

The CAPM Evidence

(Welch, Chapter 10-C)

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1: Truthiness

- ▶ **Is the CAPM True?**

- ▶ So what?

- ▶ No model is *strictly* true,

- ▶ but models can be good and useful, or bad and useless.

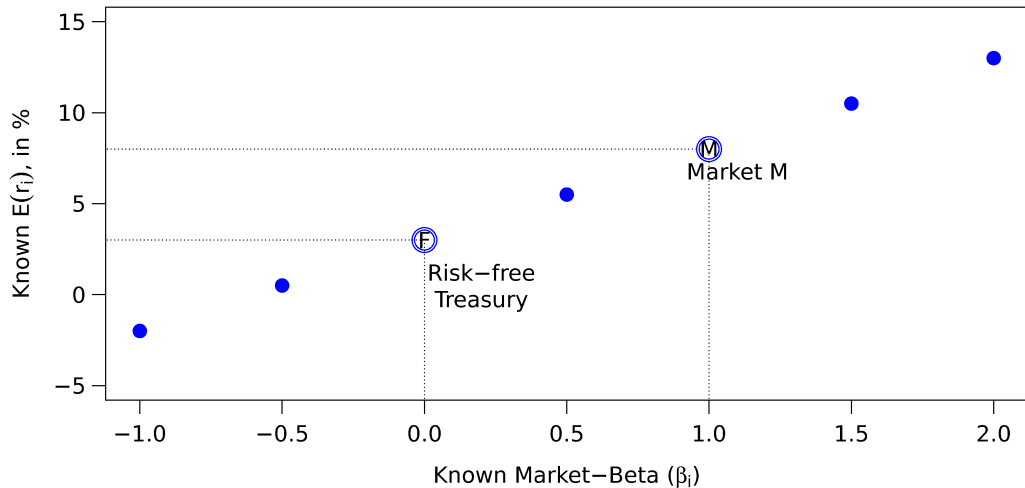
- ▶ Do its assumptions seem reasonable?

- ▶ Did high-beta stocks (say, 1.5) outperform low-beta stocks (say, 0.5) by about 2-4% per annum?

2: Security-Market Line (SML)

- ▶ The SML has market-beta on its x-axis and expected return on the y-axis.
- ▶ How should the SML look like if you knew the true inputs?

3: Graph: SML Exact

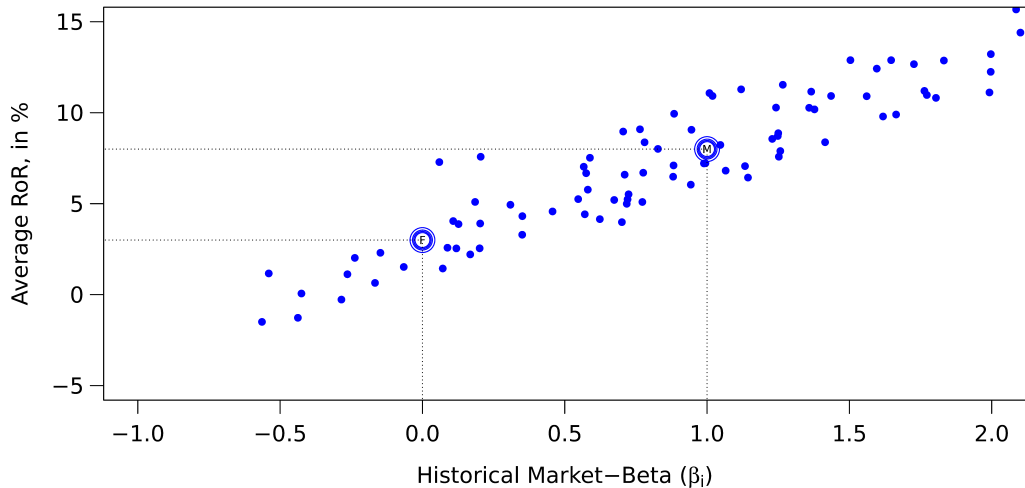


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4: SML with Estimated Inputs

- ▶ How should the CAPM SML look like if you had to estimate the CAPM inputs first?

5: Graph: SML Noisy

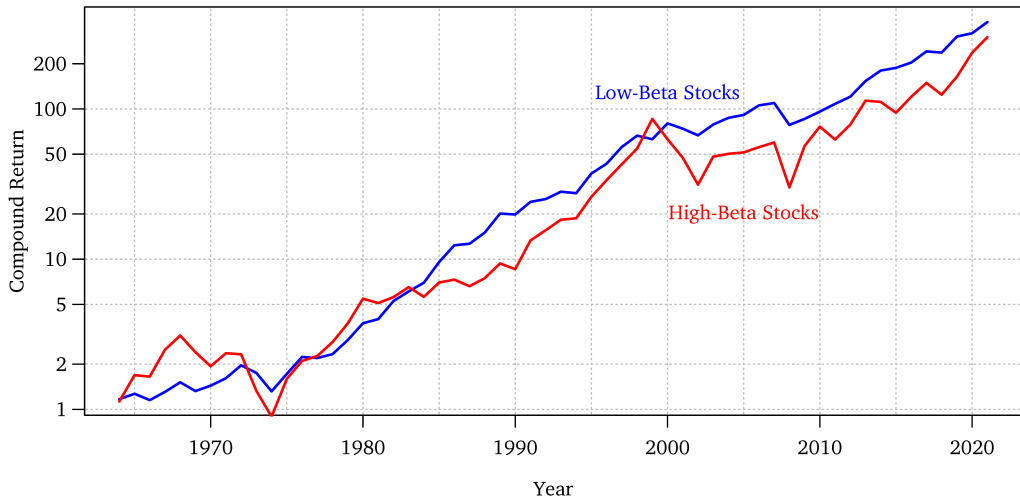


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6: Most Basic CAPM Implication

- ▶ Stocks with high market-betas should outperform stocks with low market-betas.
 - ▶ Unfortunately, the evidence is *not* favorable.
 - ▶ The real-world SML is too flat and probably even negative!
- ▶ Let's plot the empirical performance of beta (quintile) portfolios

7: Damning Evidence



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- ▶ It's not my fault that the world is using a terrible model!
- ▶ I am just the messenger!
 - ▶ Don't shoot the messenger
- ▶ You will be expected to know this model!

8: Specific Alternative Tests

Furthermore:

- ▶ Some other factors *may* matter, such as momentum, value, profitability, etc.
 - ▶ undoubtedly, they did in the past, though
 - ▶ not clear if they will in the future.
- ▶ And, even if the CAPM were better, for corporate CoC estimates, how good would its point estimates be??
 - ▶ truly terrible accuracy, almost useless, anyway.

9: But Shouldn't The CAPM Have Held?

- ▶ Not necessarily.
 - ▶ Do you care about house wealth? Hedge it!
 - ▶ Do you care about labor income? Hedge it!
- ▶ Is the market near perfect?
 - ▶ Do investors have different opinions?
 - ▶ Are most investors reasonably invested?
- ▶ Did you know the inputs?
 - ▶ What is the equity premium?

- ▶ Do the (important) investors hold the market and tilt towards low-beta stocks **if** these stocks offer too high an expected RoR?
 - ▶ mandates on (large) funds could interfere;
 - ▶ belief in superior ability could interfere;
 - ▶ agency conflicts could interfere.
- ▶ Market-correcting forces are neither strong nor quick:
 - ▶ There is no easy way to take advantage.
 - ▶ If you are smarter and the CAPM does not hold, you can create only slightly better bets for yourself
 - ▶ you should tilt towards low-beta stocks;
 - ▶ it's been happening!

10: Why Learn The CAPM?

- ▶ Does the CAPM give reasonable CoC estimates?
 - ▶ Probably not.
 - ▶ Think stopped clock twice a day.
- ▶ It is a beautiful bedtime story: the world is ok.
- ▶ It gives good intuition.
 - ▶ It makes internal sense (under its strong assumptions).

11: Why Study the CAPM?

- ▶ All alternatives that predict better are *ad-hoc*.
- ▶ There is no standard widely agreed-upon alternative.

- ▶ My personal educated guesses:
 - ▶ debt has a lower costs of capital,
 - ▶ longer-term projects require higher costs of capital.
 - ▶ we cannot predict $E(r)$ for **publicly-traded** (large) stocks.
- ▶ I prefer “asset-class based capital budgeting” (benchmarking), somewhat akin to assuming equal betas of 1 for all stocks (equities)
 - ▶ Not in wide use, but well backed up by data.
 - ▶ Generically, benchmarking is in good use.

12: Why Study the CAPM?

- ▶ Who is using the CAPM?
 - ▶ CFOs, regulators, courts, IRS, etc.
 - ▶ Other textbook authors!

13: Corporate Survey Evidence

73% of managers claim that it is the CAPM that they use.

- ▶ However, they mitigate the harm, because they also typically set a hurdle rate considerably above their $E(R)$.
- ▶ Thus, they claim they use it, but they really do not.

Non-CAPM Alternative CoC Rules:

- ▶ “ad-hoc historical returns”: 39% frequency
- ▶ various modified CAPM models: 34% frequency
- ▶ “Gordon model” & “What investors are telling us”: 15%

14: Why Study the CAPM?

- ▶ The CAPM is widely but incorrectly considered the “best-practice” model.
- ▶ If you don't understand it, you will be considered an uneducated noob.
 - ▶ In reality, most actual CAPM users are noobs,
 - ▶ but it is them who are in charge now,
 - ▶ educated in B-schools 20-40 years ago, when professors still believed that the CAPM worked.

15: Cynics View: Why Still in Use?

- ▶ The real reasons why the CAPM is still in use:
 - ▶ Hazing — no longer by professors, but by practitioners?!
 - ▶ Fake Media?
 - ▶ Wishful thinking?
 - ▶ Reality Deniers?
 - ▶ Ignorance?
 - ▶ Bad textbooks?

16: “CAPM Use” Warning

- ▶ **Don't use the CAPM unless you are forced.**
- ▶ Never expect much accuracy from the CAPM.
 - ▶ At best, ballpark cost-of-capital estimates.
- ▶ Never use the CAPM for portfolio investment decisions.
- ▶ Don't use it for short-term predictions,
- ▶ ...and don't use it for long-term predictions. (Really!)

17: Disagreements Over PV?

- ▶ It is difficult to estimate the equity premium,
- ▶ and common beta input estimates often stink,
 - ▶ although one can get pretty good ones
- ▶ and you don't even know the right model or benchmark, either.

- ▶ Is it cold comfort that $E(CF)$ estimates are usually *even worse* than $E(r)$ estimates?

18: Nerddnotes: Omitted Appendices

- ▶ **Alternatives:** Multi-Factor Type Models. Not just beta, but potentially exposure to other factors. (Controversy: could be characteristics and market inefficiency.)
 - ▶ Arbitrage Pricing Theory (APT).
 - ▶ Fama-French-Momentum-Free-for-all.
- ▶ Factors keep moving around or disappearing, as are factor loadings.
- ▶ Alas, even these “custom” alternative have been pretty lousy forward-looking, too.

19: Now What? Alternatives!

- ▶ Even if the CAPM holds, benchmarking can still work.
- ▶ Even if the CAPM fails, benchmarking can still work.

- ▶ But you need good benchmarks.

- ▶ C'est La Vie. In the land of the blind, the one-eyed man is king. — Desiderius Erasmus.