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## AI in Economics: Portfolio Management Industry Report

### Abstract

This report provides an in-depth analysis of the U.S. Portfolio Management industry (NAICS 523920), examining its structure, competitive environment, economic significance, and the transformative role of artificial intelligence. Drawing on industry sources including McKinsey, Morningstar, ICI, BLS, and FRED, the report evaluates long-run AUM expansion, persistent fee compression, labor market trends, and the increasing reliance on AI-enabled research, automation, and personalization. The study presents polished versions of Parts through of the term project, including a comprehensive industry overview, stage classification, data sources, an integrated visualization analysis, and an in-depth discussion of AI's economic impact on production processes, cost structures, market power, and systemic risk. The report then concludes with a Personal Opportunity and Skills Plan and a reflection on how AI influenced my analytical process and professional growth.

### Introduction

The U.S. portfolio management industry plays a critical role in global financial intermediation. The sector manages trillions of dollars in household and institutional wealth, provides essential risk management tools, and supports long-term capital formation. As of 2025, global assets under management (AUM) reached a historic high of USD 147 trillion—more than half of which is managed by U.S. firms. Portfolio management encompasses active and passive investment strategies delivered through mutual funds, exchange-traded funds (ETFs), separately managed accounts, hedge funds, and institutional mandates.

The industry shapes macro-financial outcomes through capital allocation, corporate governance influence, liquidity provision, and the intermediation of global savings into productive investment. As such, understanding its structure and evolution is essential for analyzing broader economic dynamics. The increasing adoption of artificial intelligence (AI) introduces both opportunities and challenges, redefining the economics of investment management by increasing scalability, altering labor demand, and reshaping competitive advantages.

This report evaluates the structure, evolution, and technological transformation of the U.S. portfolio management industry, with particular attention to how artificial intelligence is reshaping competitive dynamics and investment processes.

The sections that follow examine the industry's structure, maturity, data foundations, and technological disruptions before turning to my personal development within this evolving landscape.

## Industry Overview

This section outlines the size, competitive landscape, and economic significance of the portfolio management industry.

The portfolio management industry (NAICS 523920) comprises firms engaged in managing client assets across a wide range of investment strategies. The industry generates over USD 300 billion annually in management and advisory fees. Major market participants include global firms such as BlackRock, Vanguard, Fidelity, State Street, J.P. Morgan Asset Management, and Capital Group. These firms have established significant advantages derived from economies of scale, diversified product offerings, proprietary data, and advanced quantitative research infrastructure.

Industry concentration is high. The top ten global asset managers collectively oversee nearly 40 percent of all professionally managed assets. This concentration reflects the scale-intensive nature of asset management, where large firms benefit from the ability to spread operational costs, technology investments, and regulatory burdens across massive AUM bases. Smaller managers face competitive disadvantages, particularly as technology and AI become essential to maintaining performance, compliance, and distribution reach.

Growth drivers include demographic trends such as population aging and increased reliance on retirement savings vehicles, expansion in global wealth, financial innovation, and rising adoption of low-cost passive investment products. Exchange-traded funds (ETFs), in particular, have reshaped the industry by providing low-fee, tax-efficient, and highly liquid investment options. ETF AUM grew from approximately USD 2 trillion in 2015 to over USD 11 trillion by 2025. This shift toward low-cost investment solutions places additional pressure on traditional active managers to enhance efficiency and adopt advanced tools such as AI to sustain competitiveness.

## Industry Stage: Mature but Evolving

To assess the industry's long-term trajectory, this section evaluates whether portfolio management operates as a mature, growing, or declining sector.

The portfolio management industry is best classified as mature. It is characterized by high concentration, stable long-run demand, widespread product availability, and well-established regulatory systems. Mature industries typically exhibit slow or moderate growth and intense price competition, both of which are evident in portfolio management. Employment continues to grow at a steady but modest rate of 2–3 percent annually, reflecting ongoing demand for financial services alongside increasing automation.

One of the defining characteristics of maturity in this industry is fee compression. According to Morningstar, average mutual fund and ETF fees have declined by over 40 percent in the past decade. This decline is driven by competition from passive strategies, increased transparency, regulatory scrutiny, and investor demand for cost-effective products. As fees fall, firms must scale AUM and invest in operational efficiencies—including AI, automation, and outsourcing—to sustain profitability.

Nevertheless, the industry retains growth-oriented features due to product innovation, expansion into alternative investments, technological transformation, and rising global wealth. Institutional investors continue to diversify into private credit, infrastructure, real assets, and ESG investments. These trends create new opportunities for managers with strong research capabilities, technological sophistication, and global reach.

## Data Sources

A data-driven analysis requires strong empirical foundations; this section summarizes the datasets used to study the industry's structure and evolution. This report draws on multiple datasets to evaluate the portfolio management industry's evolution, cost dynamics, and technological transformation:

- McKinsey Global Asset Management Report (2025): Provides historical and projected estimates of global AUM.
- Morningstar Global Fund Fee Study: Documents long-term fee compression in mutual funds and ETFs.
- Investment Company Institute (ICI) Factbook: Offers data on fund flows, product types, investor trends, and AUM composition.
- Bureau of Labor Statistics (BLS): Includes employment levels, wages, and the Producer Price Index (PPI) for portfolio management services.
- Federal Reserve Economic Data (FRED): Provides financial and macroeconomic indicators affecting investor behavior.
- SEC Form ADV Filings: Contain information on advisory firms' assets, clientele, compensation structures, and investment strategies.

Together, these sources provide a coherent empirical picture of structural forces affecting portfolio management and enable a detailed examination of how AI interacts with industry economics.

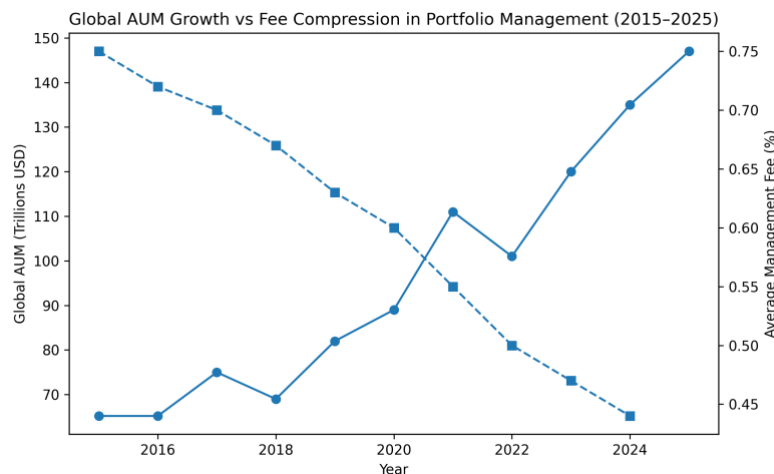
## Data Visualization

To illustrate how industry conditions have shifted over time, this section visualizes long-run trends in assets under management and fee compression. To analyze long-run structural dynamics, I constructed a visualization using global AUM data from McKinsey and average management fee data from Morningstar and ICI.

The visualization (Figure 1) illustrates two critical industry trends: rapid AUM growth and persistent fee compression. As shown in Figure 1, the widening gap between AUM growth and declining fees demonstrates how competitive pressures are reshaping profitability and scale.

Between 2015 and 2025, global AUM increased from approximately USD 65 trillion to USD 147 trillion, while average management fees declined from about 0.75 percent to roughly 0.40–0.45 percent (McKinsey, 2025; Morningstar, 2024). This divergence reflects a fundamental shift toward a high-scale, low-margin business model.

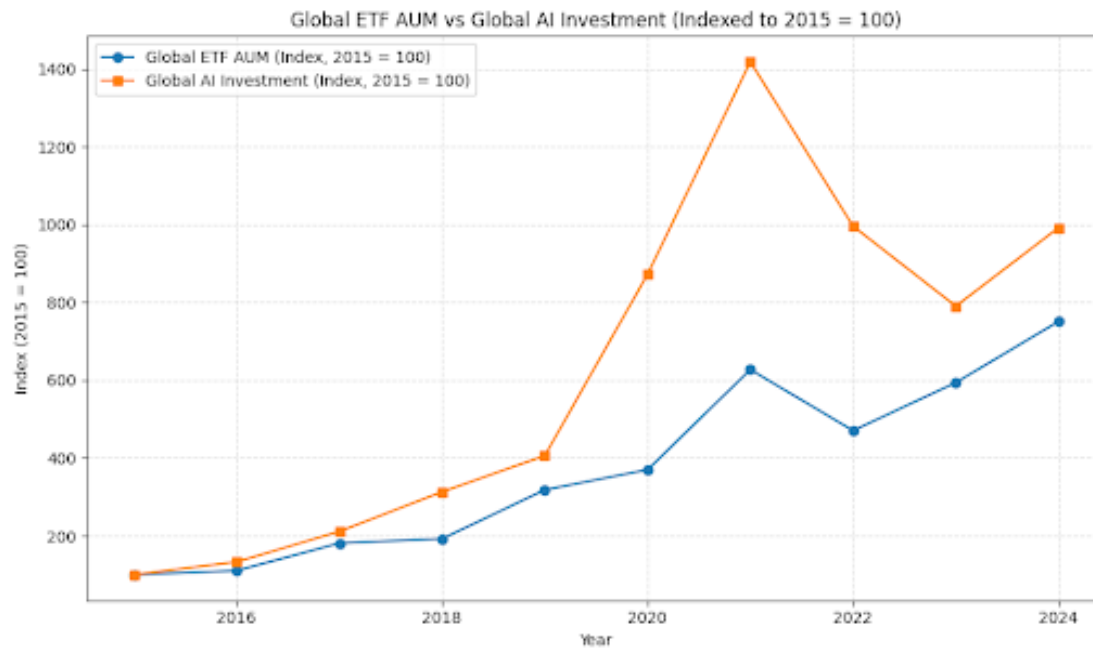
The economics of this shift are significant. As fees decline, firms cannot rely on price increases to support revenue growth. Instead, profitability depends on operational efficiency, technological sophistication, and the ability to scale AUM. AI plays a central role in enhancing productivity by automating research tasks, optimizing trading strategies, reducing operational errors, and enabling mass personalization in advisory services. The visualization underscores why firms increasingly rely on AI to sustain margins in a competitive environment.



**Figure 1. Global AUM Growth vs. Fee Compression (2015–2025).**

The widening gap between rising global AUM and declining fees highlights structural pressures on profitability. Firms must rely on technology, automation, and scale-driven models to remain competitive.

## Impact of AI on the Industry



**Figure 1. Global ETF AUM vs AI Investments (2015–2025).**

This figure compares the indexed growth of global ETF assets under management with global AI investment since 2015. While ETF AUM reflects the industry’s shift toward scalable, low-cost investment vehicles, the rapid acceleration in AI investment highlights the parallel rise in technology spending required to support automation, data-driven decision-making, and competitive efficiency. The divergence after 2019 underscores how capital markets increasingly reward scale and technological capability simultaneously.

Artificial intelligence is transforming every dimension of the portfolio management industry—including research, risk management, operations, client service, and product design. AI-driven tools allow firms to automate labor-intensive processes, enhance the quality and speed of investment decisions, and deliver customized advice at unprecedented scale.

AI improves investment research by identifying patterns across massive datasets, forecasting asset price movements, and detecting risk factors in real time. Natural language processing (NLP) systems analyze earnings call transcripts, regulatory filings, analyst reports, and market news to extract sentiment and detect emerging themes. These capabilities expand analytical reach and reduce reliance on human analysts for routine tasks.

AI also enhances portfolio construction and optimization. Automated asset allocation models adjust exposures based on risk preferences, market conditions, and tax considerations. Robo-advisors deliver low-cost, algorithmically optimized portfolios to retail investors, increasing financial inclusion while reducing the marginal cost of advisory services.

Operationally, AI streamlines trade execution, reconciliations, compliance monitoring, and client reporting. Machine learning systems flag suspicious transactions, detect anomalies, and monitor regulatory risks. These efficiencies reduce operational costs and improve accuracy, allowing firms to redirect resources toward higher-value activities.

However, AI introduces new risks and challenges. Black-box machine learning models may lack interpretability, raising questions about governance and fiduciary responsibility. Algorithmic trading strategies may exhibit correlated behavior, potentially amplifying systemic risk. Regulators have expressed concerns about fairness, data privacy, and automated conflicts of interest. Firms must balance AI adoption with robust oversight, model validation, and ethical considerations.

The labor market is undergoing significant change. Routine analytical roles are increasingly automated, shifting demand toward data scientists, quantitative researchers, machine learning engineers, and AI risk specialists. Human portfolio managers focus more on interpretation, strategic judgment, and client communication, while supervising and refining AI-driven models.

In summary, AI is both a cost-saving technology and a strategic enabler of product innovation. Firms that invest in data infrastructure, model risk governance, and human–AI complementarity will be best positioned to compete in a global industry defined by scale, efficiency, and ongoing technological evolution.

Having analyzed how AI is transforming portfolio management at an industry level, I now connect these insights to my own professional development. The following section presents my Personal Opportunity and Skills Plan.

## Personal Opportunity & Skills Plan

The portfolio management industry sits exactly at the intersection of the things that motivate me most: markets, data, and building tools that make complex decisions easier for other people. Based on my research into NAICS 523920 and my own experiences so far, I see myself fitting into FinTech-facing analyst roles within this industry – specifically investment analyst, quantitative/portfolio analyst, and AI-enabled product/FinTech analyst roles inside asset managers, banks, or technology-driven startups.

In the near term, the roles that make the most sense for me are junior investment/portfolio analyst positions in firms that actively experiment with AI and data-driven processes, and FinTech analyst roles in companies building tools for advisors or retail investors. These roles sit right where the industry is evolving: they require understanding how portfolios are actually constructed and evaluated, while also being able to prototype, test, and explain tools that use data, automation, and AI to make that work more efficient.

## High Demand Skills

From both my report and job-market evidence, several skills appear consistently:

- Understanding how to use AI tools effectively to make research, modeling, and communication faster and more accurate.
- Financial modeling and valuation, ensuring that assumptions are sound and analysis is economically meaningful.
- Portfolio construction and risk management, including diversification, factor exposures, and benchmark-relative thinking.
- Coding and data skills, particularly Python and SQL, for extracting, cleaning, and analyzing financial data.
- Communication skills for presenting insights to technical and non-technical audiences.
- Professional habits like documentation, reproducibility, and clear analytical reasoning.

## Current Strengths

My resume and past experiences provide a strong foundation for these roles. I bring:

- A dual-degree foundation in Finance and Managerial Economics, with coursework in Financial Modeling, Econometrics, Industrial Organization, Bank Management, and Decision Analysis.
- Hands-on financial modeling experience through MSBDC, Re-Volt Charging, JS Global Capital, JS Investments, and JS Bank, where I worked with real portfolios, infrastructure investments, and client-facing strategy.



- Strong exposure to portfolio thinking through independent trading on the Pakistan Stock Exchange with a 150% ROI.
- Leadership and communication through my role as Vice President of the Formula One Club UMass and through client-facing project work.
- Experience using AI for professional tasks, especially at MSBDC where I helped integrate AI into financial modeling and business planning workflows.
- A growing skill in building practical tools, demonstrated by the portfolio management tool I am currently developing for this class.

### Gaps to Close

My primary development areas involve technical depth:

- Building stronger proficiency in Python for finance, especially structuring larger projects and working with financial APIs.
- Developing SQL skills to store, query, and manage data effectively.
- Improving my understanding of machine learning for finance, including model evaluation and limitations.
- Learning how to deploy tools so others can use them independently.
- Increasing the number of portfolio-ready projects I can showcase to employers.

### 6–12 Month Upskilling Plan

My concrete plan includes:

1. Finish and refine my AI-powered portfolio manager tool and host it on GitHub and my website.
2. Strengthen Python and SQL through structured coursework and applied projects.
3. Take one advanced analytics or ML course and tie the final project to financial markets.
4. Target a Summer 2025 internship in quant, portfolio analysis, or FinTech analytics, supported by my improved tool and technical skills.
5. Begin building AI-enabled tools for real clients, leveraging my MSBDC experience.
6. Strengthen my professional online presence through LinkedIn, GitHub, and my own site.

With a clearer understanding of my professional trajectory, I now reflect on how this project and my iterative use of AI reshaped my mindset, expanded my capabilities, and influenced my long-term career outlook.

## Reflection

At the beginning of this project, I thought of AI mostly as a powerful shortcut something that could summarize articles, generate a bit of code, or help clean up writing. By the end, my view had shifted to something much deeper: AI is not just a tool that does tasks faster; it is a collaborator that can change what feels possible for someone like me, even without a traditional computer science background.

One of the biggest surprises in this course was discovering how strong AI has become at coding and, more importantly, at explaining code. I knew ChatGPT could write snippets, but I did not fully appreciate how it could walk me through logic, suggest better structures for my functions, or help me debug when something silently failed. In building my portfolio management tool, there were many moments where I would start with a vague idea – “I want this function to analyze a portfolio given ticker weights and return some key metrics” – and, through back-and-forth prompting, the AI would help me turn that idea into working code. The power was not only in auto-generating lines of Python, but in how it explained what each part was doing, suggested alternatives, and allowed me to iterate faster. That changed my mindset from “I don’t know enough coding” to “I can learn and ship things if I stay curious and keep asking good questions.”

Closely related to that, this project shifted how I see my own place in FinTech and portfolio management. Before, I viewed sophisticated tools and products as something built by teams of experienced engineers and quants, with students like me only interacting with the surface. Through this final project, I experienced the opposite: even with limited technical depth, I could design and build my own AI-powered portfolio tool that screens stocks, analyzes portfolios, and lives on a website I control. The “unattainable” suddenly felt very close. The moment I launched my project site and saw my tool working – taking user inputs and generating real analysis – it clicked that my long-term idea of building AI tools for finance is not a distant dream. It is something I am already doing at a small scale.

AI also changed how I do research and thinking, not just implementation. In the industry report parts of the project, AI helped me navigate dense sources like McKinsey, Morningstar, ICI, and BLS. Instead of being stuck on the first reading of a 50-page PDF, I could ask AI to summarize, compare, or extract patterns, and then go back to the original sources with a clearer lens. This did not replace critical thinking – if anything, it forced me to double-check numbers and push back when something looked off – but it made the process feel more manageable. Over time, I stopped seeing AI as something that “gives me answers” and started using it as a thinking amplifier, especially when synthesizing multiple data sources or testing draft arguments.

At the same time, the project made it very clear that AI is far from perfect – and that I have to remain in control. One concrete moment was when I gave the model too much information and too many overlapping instructions while working on my website, and it essentially broke things. My page stopped loading properly because of messy, conflicting code that had been generated across several iterations. That experience was frustrating in the moment, but it was also a useful lesson:

throwing everything at the model at once and accepting its output blindly is not “smart use of AI.” I had to step back, simplify the prompt, rebuild the structure, and re-learn the importance of version control and incremental changes. In other words, AI can create bugs and confusion just as easily as it can create elegant solutions if I don’t manage the process carefully.

Another important realization was about what I personally bring to the table when working with AI. This project reminded me that AI is most powerful when paired with human skills I already have: communication, creativity, and financial reasoning. AI did not generate my ideas for the portfolio tool, the industry framing, or my career direction. Those came from my background – my internships in banking and investments, my independent trading on the Pakistan Stock Exchange, my work with small businesses at MSBDC, and my curiosity about how people actually use financial tools in real life. AI helped me turn those ideas into prototypes, clearer sentences, and functioning code. That has made me more confident that I am not “competing with AI”; instead, I’m learning to orchestrate AI around my strengths.

Perhaps the most meaningful mindset shift is that I now see “building systems” as something that is genuinely within my reach. In the past, I saw myself mainly as someone who analyzes – I can read the data, think about risk, and tell a story with numbers. Through this project, I’ve experienced what it feels like to design and build an end-to-end system: a tool that takes inputs, processes them, and produces outputs that someone else could actually use. That system-level thinking is exactly what I want to carry forward into my career in portfolio management and FinTech. I no longer feel limited to just consuming tools built by others. With AI as a collaborator, my finance and data skills can be the starting point for products, not just reports.

Overall, this project did more than teach me about AI in portfolio management; it changed the way I think about my own trajectory. I came in seeing AI primarily as a set of shortcuts. I am leaving with a more mature view: AI is infrastructure that I can learn to harness – carefully, critically, and creatively – to build tools, support better investment decisions, and move my career path in directions I would have considered out of reach a year ago.

## Conclusion

The portfolio management industry is undergoing rapid technological transformation driven by AI, automation, and data-intensive research workflows. Through this project, I gained a deeper understanding not only of the industry’s structure and competitive pressures, but also of how AI can amplify human capabilities in both research and tool-building. The final report now integrates industry analysis, technological insight, and personal development into a cohesive narrative. Together, these components reflect my evolving perspective as a student entering an industry where economic reasoning, financial modeling, and AI literacy increasingly intersect.

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