

SI 2021 Capital Markets and the Economy

DISCUSSION OF

Equity Factors and Firm's Perceived Cost of Capital

by

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Idea of the paper

- Given the perceived (survey-based) cost of equity capital for a large cross-section of companies, does it correlate with risk exposures from the Fama and French 3- and 5-factor models?
- Even though companies might not econometrically estimate the model, they might be operating “as if” they had.

Setting

Duke CFO survey runs quarterly surveys over the past 25 years

- We ask a variety of questions including:
 - **Perceived 10-year market equity premium**
 - Cost of debt
 - Amount of debt
 - WACC
 - Hurdle rate
- Many volunteer individual and firm identity

Data

- Early on we documented a discrepancy between a CAPM WACC (which we could calculate given the reported inputs) and the perceived cost of capital from the CFOs
- The discrepancy grew larger after we started asking about their hurdle rate
- We discuss and analyze in a series of SSRN annual postings (not for publication)

The Equity Risk Premium in 2018

21 Pages

Posted: 2 Apr 2018

[John R. Graham](#)

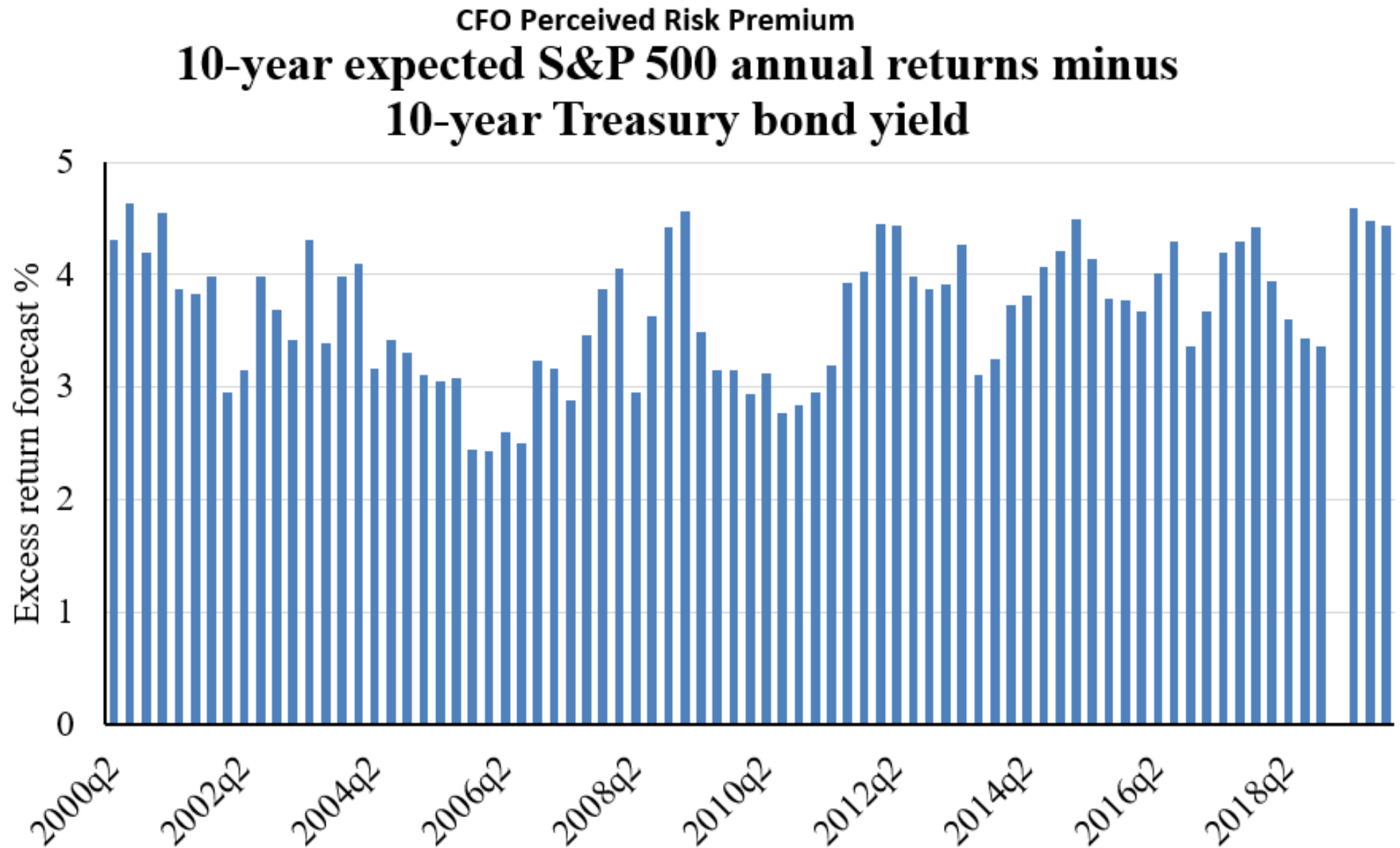
Duke University; National Bureau of Economic Research (NBER)

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Date Written: March 27, 2018

Data



March 2011

- Given risk premium (from survey) and assuming an average beta of 1, the cost of equity capital was 6.45% (assuming the 10-year Treasury is “risk free”)
- Given a Baa yield was 6.09%, with debt, the WACC would be 6.45% or lower
- Yet the perceived WACC was 10%

March 2011

Maybe CAPM is the wrong model and we are omitting important risk factors – for example size. Not obvious.

- Perceived WACC for firm revenue < \$25m = 10.6%
- Perceived WACC for firm revenue > \$10b = 10.5%

June 2012

Maybe there was sampling error, so we repeated the study in June 2012

- Calculated WACC = 5.37%
- Perceived WACC = 9.3%
- Small firms perceived WACC = 9.2%
- Large firms perceived WACC = 9.7%

Approximately 400bp gap consistent with previous survey

June 2012

We also asked about hurdle rates

- Calculated WACC = 5.37%
- Perceived WACC = 9.3%
- Perceived hurdle rate = 13.5%
- Small firm hurdle rate = 13.1%
- Large firm hurdle rate = 14.2%

The gap between what we teach our students and what companies do is massive 1000bp for large firms

June 2012

Perhaps CFOs don't use their perceived 10-year risk premia for cost of capital calculation. Suppose we just look at averages from Ibbotson from 1926.

- Average equity return 11.8%
- Average corporate bond return 6.4%
- WACC = 9.7% which is much closer to perceived WACC

However, still puzzling that the hurdle rate is 400bp addition to the WACC and why would CFOs use the returns from 1926?

June 2017

We wanted to get to the bottom of this.

- Q8a. What is the hurdle rate that your company uses to evaluate investment projects? (The “hurdle rate” is typically the minimum rate of return a project is required to earn in order for a company to pursue the project.)
- Mean = 13.6%; Median = 12 (similar to 2012)

June 2017

Even if project's expected rate of return exceeds the hurdle rate, it is not necessarily pursued.

- Q8b. Does your company pursue all projects that are expected to earn a return higher than the hurdle rate? (e.g., if your overall hurdle rate is 15%, among projects with similar risk to your company's overall risk, would you pursue all projects that are expected to return 16% or higher?)
- The puzzle deepens

	Number	Percent
Yes	71	20.6 %
No	232	67.2 %
Don't Know	42	12.2 %
Total	345	100.0 %

June 2017

Why (open-ended)?

- Q8c. What prevents you from pursuing all projects that are expected to earn a return higher than the hurdle rate?
- Example responses:
 - “Future needs and projects”
 - “Activism’s influence on capital allocation”
 - “Prioritization of other more important projects”

June 2017

What is your WACC?


	Mean	SD	95% CI	Median
What is your company's overall weighted average cost of capital (WACC) for 2017?	10.55	9.84	9.23 - 11.88	9.80
What cost of debt do you use in your WACC calculation?	7.10	13.80	5.32 - 8.88	4.50
Cost of equity?	11.79	12.07	10.19 - 13.40	10
Approximately what proportion of debt financing do you use in your WACC calculation?	36.36	33.43	32.01 - 40.71	27

- Remember average hurdle rate is 13.6%

June 2017

Why is your hurdle rate greater than your WACC?

- Six pages of open ended results organized by industry!

	Hurdle	WACC	
Retail/Wholesale	15.0	8.0	Political and regulatory risk
Services, Consulting	18.0	12.0	Our owners expect a high <u>long term</u> gain, in addition to annual returns. 
Services, Consulting	15.0	8.0	To only pursue the stars among the potential projects....
Tech [Soft/Hard/Bio]	15.0	9.3	Need to justify the soft costs - management & Board time and attention.

Idea of the paper

Can the Fama and French factors explain the perceived cost of capital?

- Let's step back
- Should the FF model explain the perceived cost of capital?
- FF add “size” and “value” premium

Idea of the paper

Can the Fama and French factors explain the perceived cost of capital?

- Size is hard to motivate with an economic model
- Size may proxy for illiquidity or asymmetric information – but there are more direct ways of measuring

Idea of the paper

Can the Fama and French factors explain the perceived cost of capital?

- Value does have an economic motivation
- Simple Gordon model suggests discount rates linked to d/P and to expected growth.
- However, it is rare that this factor is used
- Graham Harvey (2001) show CAPM is overwhelming model and discussions with CFOs indicate that little has changed
- However, managers might be operating “as if” they are using model

Duff and Phelps/Kroll

On the use of Fama and French factors

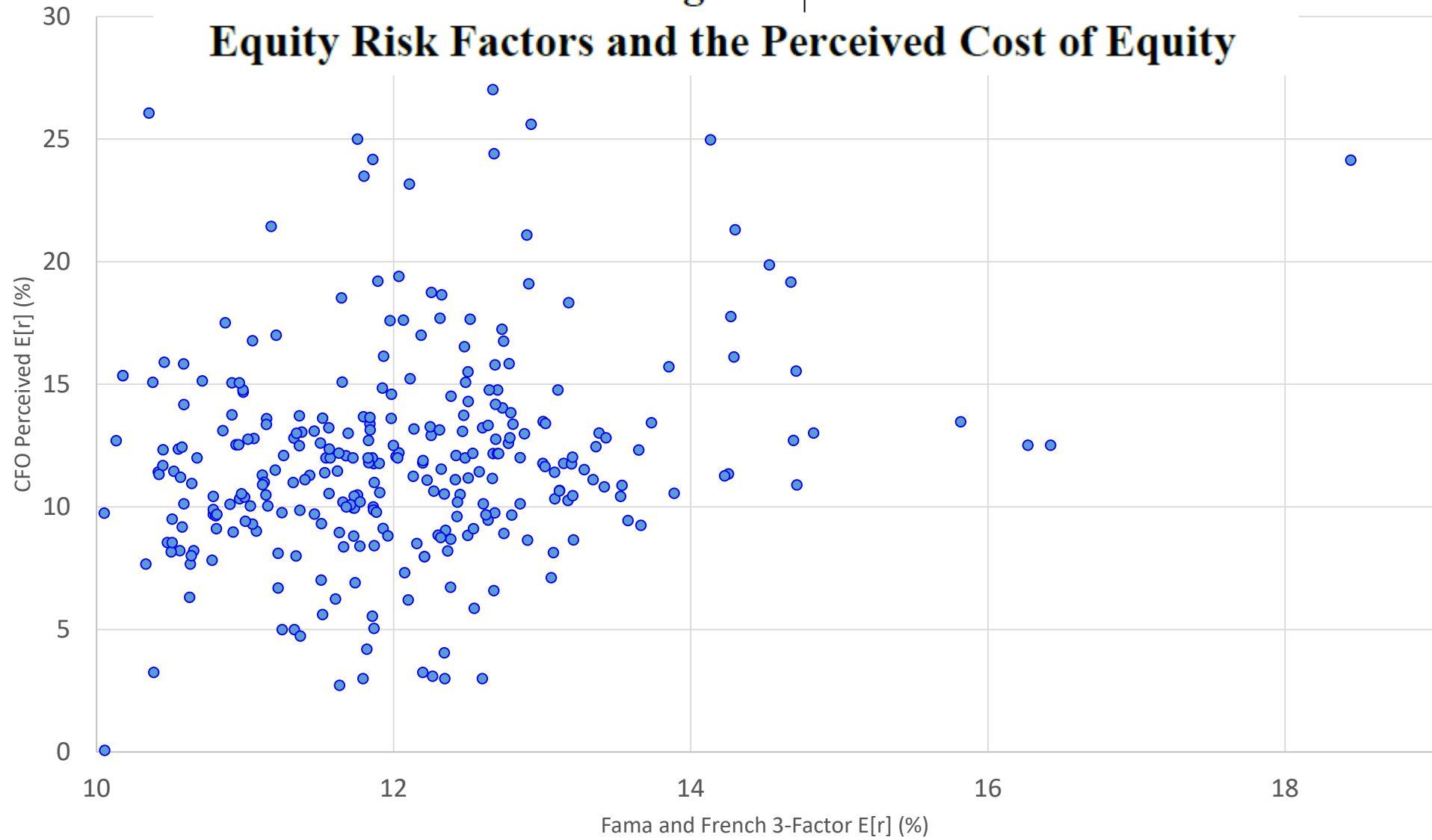
- “Although we calculate FF estimates by industry, it is not common for valuation analysts to use the FF models (either 3-factor or the 5-factor) to estimate cost of equity capital. The reason is probably that the FF models are
 - i. harder to implement and explain, and
 - ii. probably don't give better estimates than a simple CAPM with adjustments.”

Duff and Phelps/Kroll

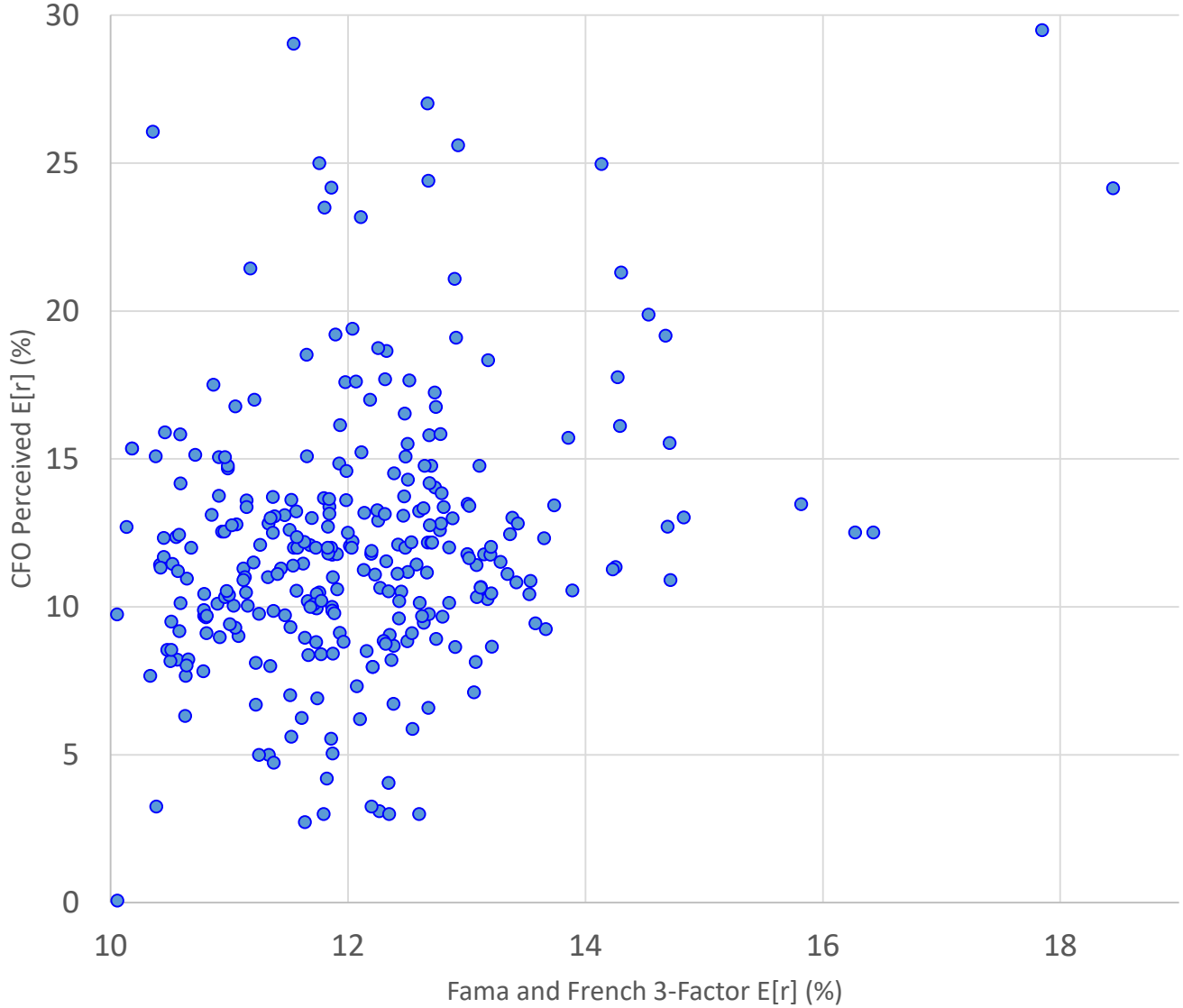
On HML

- “As far as **HML specifically**, ratios can be used to develop estimates of value, but is HML a big part of this? **Not really.**
- **There’s enough complexity in finding a consensus on what the market (equity) risk premium should be.** Trying to find a risk premium for HML, size and even the two new factors and then measure individual companies (the peer group) sensitivity to those risk premia would make the process even more complex.
- Valuation practitioners would spend their entire budgeted time trying to estimate cost of capital and not have time to focus on the projected cash flows themselves (growth rates, margins, Terminal Year value, etc.)

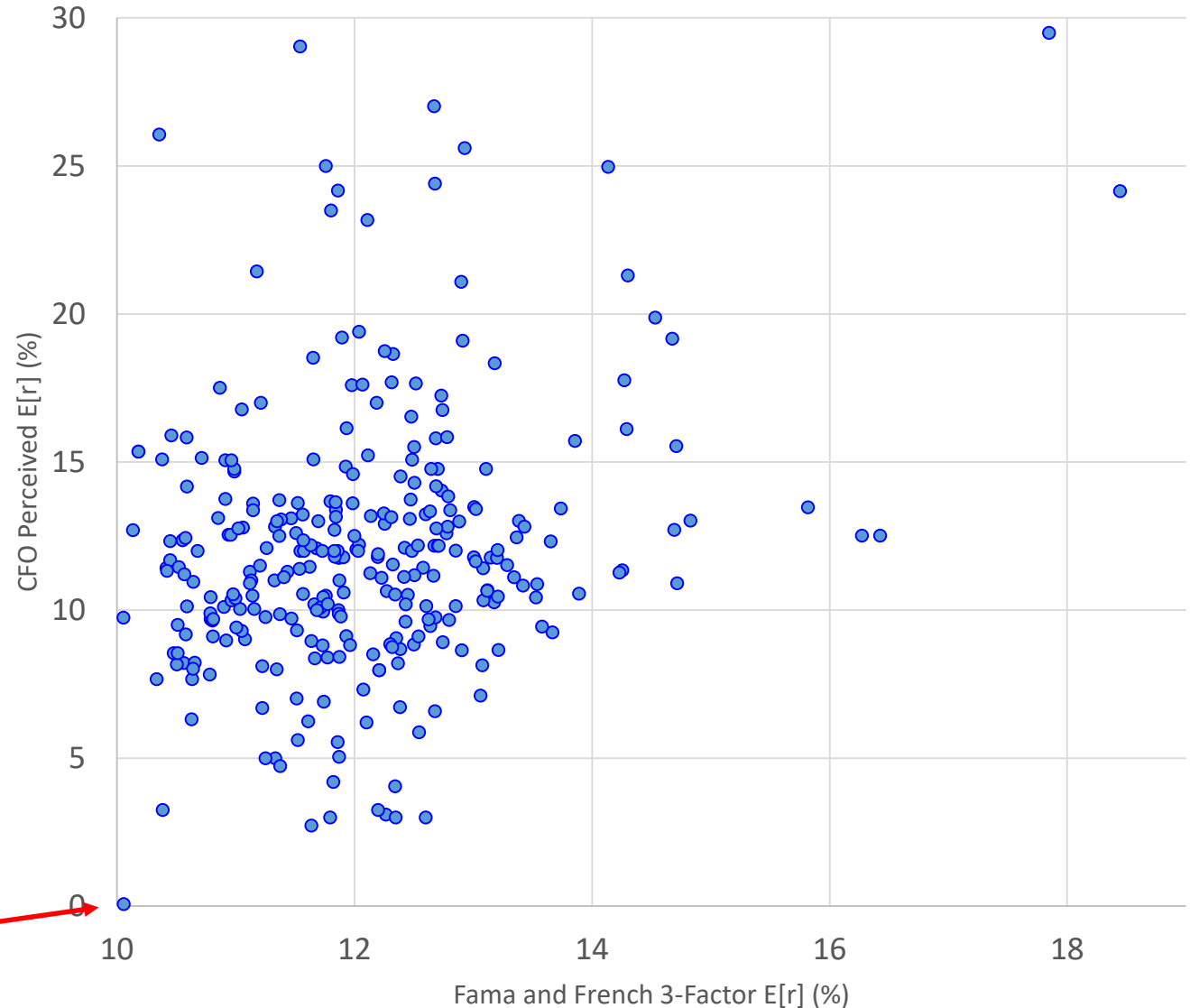
Figure 4



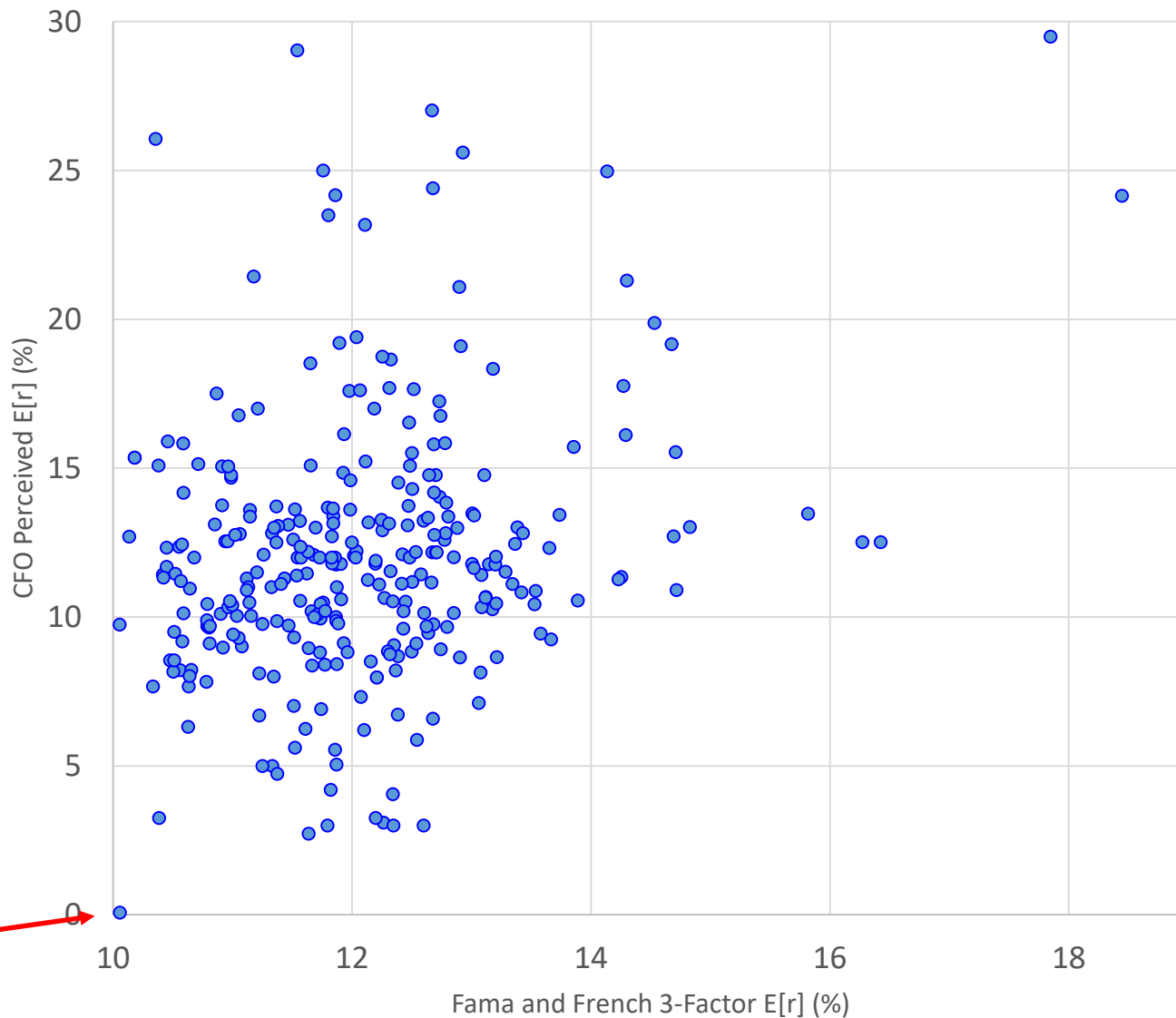
CFO Perceived Cost of Capital vs. FF3



CFO Perceived Cost of Capital vs. FF3



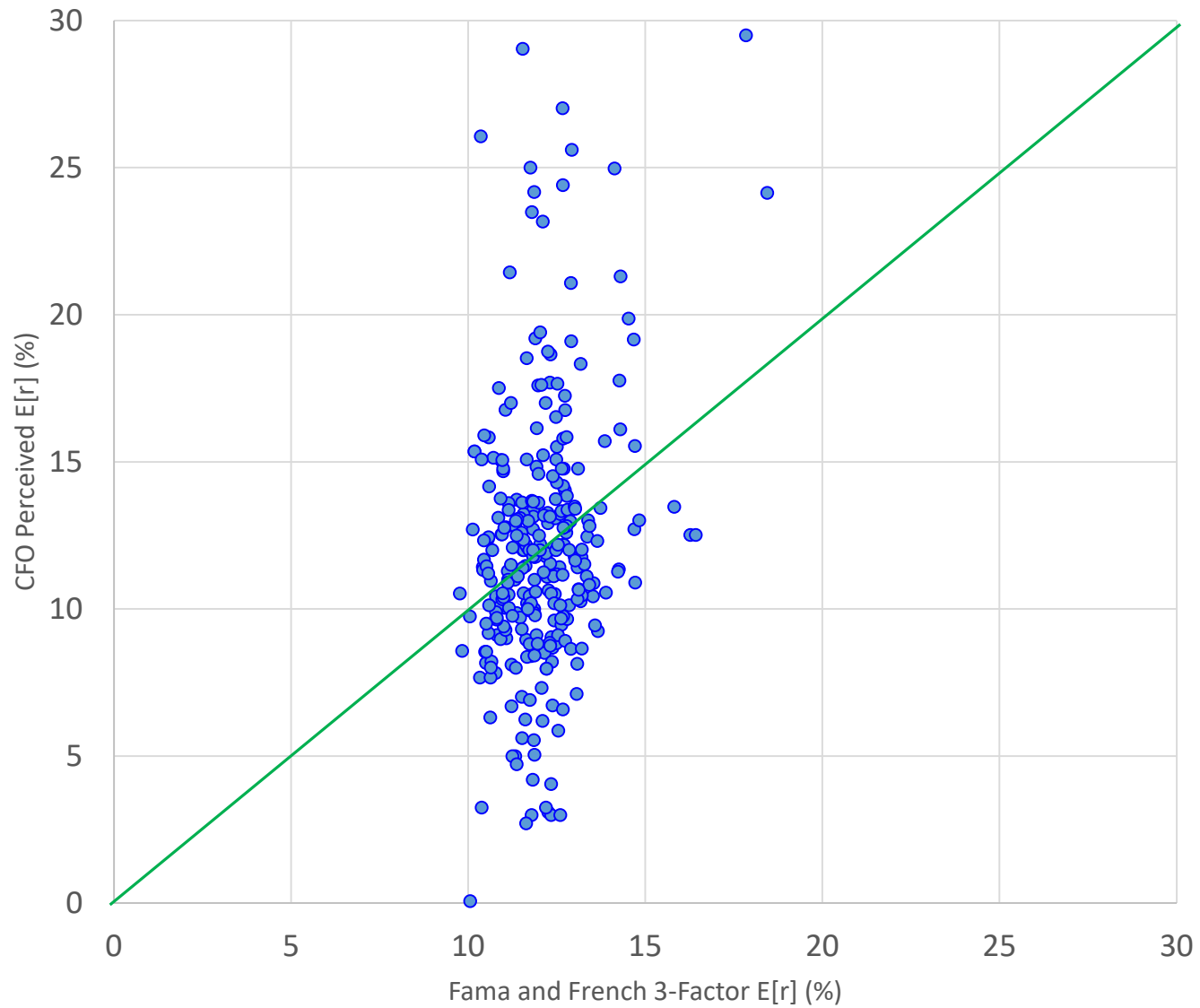
CFO Perceived Cost of Capital vs. FF3



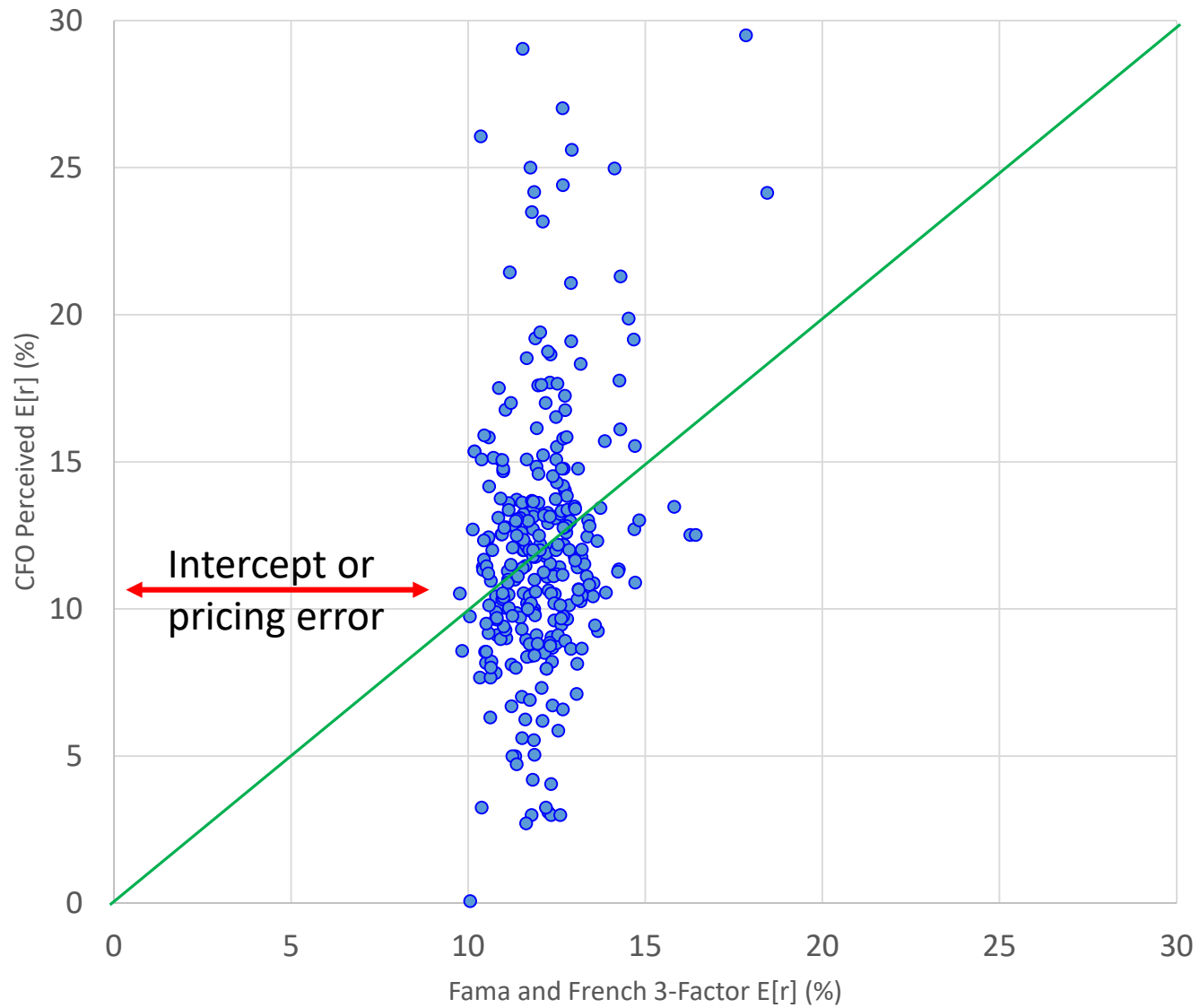
0.074%

Should be 7.4%

CFO Perceived Cost of Capital vs. FF3



CFO Perceived Cost of Capital vs. FF3



Future direction

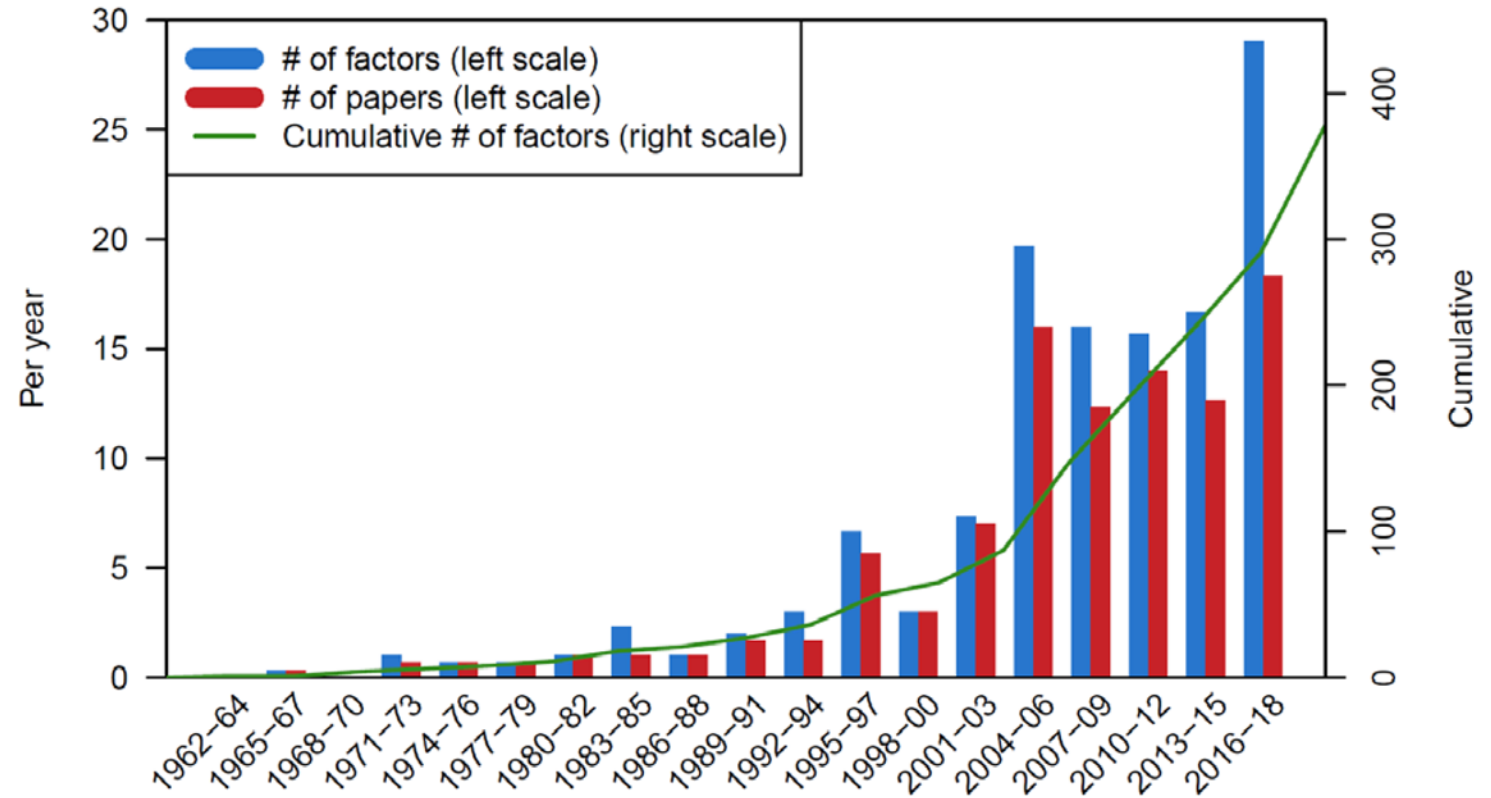
You have 300 observations of the perceived cost of capital

- There is a unique opportunity to reverse engineer asset pricing
- The problem with all asset pricing research is that we don't observe the expected returns. The Graham-Harvey database allows us to observe the expected returns

Future direction

There are many candidate factors.

- Focus on the ones with solid economic foundation.
- Which factors fit the perceived cost of capital?
- Getting beta correct is also crucial (long-term vs. short-term)



* Journals published through December 2018. Data collection in January 2019.

Source: Harvey and Liu, A Census of the Factor Zoo