The Future of the Trade: An Analysis of AI in U.S. Securities Markets

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It Started With a Question: Where Does the Money Go?

The 2020 pandemic sparked my curiosity in financial markets. Beyond the headlines, I became fascinated by the underlying mechanics:

- How do millions of trades execute in fractions of a second?
- What systems regulate the flow of trillions of dollars daily?
- How is technology, specifically AI, changing the rules of the game?

Mapping the Territory: The U.S. Securities Trading Industry

Industry Code: NAICS 523210: Securities and Commodity Exchanges.

Market Scale: An average of 20 billion shares are traded daily in the U.S. (approx. 12B on NYSE, 8B on Nasdaq).

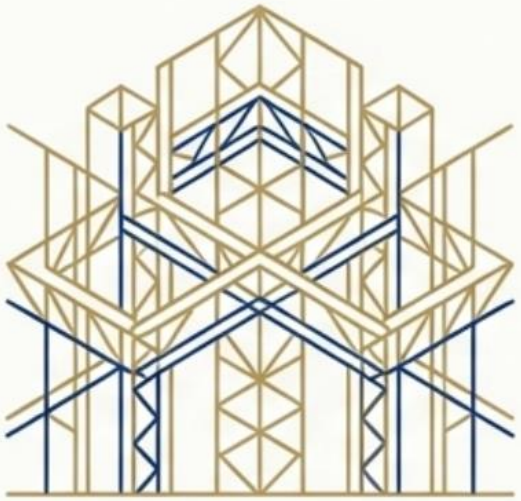
Economic Weight: Billions of U.S. dollars in value are exchanged every trading session, forming the backbone of capital allocation.

Regulatory Framework: A complex ecosystem governed by entities like the SEC and FINRA, ensuring market integrity.

The Players: A Mix of Institutional Scale and Retail Power

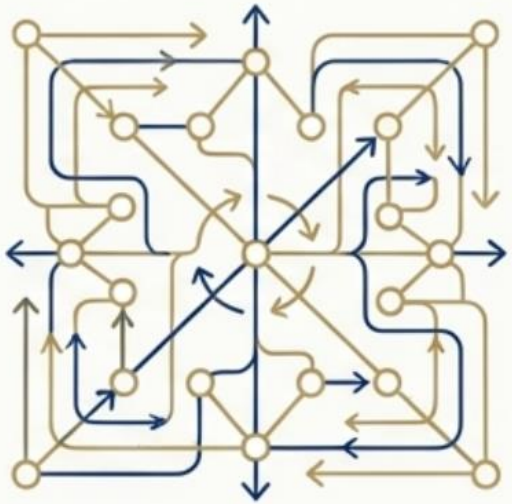
The market is a dynamic interplay between different types of participants, each with unique objectives and strategies.

Institutional Investors



Mutual Funds, Hedge Funds, Pension Funds, Insurance Companies, Private Equity

Market Makers & Wholesalers



The intermediaries providing liquidity

Individual Investors

A rapidly growing segment, often accessing markets through retail brokers

The Gatekeepers: From Wall Street Titans to FinTech Disruptors

Top 5 Incumbents

Charles Schwab: A leader, especially after acquiring TD Ameritrade.

Vanguard: Known for low-cost funds and wealth management.

Fidelity Investments: A major player with a strong retail presence.

J.P. Morgan: Significant brokerage and wealth management arm.

Morgan Stanley: Strong presence, also owns E*TRADE.

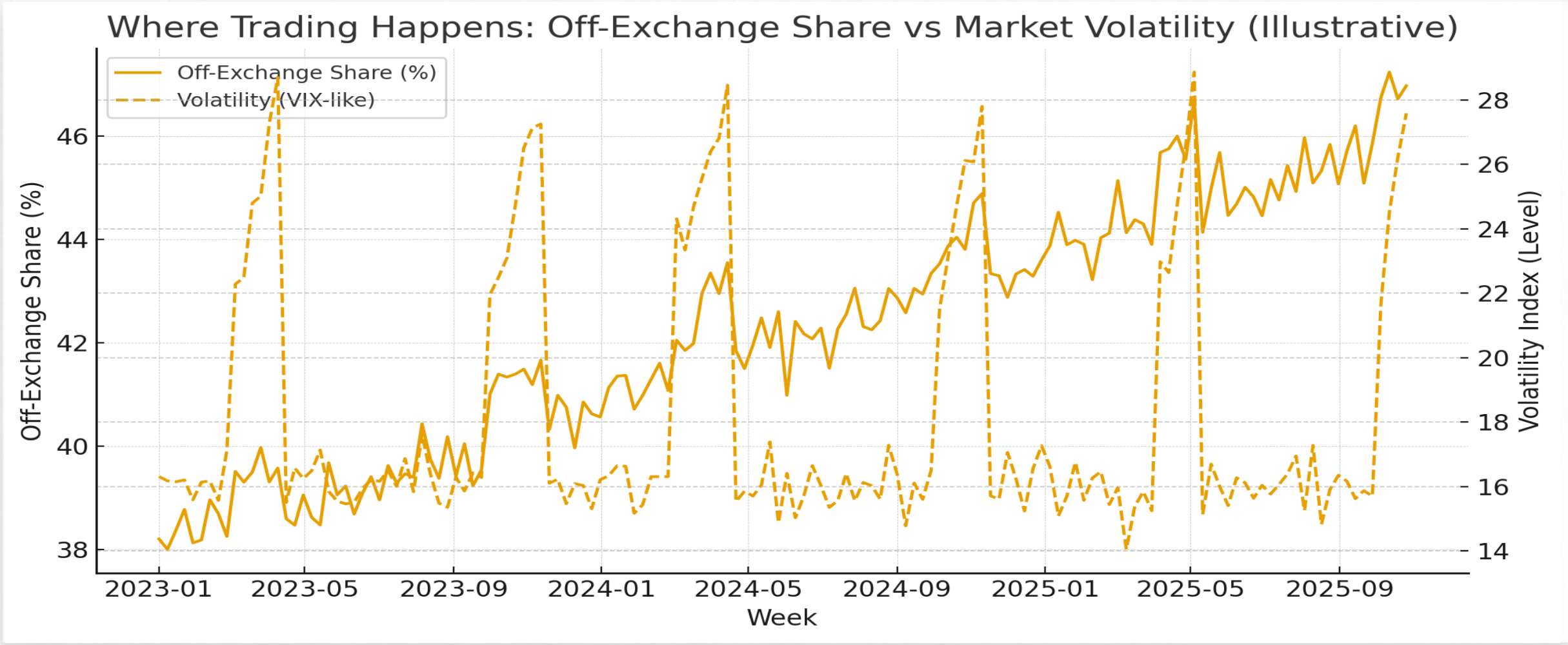
New Guard

Robinhood & Webull: Capturing a significant share of Gen Z investors with accessible, mobile-first platforms.

When Markets Get Stressed, Where Does Trading Actually Happen?

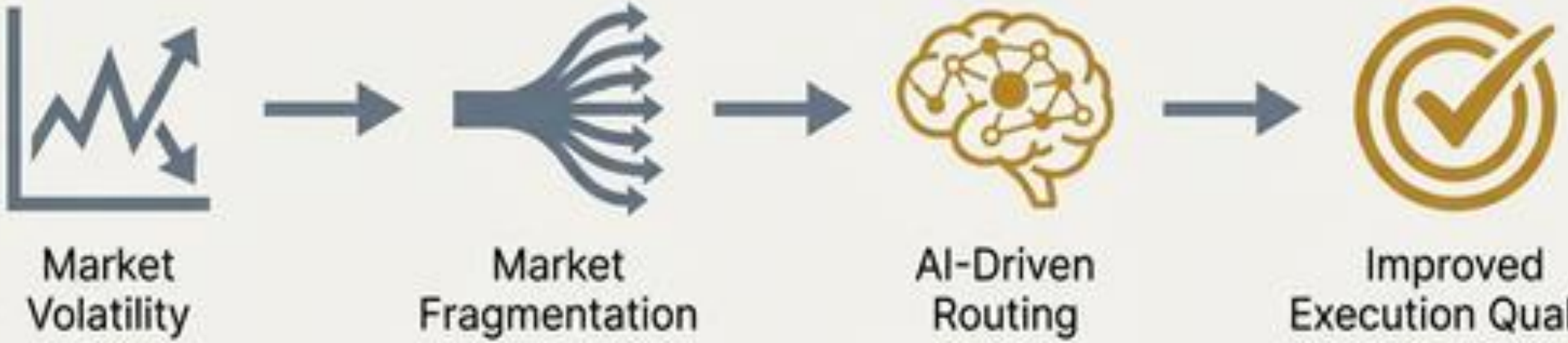
A common assumption is that most trading happens on public exchanges like the NYSE. But during periods of high volatility, the landscape shifts dramatically. This fragmentation creates both risks and opportunities, and it is where AI's value becomes most apparent.

The Insight: Volatility Pushes Trading into the Shadows



The share of trading occurring off-exchange (via ATS and internalization) trends upward overall and surges during periods of market stress. This indicates that when markets are turbulent, liquidity fragments away from “lit” public venues.

Navigating Fragmentation: AI's Critical Role in Modern Execution



- In fragmented markets, humans or simple rule-based systems cannot track spreads, depth, and toxicity across dozens of venues in real-time.
- Machine learning algorithms already analyze live order book data, cross-asset signals, and news to optimize venue, timing, and order size.
- The GenAI layer enhances this by helping write and test routing logic, summarize venue performance, and translate complex analytics for risk and compliance teams.
- The Result: AI-driven systems increase the probability of lower slippage, reduced information leakage, and better overall execution quality for investors.

The Four-Fold Impact of AI on the Trading Industry

1. For Workers

- Shifts roles from manual execution to model design, monitoring, and validation.
- Creates demand for ML engineers and data stewards.

2. For Firms

- Favors firms with scale in data and analytics.
- AI-enabled routing reduces costs and can improve margins.

3. Risks & Harms

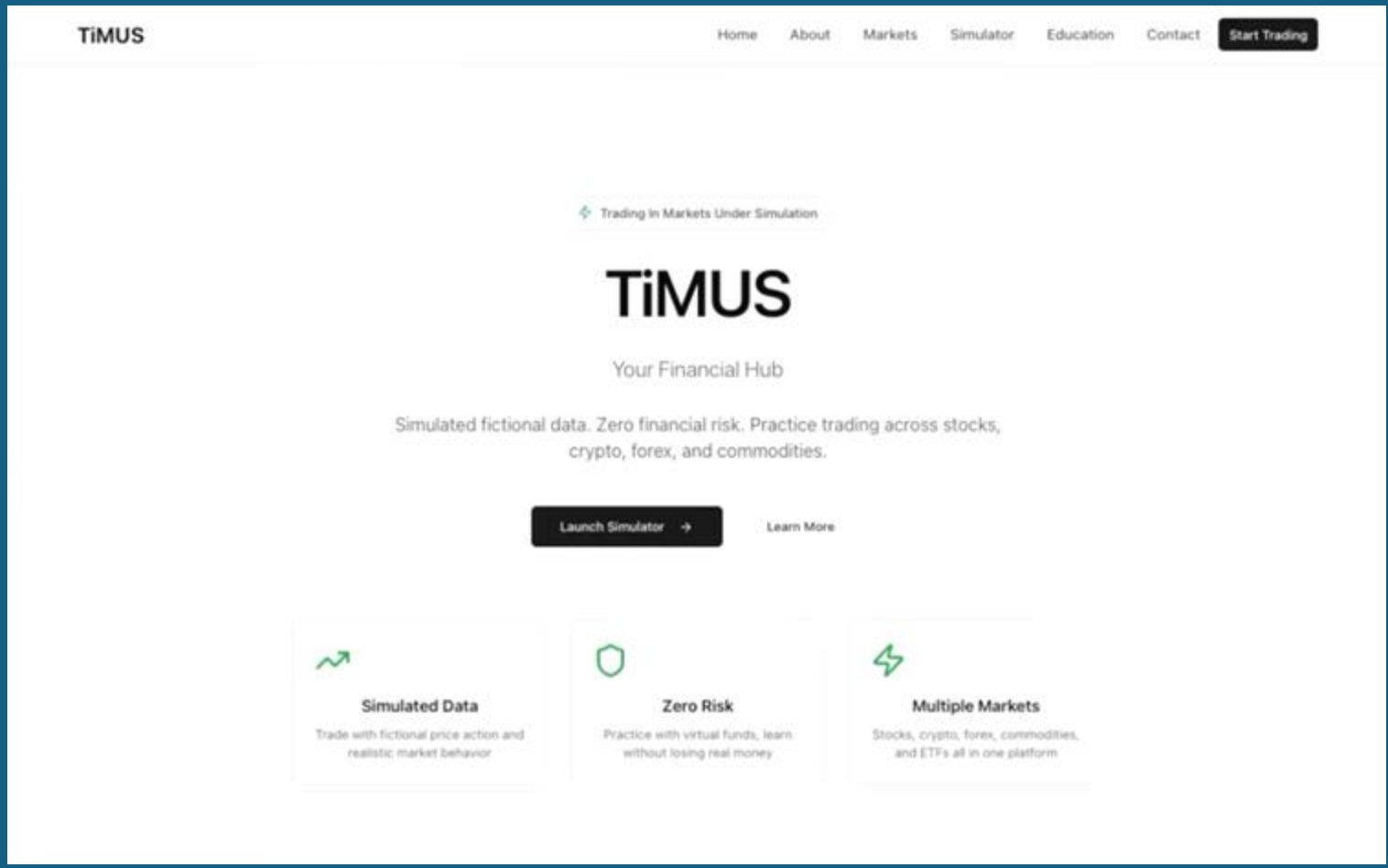
- Model opacity can lead to herding.
- Data bias can degrade execution quality for certain segments.

4. Opportunities

- Smarter routing improves investor outcomes.
- New revenue from monetizing derived analytics and data feeds.

Building a Solution: The TIMUS Trading Simulator

- **What:** Trading in Markets Under Simulation, a web-based environment to practice trading decisions in a risk-free setting.
- **Why:** Inspired by a paper-based game during the pandemic, it's a portfolio project to demonstrate my interest and ability to build a concrete tool.
- **Status:** Live prototype at
  Live prototype at timus.lovable.app.



My 6–12 Month Upskilling Blueprint

Coursework

- Prioritize upper-level courses in Investments, Risk Management, and Econometrics.
- Focus on classes with real datasets to create portfolio-ready projects.

Certifications

- Complete Bloomberg Market Concepts to formalize foundational knowledge.
- Begin preparation for the FINRA SIE as an entry-ticket to the industry.

Projects

- Evolve TiMUS: Implement basic risk analytics (e.g., max drawdown) and simple AI-driven feedback on trades.
- Complete one deep-dive company analysis with a full DCF model and professional write-up.

AI Proficiency

- Use AI tools deliberately for coding, data cleaning, and drafting—while rigorously checking all outputs.
- Develop a documented "AI workflow" to demonstrate responsible and effective use of these tools to employers.

From Industry Analysis to a Personal Blueprint

My research showed that AI isn't simply replacing people on trading desks. It is changing what humans do: monitor strategies, question models, and design guardrails.

Target Career Clusters

- Analyst, Securities Trading / Execution Desk
- Risk Management Analyst
- Credit or Capital Markets Analyst

Why These Roles

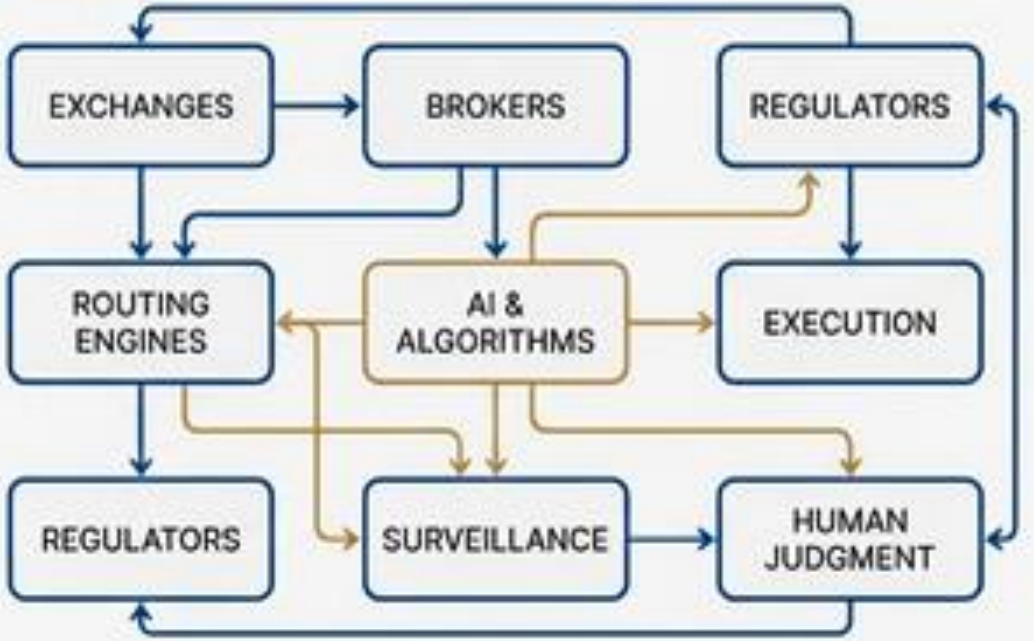
They match my skills in quantitative reasoning and communication, and they they sit at the intersection of finance, data, and AI-assisted decision-making.

What I Learned: From Black Box to a System of Choices

Before

I saw the market as a mysterious, abstract entity. AI felt like a buzzword for tech companies.

After



I now see it as a complex system of incentives, regulations, and technologies. I was surprised by how deeply AI is already embedded in routing, execution, and surveillance, and how much human judgment is still required to manage it.

How This Project Changed My Perspective

From Abstract to Grounded

The industry transformed from a mysterious “black box” into a complex but understandable system of systems I could see myself helping to build and supervise.

From Theory to Application (TiMUS)

Designing even a simple simulator revealed the immense complexity hidden behind a single click on a brokerage app, making market mechanics tangible.

From Self-Doubt to Self-Awareness

This project validated my comfort with quantitative reasoning while also clarifying the specific gaps—financial modeling, programming—I need to address to be competitive.