Who Pays When AI Breaks? Closing the Accountability Gap in Algorithmic Retirement Investing

Introduction

In January 2025, Two Sigma's $255 million SEC settlement for trading failures exposed a rising risk to retirement savings. As AI governs investments, the accountability gap between institutional profits and consumer protection widens.[1] With $43 trillion in U.S. retirement 401(k) and IRA assets and up to 15% of market activity from algorithmic trading, the question is who pays if AI disrupts portfolios.[2] Individual retirees can face large losses from a single algorithmic failure, exceeding typical annual losses from human errors or market volatility.[3] The UK's Financial Conduct Authority mandates algorithmic audits.[4] The EU's MiFID II mandates the calibration of circuit breakers in algorithmic trading.[5] In contrast, U.S. law lacks comprehensive AI-specific protections for retail investors, leaving individual retirement investors at greater risk from algorithmic trading failures. Policymakers and financial institutions should adopt a four-pillar reform strategy to close accountability gaps. Pillar one amends the Investment Company Act of 1940 to define "algorithmic investment advisor." Pillar two mandates robo-advisors managing retirement accounts to log decisions for 24 months and produce quarterly impact statements. Pillar three creates a Retirement Algorithm Insurance Fund (RAIF) to cover failures. Pillar four updates SEC Rule 206(4)-7 for oversight with automated alerts and international coordination to prevent regulatory arbitrage. Without these reforms, algorithmic trading poses significant risks to retirement security and accountability.

New Normal of Algorithmic Retirement Investing

The rise of AI robo-advisors like Betterment and Wealthfront in retirement investing underscores the urgent need for legal protections for retail investors.[6] While human advisors cause 2-3% yearly losses, algorithmic failures like the 2010 Flash Crash can trigger 10-15% losses in minutes, wiping out $1 trillion and costing retirement accounts $25,000-$75,000 each, while institutions recovered quickly. [7] [8]

Most robo-advisors do not explain their decisions, which prevents users from understanding or challenging the AI errors. The NIST AI Risk Management Framework emphasizes explainable AI in high-stakes finance, but most robo-advisors lack transparency standards. These structural shifts in retirement investments highlight why protections for human advisors are insufficient in an AI-driven environment.

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[1] SEC, SEC Charges Two Sigma for Failing to Address Known Vulnerabilities in its Investment Models, 1-16-2025
[2] ICI, Retirement Assets Total $43.4 Trillion in First Quarter 2025, 6-18-2025
[3] Ashley Hallene and Jeffrey M Allen, AI-Driven Investing: What Lawyers Should Know About Robo-Advisors, 4-30-2025
[4] Gov.UK, Auditing algorithms: the existing landscape, role of regulators and future outlook, 9-23-2022
[5] ESMA, ESMA issues final guidelines regarding circuit breakers under MiFID II, 6-4-2017
[6] James Royal, Ph.D. and Dayana Yochim, Betterment vs. Wealthfront: Which is best for you? 6-11-2025
[7] Rhodri Preece, CFA, ETHICS AND ARTIFICIAL INTELLIGENCE IN INVESTMENT MANAGEMENT,
[8] Wikipedia, "2010 Flash Crash"

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Regulatory and Accountability Challenges

The fiduciary duty in the Investment Advisers Act of 1940, Section 206, requires advisors to act in clients' best interests. The *SEC v. Capital Gains Research Bureau* (1963) established that fiduciary duty involves full disclosure of conflicts, but modern AI systems are "black boxes," making disclosures impossible.[9]

The SEC's rules on predictive data analytics require firms to identify and eliminate conflicts of interest in AI-driven recommendations.[10] The Commodities Futures Trading Commission's (CFTC's) guidance requires stricter oversight of retail accounts, while the Department of Labor's (DOL's) proposed AI regulations focus on Employee Retirement Income Security Act (ERISA) fiduciary duties for algorithmic investment management.[11]

Regulation Best Interest (Reg BI), introduced in 2019, when used with robo-advisors, has a "reasonable basis" requirement that becomes unenforceable because AI systems make countless micro-decisions based on algorithms that their creators can't fully explain.[12]

The *SEC v. Panuwat* (2024) case, focused on insider trading, set key rules for algorithmic accountability by individuals liable for automated trading decisions they control, but didn't address cases where investors lack control over algorithms managing retirement savings.[13]

The SEC is cracking down on 'AI washing,' with cases like SEC v. Delphia Inc. (2024) and SEC v. Global Predictions Inc. (2024), where firms paid $225,000 and $175,000 for deceptive practices in algorithmic services.[14]

After Knight Capital's $440 million loss in 2012 due to a malfunctioning algorithm, no individual investors were compensated despite market disruptions affecting retirement accounts.[15]

Tibble v. Edison International (2015) emphasized ERISA fiduciaries' duty to monitor investments, but courts remain inconsistent on applying this to algorithmic management, revealing a regulatory blind spot.[16]

Court precedents offer limited guidance on holding AI accountable in retail investing. Unlike institutional disputes, retirees can't seek redress when AI harms their finances, creating a moral hazard where firms prioritize profit-driven algorithms over clients' retirement security.

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[9] SEC v. Capital Gains Research Bureau, Inc., 375 U.S. 180 (1963)
[10] SEC, Conflicts of Interest and Predictive Data Analytics
[11] CFTC, Global Exchange and Trading Conference, Melissa Ostrower & Joseph J. Lazzarotti, Harnessing AI Under ERISA: A Compliance and Oversight Guide for Retirement and Health Plan Fiduciaries, 7-29-2025
[12] FINRA, SEC Regulation Best Interest (Reg BI)
[13] Securities and Exchange Commission v. Matthew Panuwat, 4:21-cv-06322
[14] Latham & Watkins, SEC AI-Washing Enforcement Actions, 3-25-2024
[15] Henrico Dolfing, The $440 Million Software Error at Knight Capital, 6-5-2019
[16] Tibble v. Edison International

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Protecting Retirement Security

We need a four-pillar reform strategy based on successful models:

Pillar One: Enhanced Fiduciary Standards.

Congress should amend the Investment Company Act of 1940 to define 'algorithmic investment advisor' and impose enhanced fiduciary duties, mirroring Switzerland's fintech rules for audit trails and transparency.

Legal and regulatory reforms for retirement investors should expand ERISA's fiduciary duties for AI-driven management. The DOL needs clear rules on algorithmic accountability and human oversight for AI managing over $10 million to uphold fiduciary duties without imposing high costs on smaller robo-advisors.

Pillar Two: Transparency and Explainability.

Federal regulators should require decision logs and impact statements for algorithmic advisors under Section 206 of the Investment Advisers Act, adding just 0.05% to fees for better oversight. Singapore's MAS AI governance employs a risk-based model, whereas the UK's FCA mandates "algorithmic audits" and stress tests for AI in retail investment advice, which could serve as templates for U.S. reforms.[17]

The SEC should use Section 206 of the Investment Advisers Act to establish rules for "explainable AI" in retail investment management, potentially adopting standards like the EU's GDPR Article 22, which grants the right to explanation for automated decisions. Robo-advisors should give clear explanations when rebalancing portfolios, performing tax-loss harvesting, or adjusting strategies.[18]

Pillar Three: Insurance and Compensation.

Congress should establish a Retirement Algorithm Insurance Fund (RAIF), similar to the Pension Benefit Guaranty Corporation, to provide coverage of up to $100,000 per account for AI-triggered losses, with an annual cost of $150-$200 per client. [19]

Unlike Securities Investment Protection Corporation (SIPC), which protects against broker failures, RAIF targets technological failures by using clear criteria to distinguish algorithmic malfunctions from market volatility based on deviation thresholds and causation.

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[17] Lucas Nicolet-Serra, Managing Artificial Intelligence: The Monetary Authority of Singapore's Recommendations on AI Model Risk Management, 1-22-2025
[18] Intersoft Consulting, GDPR, Article 22, Art. 22 GDPR Automated individual decision-making, including profiling
[19] Pension Benefit Guarantee Corporation (PBGC)

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Pillar Four: Real-Time Monitoring and International Coordination.

To ensure legal accountability for algorithmic decisions, the SEC should revise Rule 206(4)-7 to require real-time oversight and cross-border regulatory coordination for AI-driven retirement accounts. This might include automated alerts for algorithm deviations and human intervention for trades over risk limits in retirement accounts. The CFTC's Regulation Automated Trading (Reg AT) provides a model with detailed risk controls and real-time oversight for algorithmic trading.[20]

The EU's MiFID II mandates circuit breakers and disclosure rules that could serve as models for U.S. reforms. International best practices provide governance frameworks.[21] The UK requires firms using AI for advice to conduct regular "algorithmic audits" and stress tests. Germany's BaFin mandates "circuit breakers" to halt trading beyond risk limits. The U.S. could adopt similar rules through the SEC, CFTC, and Federal Reserve, including stress testing for AI managing over $1 billion in retirement assets.[22]

Closing the Accountability Gap

Without targeted legal reforms, algorithmic investing risks retirement security, as retirees lack the diversification, recovery time, and resources to absorb AI-driven losses. Addressing accountability gaps in investment law, transparency, explainability, insurance, compensation, and monitoring is crucial to ensure AI benefits Main Street, not just Wall Street. The future of Americans' financial security depends on whether AI democratizes retirement benefits or poses risks that threaten a generation's retirement prospects.

By Kiran Malige ©

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[22] Gov.UK, Auditing algorithms: the existing landscape, role of regulators and future outlook, 9-23-2022 & BaFin Federal Financial Supervisory Authority