



The structure of information release and the factor structure of returns[☆]

Thomas Gilbert, Christopher Hrdlicka*, Avraham Kamara

Michael G. Foster School of Business, University of Washington, PACCAR Hall, Box 353226, Seattle, WA 98195-3226, USA

ARTICLE INFO

Article history:

Received 12 May 2016

Revised 20 December 2016

Accepted 11 January 2018

JEL classification:

G12

Keywords:

Earnings announcements

CAPM

Factor models

SMB

HML

ABSTRACT

We model how firms releasing information on different dates causes the CAPM to fail, requiring an additional factor based on the information structure to price assets. We exemplify this mechanism's empirical relevance using quarterly earnings announcements, which cluster across months along size and book-to-market. Seventy percent of the alpha reduction from including SMB and HML occurs in the four main earnings announcement months. The information structure factor accounts for all of SMB and HML's seasonal alpha reduction and one third of their overall alpha reduction. Controlling for size and book-to-market, exposures to SMB and HML vary with firms' earnings announcement month.

© 2018 Elsevier B.V. All rights reserved.

1. Introduction

The release of information resolves risk. We investigate how this fact provides a link between the factor structure of returns and the structure of information release. The asset pricing literature mostly assumes a uniform release of information and hence that risk premia accrue uniformly over time. We relax this assumption and model how the non-uniform release of information induces time-variation in risk premia and investment opportunities. This discount

rate effect causes the Capital Asset Pricing Model (CAPM) to fail. Correcting this failure requires an additional factor based on the structure and timing of information release, consistent with Merton's (1973) Intertemporal CAPM. We show the empirical relevance of this mechanism in the context of the non-uniform release of quarterly earnings announcements.

While it is well known that the preponderance of earnings announcements occurs in the first month of each quarter, we show that there is a monthly clustering of these announcements along the size and book-to-market dimensions. In each quarter, big stocks tend to report earlier than small stocks and value stocks tend to report earlier than growth stocks.¹ For instance, 70% of big stocks announce in the first month of the quarter while only 40% of small stocks do so. In light of our model, this information clustering suggests a novel reason why the small-minus-big (SMB) and high-minus-low

[☆] We are grateful to Michael Brennan, Wayne Ferson, Wesley Gray, Mark Grinblatt, Ralph Koijen, Juhani Linnainmaa (referee), Stephan Siegel, Jake Thornock, Brett Trueman, Lance Young, seminar participants at the University of Rochester, the University of Alberta, the SFI at the EPFL and the University of Lausanne, the University of Washington, as well as participants at the Jacobs Levy Equity Management Center 2014 Conference at the Wharton School at the University of Pennsylvania and at the 2015 Pacific Northwest Finance Conference for helpful comments and discussion. All errors remain our own.

* Corresponding author.

E-mail address: hrdlicka@u.washington.edu (C. Hrdlicka).

URL: <http://faculty.washington.edu/hrdlicka/> (C. Hrdlicka)

¹ Chambers and Penman (1984), Penman (1987), and Atiase et al. (1989) note that larger firms tend to report earlier than small firms.

(HML) factors help price assets. A factor such as SMB that is long last-month announcers, small stocks, and short first-month announcers, big stocks, captures the structure of information release in addition to capturing underlying risks.

To illustrate the above mechanism, we build a two-period, two-asset rational expectations model wherein we solve for the endogenous factor structure of returns as we vary the structure of information release. To focus on the effects of information release, both assets have identical terminal cash flow distributions: a common shock multiplied by a stochastic asset-specific exposure. The stochastic exposures to the common shock are consistent with time-varying betas. We consider two information structures: one where investors learn the exposures simultaneously for both assets and one where they learn them at different dates. The timing of when investors learn these exposures affects the timing of returns but leaves the unconditional expected returns unchanged.

In the case with a uniform information release structure, both assets release their cash flow information, the common shock and firm-specific exposures, simultaneously. Since there is nothing left to announce, both returns are determined solely by these realized cash flows, and the CAPM prices both assets. In the case with a non-uniform information release structure, investors learn the terminal cash flow of the first asset at date 1 by seeing both the common shock and its asset-specific exposure, but they do not see the second asset's exposure until date 2. The initial release informs investors about the importance of the yet-to-be-released information, creating time-varying expected returns for the second asset.

The exposure to time-varying returns alters the second asset's market beta and, by the adding up constraint, that of the other asset. This change is a distortion of the CAPM betas away from their values in the benchmark case of the uniform information structure. This distortion does not simply arise from issues of statistical estimation, since it would occur even with an infinite series of perfectly measured returns. Importantly, since expected returns remain the same under both information structures, this beta distortion causes the CAPM to fail.

The intuition for this failure is as follows. Suppose investors observe a positive innovation in the common shock when the first asset releases its cash flow information at date 1. The first asset's return is driven up solely by this realized cash flow. The second asset's return is also driven up by this positive innovation as investors rationally increase their expectation of the second asset's terminal cash flow (i.e., cash flow effect). Importantly, because of the yet-to-be-released information about the second asset's exposure, investors simultaneously update their uncertainty about the second asset's terminal cash flow. In this case, the common shock's positive innovation increases the uncertainty from the remaining unknown asset-specific exposure, making the second asset conditionally riskier. The change in conditional risk is clearest in the extreme case where the common shock is zero: investors revise their uncertainty down to zero since the product of the exposure and the common shock is zero regardless of the ex-

posure realization.² This change in risk is a discount rate effect that alters the asset's second-period expected return, and it is accompanied by an offsetting realized return at date 1. The second asset's first-period return is thus a combination of both a cash flow effect and a discount rate effect that work in opposite directions.

The discount rate effect alters both assets' covariance with the market and hence also alters their CAPM betas. The direction of the betas' distortion depends on the relative importance of the cash flow effect versus the discount rate effect in the overall market return. This importance is determined by the asset weights because the cash flow effect is present in both assets' returns whereas the discount rate effect is present only in the second asset's. If the market weight of the first asset is high, the cash flow effect dominates the market return. As a result the discount rate effect dampens the second asset's comovement with the market, distorting its beta down and the beta of the first asset up. In contrast, when the market weight of the first asset is sufficiently low, the discount rate effect dominates, which accentuates the comovement of the second asset with the market in the first period, distorting its beta up and the beta of the first asset down.

In the model, the discount rate effect is captured by a factor based on the information release structure that is long the second asset (date-2 announcers) and short the first asset (date-1 announcers). The addition of this last-minus-first (LMF) factor to the CAPM eliminates the alphas that were generated by the above beta distortions. In addition, compared to the CAPM, this two-factor model generates a reduction in alphas that is concentrated in the first period.

In light of the clustering of quarterly earnings announcements by size and book-to-market, SMB and HML are empirical analogs of the model's LMF factor. The discount rate effect that varies with the asset weights is a key contribution that allows the model to match the sign of both SMB and HML given the opposite clustering of announcements along the two characteristics. When the market weight of date-1 announcers is large, consistent with big firms announcing before small firms, we obtain alphas consistent with the positive SMB premium: small firms, i.e., date-2 announcers, earn positive alphas. In contrast, when the market weight of date-1 announcers is consistent with value firms announcing before growth firms, we obtain alphas consistent with the positive HML premium: value firms, i.e., date-1 announcers, earn positive alphas.

The model makes five predictions that we test in the context of the non-uniform information structure of earnings announcements. First, we find evidence of the discount rate effect: following above-average market returns in month 1 of the quarter, stocks announcing in months 2 or 3 have higher expected returns in their announcement months. This differs from the earnings announcement pre-

² In the context of a model of investors learning about mutual fund manager performance, [Franzoni and Schmalz \(2017\)](#) use a similar multiplicative structure with a stochastic exposure to a common shock so as to generate time-varying uncertainty. In their case, the magnitude of factor realizations (e.g., market return) affects the importance of uncertainty about the exposure (i.e., betas) to such factors.

Download English Version:

<https://daneshyari.com/en/article/7361950>

Download Persian Version:

<https://daneshyari.com/article/7361950>

[Daneshyari.com](https://daneshyari.com)