ECONOMIST (Mar. 30, 2023), <https://economist.co.kr/article/view/ecn202303300057?s=31> [<https://archive.ph/PBJ3X>].

284. See Kate Park, *Samsung Bans Use of Generative AI Tools Like ChatGPT After April Internal Data Leak*, TECHCRUNCH (May 2, 2023, 6:17 AM PDT), <https://tcrn.ch/3VleVpX> [<https://perma.cc/5XX8-ANMZ>].

with proprietary data may be hesitant to use ChatGPT for making proxy voting decisions.

D. REGULATORY CHALLENGES

The uncertainty in the regulatory environment for AI models like ChatGPT could present challenges for investment funds that aim to use it in making proxy voting decisions. On March 31, 2023, the Italian Data Protection Authority temporarily banned the use of ChatGPT in Italy, citing privacy concerns.²⁸⁵ Then on April 12, 2023, the Italian Data Protection Authority provided a list of conditions for OpenAI to satisfy by April 30, 2023, if OpenAI wants to restore the ChatGPT service in Italy.²⁸⁶ For example to satisfy one of the conditions, OpenAI must post information on its website about how and why it processes the personal information of both users and non-users, as well as provide the option to correct or delete that data.²⁸⁷

Investment funds who want to rely on ChatGPT to perform corporate governance and proxy voting analysis could face challenges due to regulatory uncertainties. If ChatGPT can be temporarily taken down at the request of regulators, then the resulting blackouts of ChatGPT would severely undermine investment funds' reliance on ChatGPT for essential job responsibilities.

Significant regulatory initiatives are currently underway to address the services provided by generative AI technology. China is engaging in regulating AI-generated contents.²⁸⁸ In April 2023, the Cyberspace Administration of China proposed rules that regulate generative AIs, imposing extensive limitations on the contents that AI models, such as ChatGPT, can generate imposing extensive limitations on the contents

285. See Frances D'Emilio & Matt O'Brien, *Italy Temporarily Blocks ChatGPT Over Privacy Concerns*, AP NEWS (Mar. 31, 2023), <https://apnews.com/article/chatgpt-ai-data-privacy-italy-66634e4d9ade3c0eb63edab62915066f> [<https://perma.cc/2FT7-NFVY>].

286. *Id.*

287. *ChatGPT Could Return to Italy if OpenAI Complies with Rules*, AP NEWS (Apr. 12, 2023), <https://apnews.com/article/chatgpt-openai-data-privacy-italy-c0764f0e77273c429564fdb0c475a707> [<https://perma.cc/FE99-MXF9>].

288. See Seaton Huang et al., *Translation: Measures for the Management of Generative Artificial Intelligence Services (Draft for Comment)* (Apr. 12, 2023), <https://digichina.stanford.edu/work/translation-measures-for-the-management-of-generative-artificial-intelligence-services-draft-for-comment-april-2023/> [<https://perma.cc/JMK6-D8EU>]. OpenAI does not provide ChatGPT services in China.

that AI models, such as ChatGPT, can generate.²⁸⁹ The rules were finalized and made public on July 10, 2023,²⁹⁰ requiring companies providing public generative AI services to take steps in ensuring the accuracy and reliability of AI-generated contents.²⁹¹

Meanwhile, the U.S. is also considering regulating AI as concerns of abusing AI mount.²⁹² The SEC is engaging in regulating the application of AI to the financial industry.²⁹³ The SEC's Division of Trading and Markets is considering recommending rules proposing that the SEC addresses "broker-dealer conflicts in the use of predictive data analytics ("PDA"), artificial intelligence, machine learning, and similar technologies in connection with certain investor interactions."²⁹⁴ Obviously, using ChatGPT falls within the scope of this proposed rulemaking. On July 26, 2023, the SEC issued proposed rules 15l-2 under the Exchange Act²⁹⁵ and 211(h)(2)-4 under the Advisers Act²⁹⁶, to address the conflicts of interest associated with broker-dealers' and investment advisers' use of PDA and similar technologies when engaging or communicating with investors.²⁹⁷ This rulemaking by the SEC signifies its first substantial step to curb misconduct against investors related to financial institutions' use of generative AI technology.²⁹⁸

The most significant step in regulating generative AIs has been taken by the EU.²⁹⁹ In June 2023, European Parliament overwhelmingly passed

289. *See id.*

290. *See Interim Measures for the Management of Generative Artificial Intelligence Services*, CHINA L. TRANSLATE (July 13, 2023), <https://www.chinalawtranslate.com/en/generative-ai-interim/> [<https://perma.cc/3FMS-RWZ3>].

291. *Id.* at art. 7(4).

292. *See* Ryan Tracy, *Biden Administration Weighs Possible Rules for AI Tools Like ChatGPT*, WALL ST. J. (Apr. 11, 2023, 2:55 PM ET), <https://www.wsj.com/articles/biden-administration-weighs-possible-rules-for-ai-tools-like-chatgpt-46f8257b> [<https://archive.is/7pzi5>].

293. Prohibition of Conflicted Practices for Broker-Dealers that Use Certain Covered Technologies, 86 Fed. Reg. 49067 (Sept. 1, 2021), <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=3235-AN00> [<https://perma.cc/BPH8-RF52>].

294. *Id.*

295. 17 C.F.R. § 240.151-2.

296. 17 C.F.R. § 275.211(h)(2)-4.

297. *See* Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers, Release No. 34-97990 (July 26, 2023), <https://www.sec.gov/rules/proposed/2023/34-97990.pdf> [<https://archive.is/iB2OK>].

298. *Id.*

299. *MEPs Ready to Negotiate First-Ever Rules for Safe and Transparent AI*, NEWS EUR. PARLIAMENT (June 14, 2023), <https://www.europarl.europa.eu/news/en/press->

a draft law known as the AI Act³⁰⁰ proposed by the European Commission in 2021.³⁰¹ Generative AIs like ChatGPT will be subject to enhanced transparency requirements such as disclosing AI-generated contents and publicizing detailed summaries of the copyrighted data used for their training.³⁰²

Regulation is necessary to ensure the safety of using generative AIs and the reliability of their generated contents. However, excessive regulation of ChatGPT and similar AI tools could potentially disrupt advanced AI models' functionality, limit their creativity, hinder their ability to generate accurate and comprehensive corporate governance reports and proxy voting recommendations, and escalate compliance costs for developers and users alike.

CONCLUSION

In a recent speech, SEC Chairman Gary Gensler highlighted the risks and challenges posed by AI in finance and the economy.³⁰³ At a micro level, these challenges include the accuracy of AI models, conflicts of interest between financial advisors using AI and their investors, and the potential for fraud.³⁰⁴ On a macro level, AI could cause financial instability by driving global investors to make similar decisions, leading to the phenomenon of "herding."³⁰⁵

Despite these risks, asset management giants like Vanguard have already been utilizing AI to "create customized financial plans that help clients meet their short-term and long-term financial goals."³⁰⁶ Likewise,

room/20230609IPR96212/meps-ready-to-negotiate-first-ever-rules-for-safe-and-transparent-ai [https://perma.cc/PQ7R-X3K8].

300. *Id.*

301. *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*, COM(2021) 206 final, 2021/0106 (COD), (Apr. 21, 2021), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0206> [https://perma.cc/BPD6-C4QT].

302. *See* NEWS EUR. PARLIAMENT, *supra* note 299.

303. Gary Gensler, Chair, SEC, "Isaac Newton to AI" Remarks Before the National Press Club (July 17, 2023), https://www.sec.gov/news/speech/gensler-isaac-newton-ai-remarks-07-17-2023#_ftn30 [https://archive.is/qEBPW].

304. *Id.*

305. *Id.*

306. *See* Blake Schmidt & Amanda Albright, *AI Is Coming for Wealth Management. Here's What That Means*, BLOOMBERG (Apr. 21, 2023), <https://www>.

leveraging large language AI models such as ChatGPT to assist small institutional investors in making personalized proxy voting decisions also shows promise. By fine-tuning ChatGPT, its generalization ability can be enhanced by training with curated datasets. Thus, investment funds can employ customized ChatGPT to make self-informed and personalized proxy voting more in line with their shareholders' interests and preferences. However, there are potential challenges that should be considered in future research.

Further research is needed to examine the feasibility of this approach, including the costs for small funds to fine-tune a ChatGPT model to personalize their voting practices. The cost of hiring experts to fine-tune the model, as well as the cost of acquiring high-quality data, could be a significant obstacle for small funds. Therefore, cost-benefit analyses should be conducted to determine if the benefits outweigh the costs.

Additionally, the performance of the fine-tuned models needs to be evaluated. While the experiment in Section II.A showed the potential of ChatGPT's GPT-4 model to generate detailed proxy voting guidelines, there were also limitations such as token limitations and long-range dependencies. Fine-tuning the model with high-quality, domain-specific datasets could improve its performance and reduce these limitations. Now that GPT-4 API is becoming widely available,³⁰⁷ future research should proceed with a fine-tuned GPT-4 model to examine its performance based on the experiment design in Sections II.A and II.B. This will help to determine the effectiveness of the model in real-world scenarios and provide insights into its potential limitations and areas for improvement.

Further research should also focus on identifying and addressing potential biases and ethical considerations that may arise from using AI in proxy voting. AI models trained on biased data could lead to biased voting decisions, which would negatively impact shareholders' interests. Additionally, regulators should develop guidelines and regulations that promote the ethical and responsible use of AI in proxy voting while safeguarding shareholders' privacy. By addressing these concerns, small institutional investors can leverage ChatGPT as a powerful tool to make personalized proxy voting decisions and navigate the competitive investment market.

[bloomberg.com/news/articles/2023-04-21/vanguard-fidelity-experts-explain-how-ai-is-changing-wealth-management?sref=CMlh25pt](https://www.bloomberg.com/news/articles/2023-04-21/vanguard-fidelity-experts-explain-how-ai-is-changing-wealth-management?sref=CMlh25pt) [<https://archive.is/nvOCf>].

307. See *GPT-4 API General Availability and Deprecation of Older Models in the Completions API*, OPENAI.COM, <https://openai.com/blog/gpt-4-api-general-availability> [<https://perma.cc/7638-DNFA>] (last visited Dec. 3, 2023).

APPENDIX 1: CHATGPT-GENERATED PROXY VOTING GUIDELINES

This document has been generated by the GPT-4 model of ChatGPT. The prompts required ChatGPT to act as an experienced corporate governance expert who has provided multiple proxy recommendations on various issues. The prompts have been deleted to make this document more like actual guidelines. The following is the framework of ChatGPT's proxy voting guidelines, with weights assigned to each issue.

1. Key Aspects of Corporate Governance

ChatGPT: As a corporate governance expert with proxy voting recommendation experience, I can provide guidance on various aspects of shareholder voting, board composition, executive compensation, and other governance-related matters. Proxy voting is an essential mechanism for shareholders to exercise their voting rights without physically attending annual or special meetings. Here are a few key aspects to consider when making proxy voting recommendations:

Board composition: Evaluate the board's diversity, independence, and expertise. A well-balanced board with a mix of skills, backgrounds, and experience levels can contribute to effective decision-making and oversight.

Executive compensation: Assess whether the company's executive compensation plans align with long-term shareholder interests and are tied to performance metrics. Excessive pay packages that are not linked to performance can lead to misalignment between management and shareholder interests.

Shareholder rights: Analyze the company's governance structure and the rights provided to shareholders. For example, consider whether the company has a dual-class share structure, which can concentrate voting power in the hands of a few individuals, or if the company has adopted a poison pill strategy that makes it difficult for shareholders to effect change.

Environmental, social, and governance (ESG) factors: Assess the company's commitment to ESG principles and whether it has implemented policies and practices to address material ESG risks. This includes considering climate change, labor practices, and corporate social responsibility, among other factors.

Proxy access: Evaluate the company's provisions for proxy access, which allows shareholders to nominate directors to the board. Proxy access can help promote board diversity and increase shareholder influence on board composition.

Auditor independence: Assess the independence of the company's external auditors and their ability to provide a fair and accurate assessment of the company's financial position.

Mergers and acquisitions (M&A): Evaluate the strategic rationale behind any proposed M&A activity and its potential impact on shareholder value. Consider factors such as deal terms, potential synergies, and integration risks.

Shareholder proposals: Carefully review shareholder proposals on various governance, compensation, and ESG matters. Consider the merits of each proposal and how it aligns with the long-term interests of shareholders.

In summary, proxy voting recommendations should be based on a comprehensive analysis of the company's governance practices, executive compensation, shareholder rights, ESG factors, and any other relevant issues. The goal is to promote long-term shareholder value and ensure that management is accountable to shareholders.

2. General Model for Evaluating Proxy Proposals

ChatGPT: Yes, I can provide a general model for offering proxy voting advice. This model outlines key steps and considerations when analyzing and making recommendations on various proxy voting matters. Keep in mind that this is a general framework, and specific situations may require additional analysis or focus on unique issues.

Gather relevant information: Collect necessary data on the company's governance practices, financial performance, ESG policies, and other relevant factors. Sources may include the company's proxy statement, annual report, sustainability report, and third-party research or assessments.

Assess board composition: Evaluate the board's overall composition, focusing on diversity, independence, and expertise. Identify any gaps in skills or experience and consider whether the company's director nomination process is robust and transparent.

Evaluate executive compensation: Analyze the company's executive compensation plans, ensuring they are tied to performance metrics and aligned with long-term shareholder interests. Consider the use of

equity-based incentives, peer benchmarking, and any potential risks of excessive pay.

Review shareholder rights: Examine the company's governance structure and the rights provided to shareholders. Identify any potential red flags, such as a dual-class share structure, staggered board, or anti-takeover provisions.

Analyze ESG factors: Assess the company's commitment to ESG principles and its ability to manage material ESG risks. Review the company's policies, practices, and disclosures related to environmental, social, and governance matters.

Evaluate proxy access provisions: Determine whether the company has adopted proxy access provisions that allow shareholders to nominate directors to the board. Consider the eligibility requirements and potential impact on board diversity and shareholder influence.

Assess auditor independence: Evaluate the independence and performance of the company's external auditors, ensuring they can provide an accurate and unbiased assessment of the company's financial position.

Examine M&A proposals: If applicable, analyze any proposed mergers or acquisitions for their strategic rationale and potential impact on shareholder value. Consider deal terms, synergies, and integration risks.

Review shareholder proposals: Carefully assess shareholder proposals related to governance, compensation, and ESG issues. Weigh the merits of each proposal and its alignment with the long-term interests of shareholders.

Develop recommendations: Based on the analysis, formulate proxy voting recommendations on director elections, executive compensation plans, shareholder proposals, and other relevant matters. Clearly articulate the rationale behind each recommendation and how it serves the best interests of shareholders.

Communicate and engage: Share proxy voting recommendations with clients or stakeholders and be prepared to discuss the underlying analysis. Engage with company management, if necessary, to address concerns or seek additional information.

By following this general model, you can provide well-informed and objective proxy voting advice that promotes long-term shareholder value and effective corporate governance.

3. Weighting in Proxy Voting Recommendations

ChatGPT: The weighting in a proxy voting recommendation model may vary depending on the specific priorities and preferences of the individual or organization using the model. However, I can provide a general example of how different factors might be weighted when making proxy voting recommendations:

Board composition: 20%

Executive compensation: 20%

Shareholder rights: 15%

ESG factors: 15%

Proxy access: 10%

Auditor independence: 5%

M&A proposals: 10%

Shareholder proposals: 5%

In this example, board composition and executive compensation are given the highest weight, reflecting their significance in ensuring effective corporate governance and alignment of management interests with shareholders. Shareholder rights and ESG factors are also important considerations, each receiving a 15% weight.

Proxy access, M&A proposals, and shareholder proposals are assigned a moderate weight, while auditor independence is given a lower weight, as it generally has a more indirect impact on shareholder value.

It's essential to note that these weights are only an example and can be adjusted based on the preferences, priorities, and objectives of the individual or organization using the model. Also, the model should be flexible enough to account for unique circumstances or issues that may arise in specific cases, requiring additional emphasis or analysis.

4. Reasons for Weighting

ChatGPT: The weights provided in the example are based on a general understanding of the relative importance of each issue in promoting effective corporate governance and long-term shareholder value. The rationale for each weight is explained below:

Board composition (20%): A well-balanced and diverse board with the right mix of skills, backgrounds, and experience is crucial for effective decision-making and oversight. As a result, board composition is given significant weight, reflecting its importance in driving corporate performance and strategy.

Executive compensation (20%): Aligning executive compensation with company performance and long-term shareholder interests is vital to incentivize management to make decisions that benefit shareholders. This factor is given substantial weight as it directly influences the behavior of company leadership.

Shareholder rights (15%): Shareholders' ability to influence company decisions and hold management accountable is an essential aspect of corporate governance. This factor is assigned a moderate weight, reflecting the need to ensure that shareholders have the necessary rights and tools to protect their interests.

ESG factors (15%): Companies that effectively manage ESG risks and opportunities are more likely to create long-term value for shareholders. By assigning a moderate weight to ESG factors, the model acknowledges the growing importance of sustainability and responsible corporate practices in today's business environment.

Proxy access (10%): Proxy access provisions empower shareholders to nominate directors to the board, enhancing board diversity and shareholder influence. This factor is given a moderate weight, recognizing its role in promoting effective board composition and governance.

Auditor independence (5%): Independent and unbiased external audits are crucial for ensuring accurate financial reporting and investor confidence. This factor is given a lower weight, as it has a more indirect impact on shareholder value and governance, but it still plays a crucial role in maintaining transparency and trust.

M&A proposals (10%): Mergers and acquisitions can significantly impact shareholder value, either positively or negatively. This factor is assigned a moderate weight to emphasize the importance of

carefully evaluating proposed deals and their potential effects on long-term shareholder interests.

Shareholder proposals (5%): Shareholder proposals can address various governance, compensation, and ESG issues. While each proposal's impact on shareholder value might vary, this factor is given a lower weight, acknowledging that these proposals can sometimes lead to improvements in corporate practices and policies.

It's important to reiterate that these weights are just an example, and organizations or individuals may choose to assign different weights based on their priorities and objectives. The model should be adaptable and flexible to accommodate unique circumstances and preferences.

5. Board Composition

ChatGPT: When evaluating board composition, various factors contribute to an effective and well-functioning board. While the specific weights may vary depending on an organization or individual's priorities, I can provide an example of some critical considerations and their potential weights:

Board independence (30%): A significant portion of the board should consist of independent directors, free from material relationships with the company or its management. This ensures objective decision-making and effective oversight.

Diversity (30%): Board diversity, including gender, ethnicity, age, and background, leads to a broader range of perspectives and better decision-making. Diverse boards are more likely to avoid groupthink and have better problem-solving capabilities.

Skills and expertise (25%): Board members should possess a mix of skills and expertise relevant to the company's industry, operations, and strategic goals. This includes financial, technological, legal, and industry-specific knowledge, among others.

Board size (5%): An optimal board size enables effective decision-making without becoming unwieldy. Boards that are too large may suffer from slow decision-making, while those that are too small may lack the necessary diversity of skills and experience.

Director tenure (5%): A balanced mix of long-serving and newer directors ensures both institutional knowledge and fresh perspectives. Excessively long director tenures can contribute to entrenchment, while a board composed mainly of new directors may lack the necessary experience.

Committee structure (5%): Board committees, such as audit, compensation, and nominating committees, should be appropriately structured and staffed with qualified and independent directors. This allows for efficient delegation of responsibilities and effective oversight.

These weights are meant to serve as an example and may be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the particular company and industry context.

1. Board independence (30%): Board independence ensures objectivity and reduces conflicts of interest. Key factors to consider and their potential weights include:

a. Independent directors (50%): The proportion of independent directors on the board.

b. Independent committees (30%): Ensure critical board committees (audit, compensation, and nominating) are composed mainly or entirely of independent directors.

c. Independent board chair or lead director (20%): Presence of an independent board chair or lead director to facilitate objective oversight.

2. Diversity (30%): A diverse board brings various perspectives, experiences, and skills to the table. Key diversity factors and their potential weights include:

a. Gender diversity (40%): Representation of women on the board.

b. Ethnic diversity (40%): Representation of different ethnicities on the board.

c. Other forms of diversity (20%): This includes age, background, and professional experience.

3. Skills and expertise (25%): A well-rounded board possesses the skills and expertise necessary to guide the company effectively. Key areas of expertise and their potential weights include:

a. Financial expertise (20%): Directors with financial knowledge, such as a background in accounting or finance.

b. Industry expertise (20%): Directors with experience in the company's industry or sector.

c. Technology expertise (20%): Directors with experience in technology, digital transformation, or cybersecurity, as relevant to the company.

d. Legal and regulatory expertise (20%): Directors with knowledge of legal and regulatory matters that impact the company.

e. Strategic planning expertise (20%): Directors with experience in strategy, mergers and acquisitions, or other relevant areas.

4. Board size (5%): The optimal board size should balance efficiency and diversity. Consider the following weight:

a. Number of directors (100%): Assess the total number of directors on the board and determine if it's an appropriate size given the company's scale and complexity.

5. Director tenure (5%): A mix of long-serving and newer directors ensures both continuity and fresh perspectives. Key factors to consider and their potential weights include:

a. Average tenure (50%): Assess the average tenure of directors on the board.

b. Tenure diversity (50%): Evaluate the distribution of director tenures to ensure a mix of long-serving and newer directors.

6. Committee structure (5%): Board committees should be well-structured and staffed with qualified directors. Key factors to consider and their potential weights include:

a. Committee composition (50%): Assess the composition of key committees (audit, compensation, and nominating) to ensure they are staffed with appropriate expertise.

b. Committee performance (50%): Evaluate the effectiveness of each committee in fulfilling its responsibilities and objectives.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

6. Executive compensation

ChatGPT: When evaluating executive compensation, various factors contribute to determining whether the compensation packages align with long-term shareholder interests and company performance. The specific weights may vary depending on an organization or individual's priorities. However, I can provide an example of some critical considerations and their potential weights:

1. Pay-for-performance alignment (40%): Assess whether executive compensation is tied to company performance and encourages long-term value creation. Key factors to consider and their potential weights include:

a. Performance metrics (50%): Evaluate the use of short-term and long-term performance metrics that are relevant to the company's strategy and industry.

b. Performance targets (30%): Assess whether the performance targets are challenging yet achievable, encouraging executives to strive for continuous improvement.

c. Performance period (20%): Consider the time horizon of performance measurement and whether it encourages long-term decision-making.

2. Compensation structure (30%): Examine the balance between fixed and variable pay components, ensuring that the compensation structure incentivizes executives without encouraging excessive risk-taking. Key factors to consider and their potential weights include:

a. Base salary (30%): Evaluate the appropriateness of the base salary, considering the executive's role, experience, and industry benchmarks.

b. Short-term incentives (30%): Assess the design and weight of annual bonuses or other short-term incentives, ensuring they are tied to relevant performance metrics.

c. Long-term incentives (40%): Evaluate the structure and weight of long-term incentives, such as stock options, restricted stock units, or performance shares, to ensure they promote long-term value creation.

3. Compensation benchmarking (15%): Determine whether executive pay is appropriate compared to industry peers or other relevant

benchmarks. Key factors to consider and their potential weights include:

a. Peer group selection (60%): Assess the appropriateness of the peer group used for benchmarking, considering factors such as company size, industry, and geography.

b. Benchmarking methodology (40%): Evaluate the methodology used for benchmarking, ensuring that it provides a fair and accurate comparison of executive pay levels.

3. Compensation governance (10%): Assess the role of the board and the compensation committee in overseeing executive compensation. Key factors to consider and their potential weights include:

a. Compensation committee independence (50%): Ensure that the compensation committee is composed mainly or entirely of independent directors.

b. Compensation committee expertise (50%): Evaluate the qualifications and experience of the compensation committee members in the area of executive compensation.

4. Clawbacks and risk mitigation (5%): Consider the presence of provisions to mitigate risk and protect shareholder value in case of misconduct or financial restatements. Key factors to consider and their potential weights include:

a. Clawback provisions (50%): Assess whether the company has implemented clawback provisions that allow the recovery of incentive-based compensation in case of misconduct or restatements.

b. Risk management (50%): Evaluate the company's approach to managing risks related to executive compensation, such as the presence of stock ownership guidelines or holding periods.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

7. Shareholder Rights (15%)

ChatGPT: When evaluating shareholder rights, various factors contribute to determining whether a company's governance structure promotes accountability and enables shareholders to influence key decisions. The specific weights may vary depending on an

organization or individual's priorities. However, I can provide an example of some critical considerations and their potential weights:

1. Voting rights (40%): Assess whether voting rights are fairly distributed among shareholders and if they can effectively influence key decisions. Key factors to consider and their potential weights include:

a. One-share, one-vote principle (70%): Evaluate whether the company adheres to the one-share, one-vote principle, ensuring that each share of common stock has equal voting rights.

b. Supermajority vote requirements (30%): Assess the presence of supermajority vote requirements for significant decisions, which may hinder shareholder influence by requiring an unusually high level of support.

2. Anti-takeover provisions (25%): Examine whether the company has implemented measures that could entrench management and deter potential takeover bids. Key factors to consider and their potential weights include:

a. Poison pills (40%): Evaluate whether the company has adopted a shareholder rights plan or "poison pill" that could dilute the ownership of a potential acquirer.

b. Staggered board (40%): Assess whether the company has a staggered board structure, in which only a portion of directors stand for election each year, making it more challenging to replace a majority of the board.

c. Other anti-takeover measures (20%): Examine the presence of other anti-takeover provisions, such as golden parachutes, exclusive forum provisions, or limitations on shareholders' ability to call special meetings.

3. Shareholder engagement (20%): Determine whether the company facilitates open communication and engagement with shareholders. Key factors to consider and their potential weights include:

a. Shareholder proposals (50%): Assess the company's responsiveness to shareholder proposals and whether it addresses shareholder concerns.

b. Shareholder communication (50%): Evaluate the company's efforts to communicate with shareholders, such as investor presentations, conference calls, or dedicated investor relations resources.

4. Shareholder voting mechanisms (10%): Assess whether the company provides shareholders with accessible and convenient voting mechanisms. Key factors to consider and their potential weights include:

a. Proxy access (50%): Evaluate whether the company has adopted proxy access provisions, allowing shareholders to nominate directors on the company's proxy statement.³⁰⁸

b. Electronic voting (50%): Assess whether the company facilitates electronic proxy voting, making it more convenient for shareholders to cast their votes.

5. Board accountability (5%): Examine the company's commitment to board accountability and responsiveness to shareholder concerns. Key factors to consider and their potential weights include:

a. Director election thresholds (50%): Evaluate the company's director election standards, such as whether it requires a majority vote for uncontested director elections.

b. Board evaluation (50%): Assess the company's process for evaluating board performance, including the use of third-party assessments or other best practices.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

308. In November 2021, the SEC issued universal proxy rules that require reporting companies to include board nominees of dissident shareholders on the proxy cards distributed by the companies. *See supra* note 202. This is applicable if the dissident shareholders solicit at least 67% of voting shares and fulfill the procedural requirements specified in the rules and the companies' bylaws. *See supra* Section II.A.1. However, the bylaws of reporting companies may have a lower threshold for dissident shareholders to use the universal proxy card. This emphasizes the importance of training ChatGPT with current data.

8. ESG Factors (15%)

ChatGPT: Evaluating Environmental, Social, and Governance (ESG) factors is an essential aspect of assessing a company's sustainability and ethical practices. These factors can have a significant impact on a company's reputation, risk management, and long-term performance. Here is a breakdown of the ESG factors and potential weights for each category:

1. Environmental (40%): Assess the company's efforts to minimize its environmental footprint, manage environmental risks, and promote sustainable practices. Key factors to consider and their potential weights include:

a. Climate change and greenhouse gas emissions (30%): Evaluate the company's efforts to reduce greenhouse gas emissions and mitigate the risks associated with climate change.

b. Resource management (25%): Assess the company's initiatives to use resources efficiently, including energy, water, and raw materials.

c. Waste and pollution management (25%): Examine the company's efforts to minimize waste generation and prevent pollution, including hazardous waste and air emissions.

d. Biodiversity and land use (20%): Evaluate the company's impact on biodiversity and its approach to land use, including responsible sourcing of raw materials and habitat conservation.

2. Social (35%): Examine the company's commitment to social responsibility, including its treatment of employees, suppliers, customers, and communities. Key factors to consider and their potential weights include:

a. Labor and human rights (40%): Assess the company's labor practices, such as fair wages, working conditions, and adherence to human rights standards.

b. Employee health and safety (20%): Evaluate the company's efforts to ensure a safe and healthy work environment for its employees.

c. Diversity and inclusion (20%): Examine the company's commitment to promoting diversity and inclusion at all levels, including its workforce, management, and board.

d. Community engagement (20%): Assess the company's efforts to support the communities in which it operates, including charitable contributions, local hiring, and community development initiatives.

3. Governance (25%): Assess the company's governance practices and commitment to ethical business conduct. Key factors to consider and their potential weights include:

a. Board structure and composition (30%): Evaluate the company's board independence, diversity, and expertise, as well as the effectiveness of board committees.

b. Executive compensation (20%): Assess whether executive compensation is aligned with company performance and long-term shareholder interests.

c. Shareholder rights (20%): Examine the company's commitment to protecting shareholder rights and facilitating shareholder influence on key decisions.

d. Ethics and compliance (30%): Evaluate the company's efforts to promote ethical business conduct and maintain robust compliance programs, including anti-bribery, anti-corruption, and data privacy policies.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

9. Proxy Access: (10%)

ChatGPT: Proxy access is an important aspect of shareholder rights, allowing shareholders to nominate director candidates on the company's proxy statement. A detailed breakdown of proxy access considerations and their potential weights includes:

1. Ownership threshold (40%): Assess the minimum ownership percentage required for shareholders to nominate directors. Lower thresholds make it easier for shareholders to exercise their proxy access rights. Key factors to consider and their potential weights include: a. Percentage of outstanding shares (60%): Evaluate the required percentage of outstanding shares that shareholders must own to nominate directors. b. Holding period (40%): Assess the length of time shareholders must hold the required shares before being eligible to nominate directors.

2. Nomination limits (30%): Examine the limits on the number of director nominees that shareholders can submit. Fewer restrictions allow for greater shareholder influence. Key factors to consider and their potential weights include:

a. Maximum number of nominees (50%): Evaluate the maximum number of director nominees that shareholders can propose.

b. Percentage of board seats (50%): Assess the maximum percentage of board seats that can be filled by shareholder-nominated directors.

3. Disclosure requirements (20%): Assess the information that shareholders must provide when submitting director nominations. Transparent and reasonable disclosure requirements promote a fair nomination process. Key factors to consider and their potential weights include:

a. Background information (50%): Evaluate the required background information on nominees, such as professional experience, qualifications, and potential conflicts of interest.

b. Ownership information (50%): Assess the required disclosure of the nominating shareholder's ownership stake, including the duration of ownership and any material relationships with the company.

4. Nomination process (10%): Examine the procedural aspects of submitting director nominations, including the timing and format of submissions. A user-friendly nomination process encourages shareholder participation. Key factors to consider and their potential weights include:

a. Submission window (50%): Assess the timeframe during which shareholders can submit director nominations, ensuring that it provides sufficient opportunity for shareholder participation.

b. Submission format (50%): Evaluate the format and channels through which shareholders can submit nominations, such as electronic submissions or physical mail.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

10. Auditor Independence (5%)

ChatGPT: Auditor independence is critical to ensure the credibility and reliability of a company's financial statements. A detailed breakdown of auditor independence considerations and their potential weights includes:

1. Non-audit services (40%): Assess the extent to which the auditor provides non-audit services to the company, which may compromise their independence. Key factors to consider and their potential weights include:

a. Non-audit service fees (70%): Evaluate the proportion of non-audit service fees relative to total fees paid to the auditor, with a higher proportion potentially indicating a conflict of interest.

b. Types of non-audit services (30%): Assess the nature of non-audit services provided, with a focus on services that could create a conflict of interest, such as consulting, tax advisory, or internal audit services.

2. Audit firm rotation (30%): Examine the length of time the audit firm has been serving the company, as a long tenure may raise concerns about independence. Key factors to consider and their potential weights include:

a. Audit firm tenure (60%): Evaluate the number of years the audit firm has been engaged by the company, with longer tenures potentially indicating a lack of independence.

b. Mandatory rotation policies (40%): Assess whether the company has implemented policies requiring mandatory audit firm rotation after a certain period, which can help maintain auditor independence.

3. Audit partner rotation (20%): Assess the rotation of key audit partners to ensure that fresh perspectives are brought to the audit process. Key factors to consider and their potential weights include:

a. Lead audit partner tenure (60%): Evaluate the number of years the lead audit partner has been assigned to the company, with shorter tenures being preferable to maintain independence.

b. Mandatory partner rotation policies (40%): Assess whether the audit firm has implemented policies requiring mandatory rotation of key audit partners, such as the lead audit partner or the partner responsible for reviewing the audit.

4. Audit committee oversight (10%): Examine the role of the company's audit committee in overseeing the auditor's work and

ensuring their independence. Key factors to consider and their potential weights include:

- a. Audit committee independence (50%): Evaluate the independence of the audit committee members, ensuring that they are free from any conflicts of interest.
- b. Audit committee expertise (50%): Assess the financial expertise of the audit committee members, as this can contribute to effective oversight of the auditor's work.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

11. M&A Proposals (10%)

ChatGPT: When evaluating Mergers and Acquisitions (M&A) proposals, various factors contribute to determining whether the proposed transaction aligns with shareholder interests and has the potential to create long-term value. The specific weights may vary depending on an organization or individual's priorities. However, I can provide an example of some critical considerations and their potential weights:

1. Strategic rationale (35%): Assess the strategic reasons behind the proposed transaction and how it aligns with the company's long-term goals. Key factors to consider and their potential weights include:
 - a. Business synergies (50%): Evaluate the potential synergies from the proposed transaction, such as cost savings, revenue enhancements, or technology integration.
 - b. Market expansion (25%): Examine the potential for the proposed transaction to provide access to new markets, customers, or distribution channels.
 - c. Diversification (25%): Assess whether the proposed transaction would result in a more diversified business portfolio, reducing the company's exposure to risks associated with a single industry or product line.

2. Financial impact (30%): Examine the financial implications of the proposed transaction and its potential to create shareholder value. Key factors to consider and their potential weights include:

a. Purchase price (40%): Evaluate the reasonableness of the purchase price, considering factors such as valuation multiples, premiums paid, and industry benchmarks.

b. Financing structure (30%): Assess the proposed financing structure, including the use of cash, stock, or debt, and the potential impact on the company's capital structure and credit rating.

c. Earnings accretion/dilution (30%): Examine the potential impact of the proposed transaction on the company's earnings per share, considering whether it is expected to be accretive or dilutive.

3. Integration risks (20%): Assess the potential risks associated with integrating the target company into the acquirer's operations. Key factors to consider and their potential weights include:

4. a. Cultural fit (40%): Evaluate the compatibility of the target company's culture and values with those of the acquirer, which can impact the success of the integration process. b. Operational challenges (40%): Assess the complexity of integrating the target company's operations, including IT systems, supply chains, or manufacturing processes. c. Retention of key talent (20%): Examine the potential for the proposed transaction to result in the loss of key employees from the target company, which could hinder the integration process and the realization of synergies.

5. Governance and management (15%): Examine the potential impact of the proposed transaction on the company's governance structure and management team. Key factors to consider and their potential weights include:

a. Board composition (50%): Evaluate any changes to the board composition resulting from the proposed transaction, including the addition of new directors from the target company.

b. Management integration (50%): Assess the potential impact of the proposed transaction on the company's management team, including any changes to key executive roles or reporting structures.

Please note that these weights are only examples and can be adjusted based on the specific priorities and preferences of the individual or organization using the model. The relative importance of each factor may also vary depending on the company and industry context.

12. Shareholder Proposals (5%)

ChatGPT: Shareholder proposals are an important mechanism through which shareholders can influence a company's policies, practices, and governance. When evaluating shareholder proposals, several factors contribute to determining whether the proposal is in the best interest of the company and its shareholders. The specific weights may vary depending on an organization or individual's priorities. However, I can provide an example of some critical considerations and their potential weights:

1. Relevance to the company (30%): Assess whether the proposal is directly related to the company's operations, strategy, or governance. Key factors to consider and their potential weights include:

a. Alignment with business strategy (50%): Evaluate whether the proposal addresses an issue that is relevant to the company's strategy, operations, or industry.

b. Materiality (50%): Examine whether the proposal addresses a material issue that could have a significant impact on the company's financial performance, reputation, or risk profile.

2. Potential impact on shareholders (25%): Assess the potential impact of the proposal on shareholder value, both in the short and long term. Key factors to consider and their potential weights include:

a. Financial implications (50%): Evaluate the potential financial implications of the proposal, such as costs, benefits, or risks associated with its implementation.

b. Long-term value creation (50%): Assess whether the proposal is likely to contribute to the company's long-term value creation, considering factors such as growth prospects, risk management, and competitive positioning.

3. Alignment with best practices (20%): Examine whether the proposal is aligned with best practices and industry standards. Key factors to consider and their potential weights include:

a. Governance standards (50%): Evaluate whether the proposal adheres to widely accepted governance standards, such as those related to board composition, executive compensation, or shareholder rights.

b. ESG guidelines (50%): Assess whether the proposal aligns with environmental, social, and governance (ESG) guidelines or recommendations, such as those from industry associations or regulatory bodies.

4. Feasibility and implementation (15%): Assess the feasibility of implementing the proposal and the potential challenges associated with its execution. Key factors to consider and their potential weights include:

a. Complexity (50%): Evaluate the complexity of implementing the proposal, considering factors such as operational challenges, resource requirements, or regulatory hurdles.

b. Management's ability to execute (50%): Assess the company's management team's ability and track record in executing similar initiatives or managing comparable challenges.

5. Support from other shareholders (10%): Examine the level of support for the proposal from other shareholders, which can provide an indication of its merit and the likelihood of its approval. Key factors to consider and their potential weights include:

a. Shareholder voting history (50%): Assess the voting history on similar proposals at the company or within its industry, as a proxy for the level of support among other shareholders.

b. Proxy advisor recommendations (50%): Evaluate the recommendations of proxy advisory firms on the proposal, as these firms often influence institutional investors' voting decisions.