

# Innovations in Finance

## Conventional Wisdom circa 1950

"Once you attain competency, diversification is undesirable. One or two, or at most three or four, securities should be bought. Competent investors will never be satisfied beating the averages by a few small percentage points."

Gerald M. Loeb  
*The Battle for Investment Survival*, 1935

Analyze securities one by one. Focus on picking winners. Concentrate holdings to maximize returns.

Broad diversification is considered undesirable.

## The Role of Stocks

James Tobin  
Nobel Prize in Economics, 1981

Separation Theorem:  
1. Form portfolio of risky assets.  
2. Temper risk by lending and borrowing.

Shifts focus from security selection to portfolio structure.

"Liquidity Preference as Behavior Toward Risk," *Review of Economic Studies*, February 1958

## Single-Factor Asset Pricing Risk/Return Model

William Sharpe  
Nobel Prize in Economics, 1990

Capital Asset Pricing Model: Theoretical model defines risk as volatility relative to market.

A stock's cost of capital (the investor's expected return) is proportional to the stock's risk relative to the entire stock universe.

Theoretical model for evaluating the risk and expected return of securities and portfolios.

## Efficient Markets Hypothesis

Eugene F. Fama, University of Chicago

Extensive research on stock price patterns.

Develops Efficient Markets Hypothesis, which asserts that prices reflect values and information accurately and quickly. It is difficult if not impossible to capture returns in excess of market returns without taking greater than market levels of risk.

Investors cannot identify superior stocks using fundamental information or price patterns.

## The Birth of Index Funds

John McQuown, Wells Fargo Bank, 1971;  
Rex Sinquefeld, American National Bank, 1973

Banks develop the first passive S&P 500 Index funds. Years later, Sinquefeld co-chairs Dimensional, and McQuown sits on its Board.

1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974

## Diversification and Portfolio Risk

Harry Markowitz  
Nobel Prize in Economics, 1990

Diversification reduces risk.

Assets evaluated not by individual characteristics but by their effect on a portfolio. An optimal portfolio can be constructed to maximize return for a given standard deviation.

## Investments and Capital Structure

Merton Miller and Franco Modigliani  
Nobel Prizes in Economics, 1985 and 1990

Theorem relating corporate finance to returns.

A firm's value is unrelated to its dividend policy.

Dividend policy is an unreliable guide for stock selection.

## Behavior of Securities Prices

Paul Samuelson, MIT  
Nobel Prize in Economics, 1970

Market prices are the best estimates of value.

Price changes follow random patterns. Future share prices are unpredictable.

"Proof That Properly Anticipated Prices Fluctuate Randomly," *Industrial Management Review*, Spring 1965

## First Major Study of Manager Performance

Michael Jensen, 1965;  
A.G. Becker Corporation, 1968

First studies of mutual funds (Jensen) and of institutional plans (A.G. Becker Corp.) indicate active managers underperform indexes.

Becker Corp. gives rise to consulting industry with creation of "Green Book" performance tables comparing results to benchmarks.

## Options Pricing Model

Fisher Black, University of Chicago;  
Myron Scholes, University of Chicago;  
Robert Merton, Harvard University  
Nobel Prize in Economics, 1997

The development of the Options Pricing Model allows new ways to segment, quantify, and manage risk.

The model spurs the development of a market for alternative investments.

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## A Major Plan First Commits to Indexing

New York Telephone Company invests \$40 million in an S&P 500 Index fund.

The first major plan to index.

Helps launch the era of indexed investing.

"Fund spokesmen are quick to point out you can't buy the market averages. It's time the public could."

Burton G. Malkiel  
*A Random Walk Down Wall Street*, 1973 ed.

## The Size Effect

Rolf Banz;  
University of Chicago

Analyzed NYSE stocks, 1926-1975.

Finds that, in the long term, small companies have higher expected returns than large companies and behave differently.

Dimensional Fund Advisors Inc. is founded in 1981 and launches the first passive small cap strategy (the US Micro Cap Portfolio).

## International Size Effect

Dimensional Fund Advisors Inc.  
International Small Cap Strategies

Dimensional Investing vs. Indexing:

With no index, Dimensional creates international small cap strategies modeled after the US research.

Dimensional's live returns become the index used in Ibbotson Associates' database.

Dimensional investing is based on a rational risk dimension, and does not slavishly follow indexes or investing conventions.

## Multifactor Asset Pricing Model and Value Effect

Eugene Fama and Kenneth French;  
University of Chicago

Improves on the single-factor asset pricing model (CAPM).

Identifies market, size, and "value" factors in returns.

Develops the three-factor asset pricing model, an invaluable asset allocation and portfolio analysis tool.

Dimensional introduces value strategies based on the research.

Lends to similar findings internationally.

## Applied Core Equity

Dimensional portfolio construction methodology weights securities by size and value characteristics instead of market capitalization.

Total market strategies launched to provide efficient, diversified risk factor exposure while limiting turnover and transaction costs.

Core equity portfolios move beyond traditional, component-based asset allocation via vast diversification and cost-efficient market coverage.

1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006

## Database of Securities Prices since 1926

Roger Ibbotson and Rex Sinquefeld,  
*Stocks, Bonds, Bills, and Inflation*

An extensive returns database for multiple asset classes is first developed and will become one of the most widely used investment databases.

The first extensive, empirical basis for making asset allocation decisions changes the way investors build portfolios.

## Variable Maturity Strategy Implemented

Dimensional Fund Advisors Inc.  
One-Year Fixed Income Strategy

With no prediction of interest rates, Eugene Fama develops a method of shifting maturities that identifies optimal positions on the fixed income yield curve.

## Nobel Prize Recognizes Modern Finance

Economists who shaped the way we invest are recognized, emphasizing the role of science in finance.

William Sharpe for the Capital Asset Pricing Model.

Harry Markowitz for portfolio theory.

Merton Miller for work on the effect of firms' capital structure and dividend policy on their prices.

## Tax Management

Dimensional tax-managed strategies implemented to maximize after-tax returns by offsetting gains and minimizing dividends.

Based on Fama/French research and Dimensional's "portfolio decision system" trading technology.