

Modern Finance and Its Impact in the Real World

Financial Markets, Day 1, Class 1

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Outline for Day 1

- Class 1: Modern finance and its impact in the real world.
- Class 2: Estimation using financial data.
- Class 3: Alpha, Beta, and the CAPM.
- Class 4: Quant investing and multifactor models.
- Class 5: Quant investing and other cross-sectional patterns.
- Class 6: Review and quiz.

Outline for Class 1

- Class logistics.
- Modern finance.
- Impact in the real world.

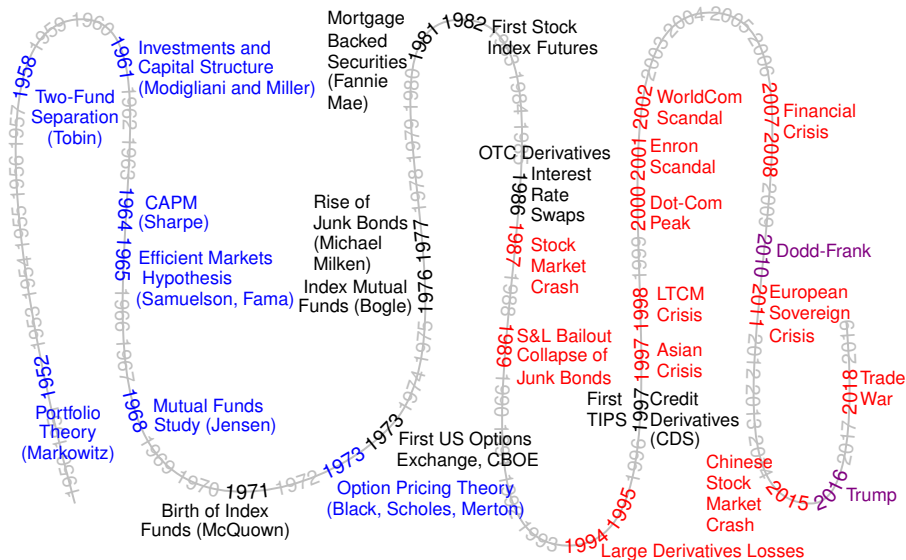
How Grades are Determined?

- 20% Class attendance
- 20% Class participation
- 20% In-Class Tests
- 20% Group Project
- 20% Individual Project

Modern Finance and Its Impact in the Real World

- Finance as an academic discipline has a direct and lasting impact on the development of capital markets and the practice of financial institutions.
- It offers an asset-pricing framework through which financial risk can be quantified and priced in relation to the economic fundamentals.
- The dynamic asset pricing models and hedging techniques developed by academics are instrumental in advancing the tremendous innovations in financial products since the 1970s.
- Often, the most creative ideas and the best trading strategies arise from research papers written by finance professors.
- The real and sometime painful experiences from the capital markets also influence how research is done in the academic world.

Modern Finance: Theory, Practice, and Lessons



Markowitz (1952)

- The beginning of Modern Finance.
- Introduces the concept of risk and return tradeoff.
- Risk is central to the process of investing.
- Forms the foundation for all subsequent theories on quantifying risk.



**Harry M.
Markowitz**

🕒 1/3 of the prize

USA

City University of
New York
New York, NY, USA

b. 1927

Tobin (1958)

- Two-fund separation: one risky and one riskfree.
- The optimal risky portfolio is the same for all mean-variance investors, regardless of his level of risk aversion.
- The level of risk aversion affects the relative allocation between the risky and riskfree.

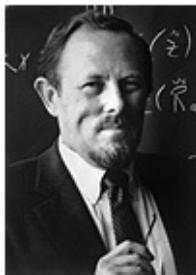


James Tobin

Prize share: 1/1

Sharpe (1964)

- A model with huge impact on the practice of finance, especially in asset management.
- Brings Markowitz (1952) to equilibrium: all investors behave optimally and the markets clear.
- The optimal risky portfolio in Tobin (1958) becomes the market portfolio and the single most important risk: systematic risk.
- The riskiness of a stock is measured not by its own variance, but its covariance with the market portfolio: $\beta^i = \text{cov}(R^i, R^m) / \text{var}(R^m)$.
- The reward is proportional to the exposure to systematic risk: $E(R^i) - r_f = \beta^i (E(R^m) - r_f)$.



William F. Sharpe

🕒 1/3 of the prize

USA

Stanford University
Stanford, CA, USA

b. 1934

Black and Scholes (1973)

- A pricing framework with huge influence on generations of academics and practitioners.
- The continuous-time arbitrage-free pricing framework establishes the foundation for financial innovations on Wall Street since the 1970s.
- The multi-trillion dollar OTC derivatives market would not have been possible without their work.
- Such financial innovations offer a whole new dimension of risk taking by giving people the flexibility to choose the risk to take or avoid.



Robert C. Merton

Prize share: 1/2



Myron S. Scholes

Prize share: 1/2

Vanguard and the Birth of Index Mutual Funds

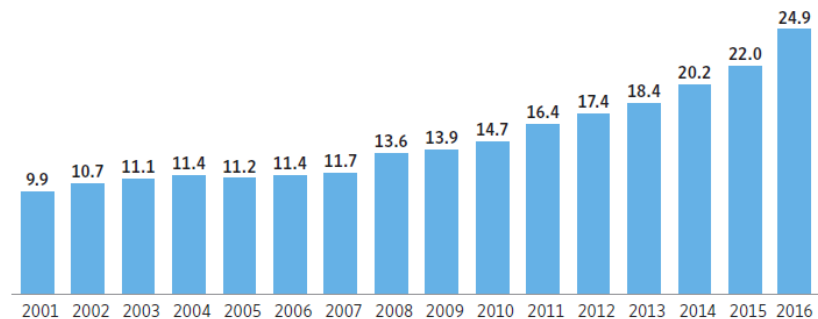
- Vanguard, with \$5.3 trillion in assets under management, is the largest provider of mutual funds and the second-largest of ETFs.
 - ▶ Vanguard Total Stock Market Index (VTSMX): net assets \$757 billion.
 - ▶ Vanguard 500 Index (VFINX): oldest index mutual fund (\$448 billion).
- In a commentary published on the *Wall Street Journal* in 2011, John Bogle, founder of The Vanguard Group and of the Vanguard 500 Index Fund, wrote
 - ▶ On August 31, 1976, the first index mutual fund was born. The idea that passive equity management could outpace active management was derogated and ridiculed.
 - ▶ When the books were closed, the underwriting produced just \$11.3 million, a 93% shortfall from the goal (\$150 million).
 - ▶ Today (September 2011), the assets of the Vanguard funds modeled on the S&P 500 Index total \$200 billion, together constituting the largest equity fund in the world. (The second largest, at \$180 billion, are the Vanguard Total Stock Market Index Funds.) Investors have voted for index funds with their wallets, and they continue to do so.

The Growth of Index Mutual Funds

FIGURE 2.13

Index Equity Mutual Funds' Share Continued to Rise

Percentage of equity mutual funds' total net assets; year-end, 2001-2016



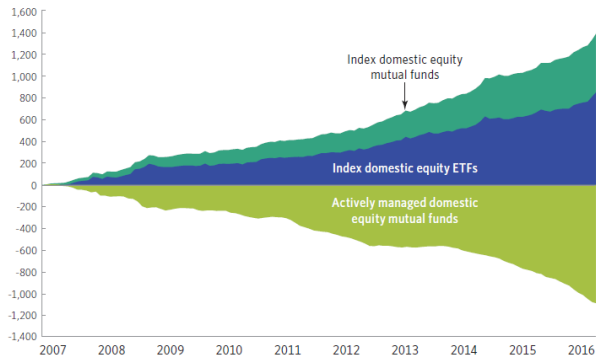
Source: [2017 Investment Company Fact Book](#)

Cumulative Flow Since 2007

FIGURE 2.14

Some of the Outflows from Domestic Equity Mutual Funds Have Gone to ETFs

Cumulative flows to and net share issuance of domestic equity mutual funds and index ETFs,* billions of dollars; monthly, January 2007–December 2016



* Prior to October 2009, index domestic equity ETF data include a small number of actively managed domestic equity ETFs.

Note: Equity mutual fund data include net new cash flow and reinvested dividends. Data exclude funds that invest primarily in other funds.

Source: [2017 Investment Company Fact Book](#)

From Academic to the Real World

- The implementation of a great idea does not always travel in a straight line. Reshaping an industry takes years, even decades.
- The slow, but persistent rise of Indexing and Factor Investing, with the emergence of giants such as Vanguard (\$5.3 trillion) and BlackRock (\$5.98 trillion), is a perfect example of how academic research can lead the industry practice.
- It is through such examples that we learn to appreciate the power of academic insights. If you are in this world to make a long-term impact, not just short-term profits, root your practice firmly in the rigor of academic insights.
- In his 2011 WSJ article, Bogle credited his success to the support from Nobel laureate economist Paul Samuelson: *“Samuelson was much more forceful, strengthening my backbone for the hard task that lay ahead: taking on the industry establishment.”*