Introduction

Part 1* of MFE 230G

Course Outline

Tuesday August 10, 2021 10:00 am - noon, 1:00 pm - 3:00 pm F320

1. Introduction
2. Basic Mathematics for Portfolio Management
3. Framework (Chapters 2, 4-6)

Tuesday August 17, 2021 10:00 am - noon, 1:00 pm - 3:00 pm F320

4. Risk Modeling (Chapter 3)
5. Valuation (Chapter 9,7)
6. Behavioral Finance and Equity Investing

Tuesday August 24, 2021 10:00 am - noon, 1:00 pm - 3:00 pm F320

7. Forecasting (Chapters 10,11)
8. Information Analysis (Chapter 12)
9. Portfolio Construction (Chapters 14, 15)

Tuesday August 31, 2021 10:00 am - noon, 1:00 pm - 3:00 pm F320

10. Transactions Costs (Chapter 16)
11. Dynamic Portfolio Management
12. Performance Analysis (Chapter 17)

*This part will cover equity markets. Part 2 will cover currency markets plus some additional equity material.

Course Logistics

- Instructor: Ronald Kahn
  - Global Head of Systematic Equity Research, BlackRock
  - ron.kahn@blackrock.com
  - 415-806-2292
  - Office hour: before class
- GSI: Leo Drukker
  - Email: ldrukker@Berkeley.edu
  - Discussion section: Fridays 3-5 pm
  - Office hours: Tuesdays 6-8 pm
- Text: *Active Portfolio Management*, Grinold and Kahn. Also *The Future of Investment Management*, Kahn. Plus some additional papers posted on class website.
  - We also have a new book, *Advances in Active Portfolio Management*, for those who want to read about the latest advances and applications.
- Three homework assignments, final exam (combined with Currency part of course).

Grading

- Equity Half of the Course:
  - Homework (3): 50%
  - Final Exam: 50%

  - Homework assignments: some discussion with classmates allowed, but every student expected to turn in their own solutions.
  - Final exam will be take-home.
- Final course grade is average of the equity and currency grades.

Active Management

- Why believe in active management?
- Many arguments against it:
  - CAPM, Efficient market hypothesis, and accompanying academic studies.
  - Active managers face headwind of transactions costs, fees, taxes, etc.
  - Sharpe's arithmetic of active management.
  - Index funds consistently perform above the median.
- Arguments for active management:
  - Opportunity:
    - Excess volatility (Shiller, 1981)
  - Specifics:
    - Behavioral finance (Kahneman and Tversky, 1979)
    - Arbitrage Pricing Theory (Ross, 1976)
    - Informational Inefficiencies (Grossman and Stiglitz, 1980)
    - Constraints
    - Opportunistic trades
  - Examples of success: Warren Buffett, Renaissance Technology,…

Our perspective

- Successful active management is possible
- But it isn't easy.
- Consistent success requires the art of seeing what others miss.
- But it also requires the science of optimally investing based on those ideas.
- We can offer a process.
- Not a guarantee of success.

Quantitative versus Fundamental Investing

- Quantitative or scientific investing applies rigorous and systematic analysis—the scientific method—to investing. Scientific investors use the scientific method to develop return forecasts, and then construct portfolios by optimally trading off those expected returns against risk and trading costs.

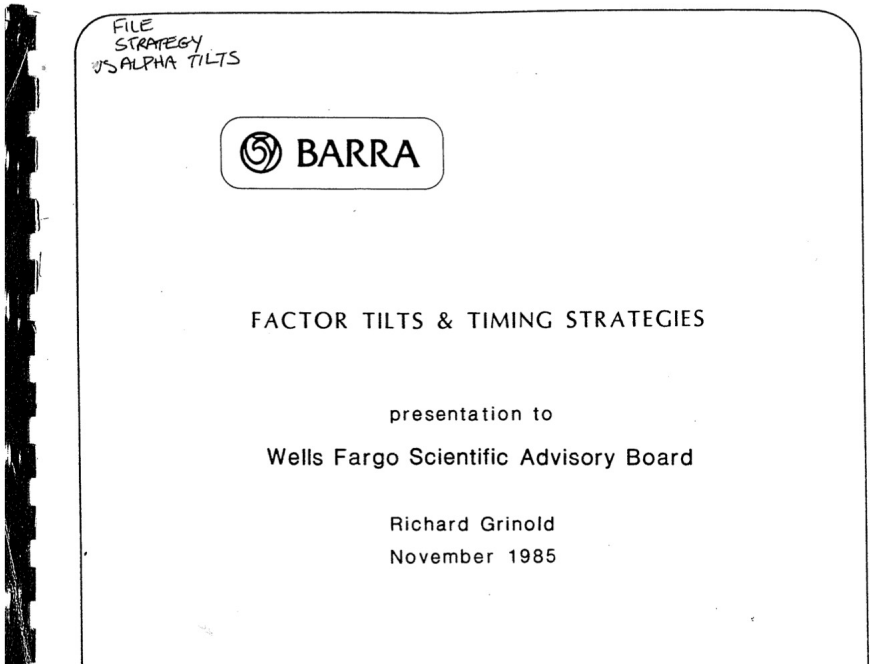
- Quantitative investing differs from Fundamental investing is some important ways, but in other ways are closer than many investors believe:

	Quantitative Investing	Fundamental Investing
Investment Ideas	Limited only by imagination and data.	Limited only by imagination
Data gathering	Very large amount of numerical and text data.	Numerical and text data, company visits
Portfolios	Large number of assets, process-driven	Fairly concentrated portfolios
Management	Team-based	Manager-based

The Infancy of Quant Investing: 1960s – 1980s

- Investment Ideas and Influences:
  - Origins of Systematic Investing: Ben Graham, John B. Williams, Data disclosure requirements (1930s)
  - Birth of Modern Portfolio Theory: Markowitz, CAPM, Efficient Markets, Index Funds (1950s, 1960s)
  - Active Management Strikes Back: Treynor-Black, Barr Rosenberg (Factor models), APT, Behavioral Finance, Informational Inefficiency, Excess Volatility (1970s, early 1980s)
  - Risk Premia: Size and Value, backtested over ~20-year history
- Asset Levels
  - Slow growth up to ~$3 -$4 Billion
- Data
  - Long history of prices, volumes, fundamentals
- Technology
  - Mainframe time-sharing, slowly evolving to PC-based
  - Limited amounts of computation and storage (1987: 3 1/2 inch floppy, 2.88 MB capacity)
- Portfolios
  - Long-only
- Investment Products
  - Almost all investing is fundamental active.
  - Indexing began in the 1970's. Quant investing started around that time. Stat Arb (pairs trading) started by the mid-1980's.
  - By the end of the 1980's, quant investing had expanded from the US to Japan, US Smallcap, UK, Europe, Canada, Australia

Example: US Alpha Tilts 1985


FILE
STRATEGY
US ALPHA TILTS

BARRA

FACTOR TILTS & TIMING STRATEGIES

presentation to

Wells Fargo Scientific Advisory Board

Richard Grinold
November 1985

CONCENTRATE ON FIVE FACTORS

YIELD

SIZE

SUCCESS

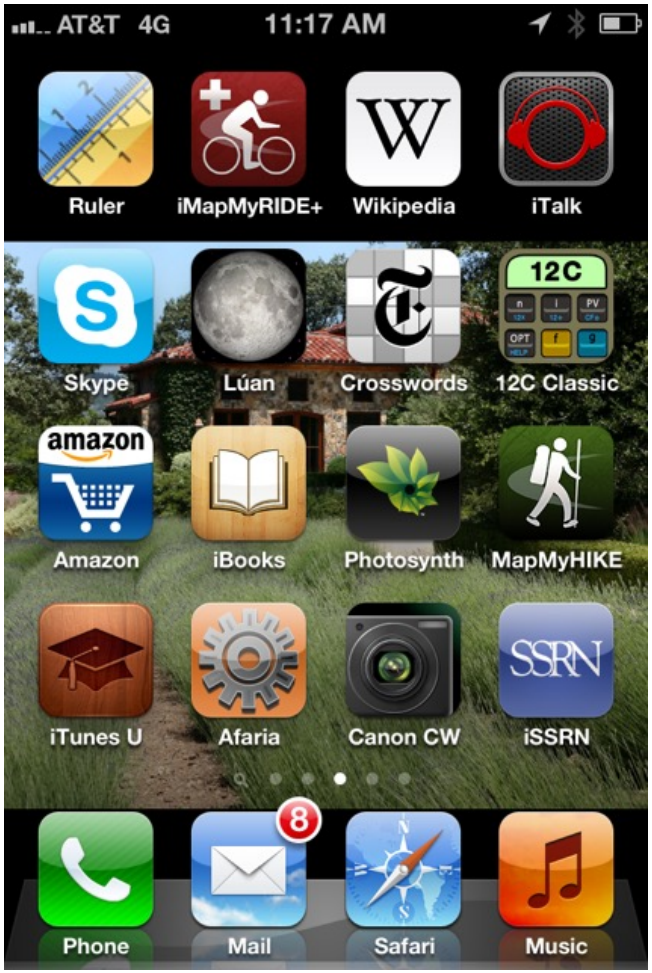
BOOK/PRICE

EARNINGS/PRICE

BARRA's name for momentum

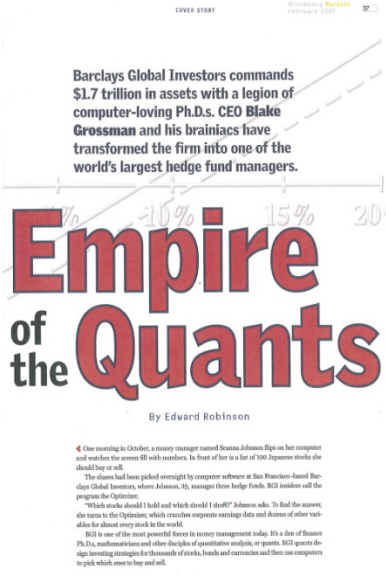
- My group still runs this strategy today.
- In 1985, being able to calculate book-to-price ratios for 500 stocks was an edge. That is no longer true, and US Alpha Tilts has evolved considerably since then.
- This looks very much like today's Smart Beta strategies.

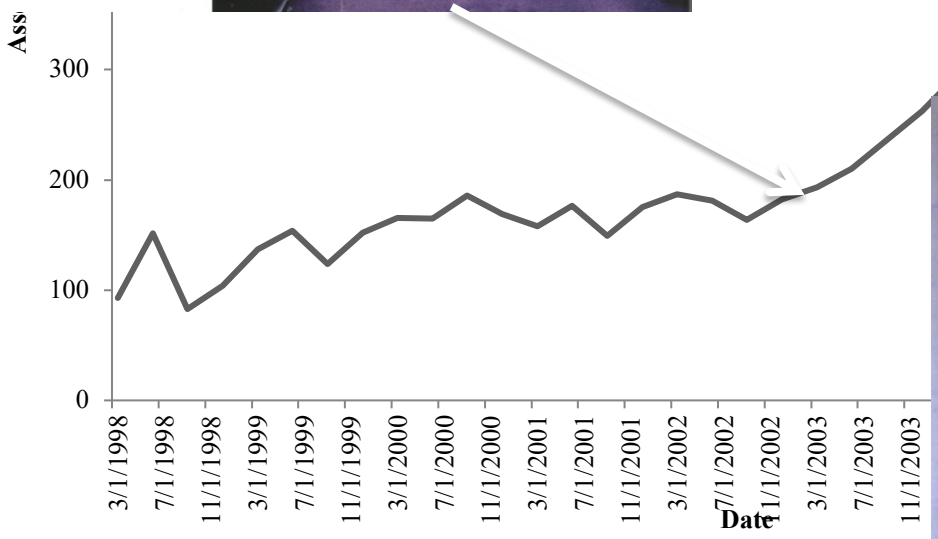
Teen Years (1990s) Through Early Adulthood (1998-2006)



Filings


The Best Investo
You've Never Heard of
Here's how Barclays Global beats the market—and why you can't.
by Justin Fox
Photographs by Howard Cao
Quant master: BGI's Grossman is building a hedge fund giant.


Barclays Global Investors commands $1.7 trillion in assets with a legion of computer-loving Ph.D.s. CEO Blake Grossman and his brainiacs have transformed the firm into one of the world's largest hedge fund managers.
Empire of the Quants
By Edward Robinson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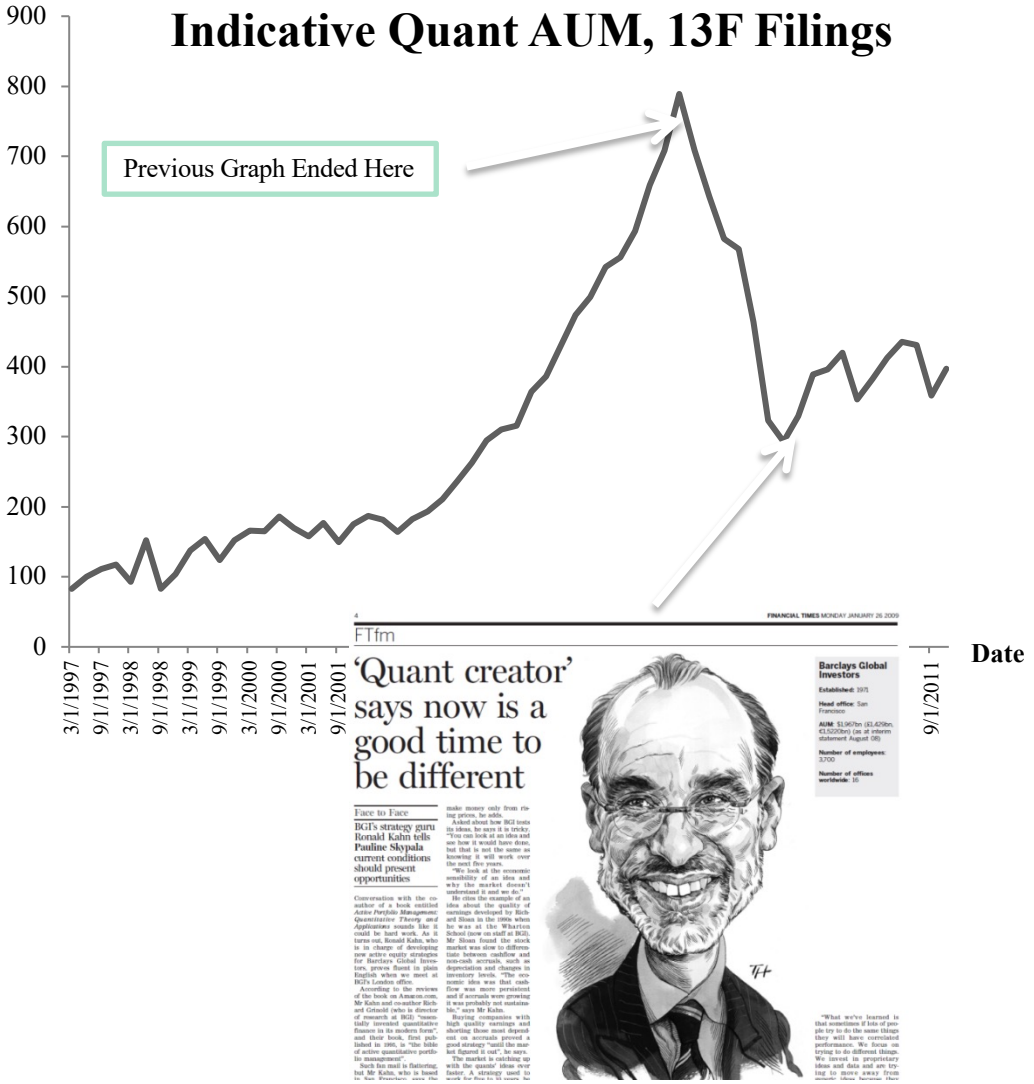
Special Report
Outsmarting the Market
Behind Barclays' quest to build a world-class team of academic quants that systematically does the impossible. By Anthony Bianco
Hard Data vs. Heroics

Mid-Life Crisis: Bursting the Bubble: 2007 - 2009

- Asset Levels
  - Asset levels / Exposures down ~75%
- Portfolios
  - Shrinking / Deleveraging
- Market Environments
  - Enormous outflows across correlated quant managers led to significant drag on all quant managers.
  - The impact extended beyond just quant to many value managers (e.g Bill Miller)
  - Dramatic increase in volatility, largely driven by macrofactors



The GFC Fork in the Road

Need to Reinvent Quant:
Standard quant signals now well-known and generic.

Stay the Course:
Value has had many drawdowns over the past 100 years. It will come back.

The Journal of FINANCE
The Journal of THE AMERICAN FINANCE ASSOCIATION

THE JOURNAL OF FINANCE • VOL. LXXI, NO. 1 • FEBRUARY 2016

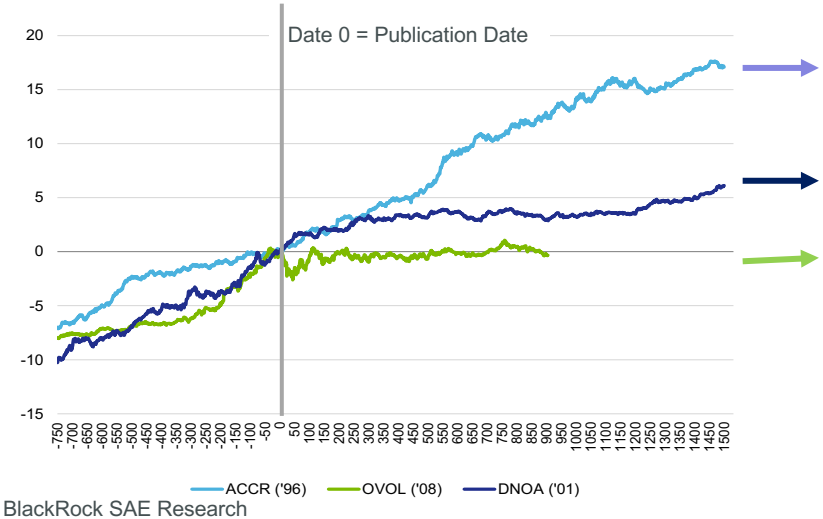
Does Academic Research Destroy Stock Return Predictability?

R. DAVID MCLEAN and JEFFREY PONTIFF*

ABSTRACT

We study the out-of-sample and post-publication return predictability of 97 variables shown to predict cross-sectional stock returns. Portfolio returns are 26% lower out-of-sample and 58% lower post-publication. The out-of-sample decline is an upper bound estimate of data mining effects. We estimate a 32% (58%–26%) lower return from publication-informed trading. Post-publication declines are greater for predictors with higher in-sample returns, and returns are higher for portfolios concentrated in stocks with high idiosyncratic risk and low liquidity. Predictor portfolios exhibit post-publication increases in correlations with other published-predictor portfolios. Our findings suggest that investors learn about mispricing from academic publications.

Signal Returns Around Publication Dates



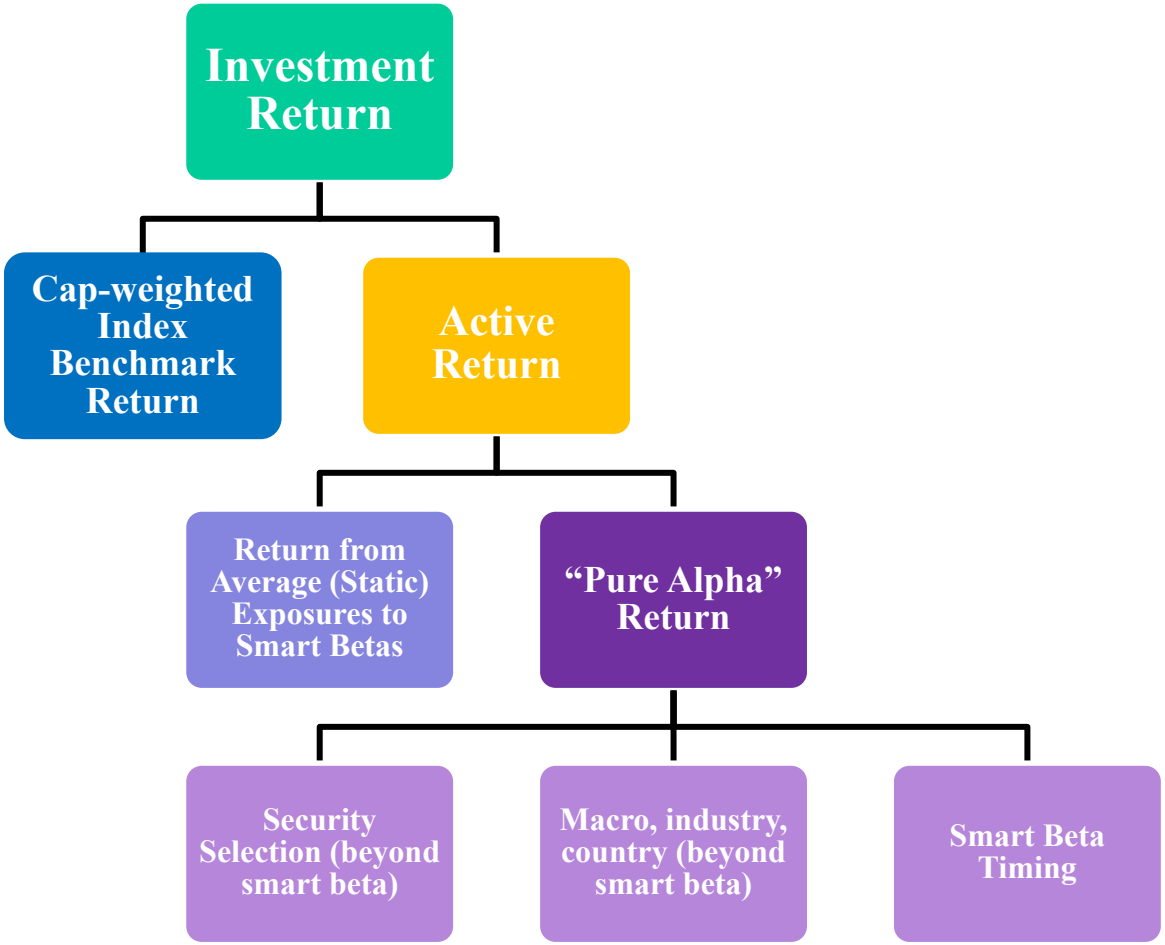
Mid '90's: Traditional, quality research could create a sustaining competitive advantage

Early '00's: Technology and access to information was decreasing the staying power of those advantages

Late '00's: Market incorporates information so rapidly that constant innovation is required to gain an edge

Source: BlackRock SAE Research

Future of Investing on 1 slide



The Future of Pure Alpha Quant Investing

- Not Simple Implementations of Academic Research
  - The next great investment idea will not come from SSRN
- Not Static Exposures to factors: value, size, momentum, quality, low volatility—that is now Smart Beta (as opposed to Pure Alpha investing).
  - Why pay active fees for generic ideas increasingly available in simple, rules-based, transparent, and low-cost vehicles?
  - (This will significantly impact asset management generally, not just quants.)
- Effective and orthogonal ideas, dynamic, supported by constant innovation. Alternative and unstructured data, and machine learning, can play big roles here.