Discussion of:

Commonality in Misvaluation, Equity Financing, and the Cross Section of Stock Returns

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Motivation

- The key question Hirshleifer and Jiang (2007) address is whether the prices of over- and under-valued stocks co-move as a result of mispricing shocks.
- HJ note that behavioral theories predict comovement of firms based on both mispricing of underlying fundamental factors, and based on shifts in sentiment.
  - Daniel, Hirshleifer, and Subrahmanyam (2001), Barberis and Shleifer (2003).

Paper Outline

Hirshleifer and Jiang (2007) present an interesting set of results:

1. Build a factor mimicking portfolio, **U**ndervalued-**M**inus-**O**vervalued, which buys repurchasers, and shorts recent issuers.
2. Show that UMO is not spanned by the F-F/C factors Mkt, HML, SMB and MOM.
3. $\text{UMO}_{\perp}$ (an orthogonalized UMO), earns a large premium over this sample.
4. Individual firm loadings on UMO are less stable than loadings on Mkt, HML, SMB.

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What is UMO Capturing?

- HJ argue that **UMO** is inherently "different" than other factor-mimicking portfolios (*e.g.*, **HML**).

  ...variation in UMO cannot be fully explained by fundamental cash flow factors, because there are common fluctuations in prices due to investor misperceptions or sentiment. UMO is designed to capture such common, irrational fluctuations. Return factors such as those of the 3- or 4- factor model may contain non-fundamental fluctuations as well. But ... they are only imperfect proxies for non-fundamental fluctuations ... [p.9]

Are UMO and HML Different?

- UMO probably doesn't capture *just* sentiment fluctuations, and probably isn't a *perfect* proxy for mispricing.
  - For example, there are undoubtedly firms that issue equity even when they are not overvalued.
    - This might happen when they have good investment opportunities, lack internal funds, and cannot otherwise access capital markets.
    - This set of firms are likely to experience common fluctuations in price due to movements in fundamental factors.
- *Consistent with this, HJ's results indicate that both UMO and HML are priced*:
  - This wouldn't be the case were UMO a perfect proxy for mispricing.

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Fundamental and Non-fundamental Fluctuations

- As discussed earlier, one part of the HJ paper is to distinguish between fundamental and non-fundamental fluctuations.
- My sense is it is useful to put a bit more structure on this.
  - My motivation here is to show that their current set of tests don't necessarily demonstate that *any* of UMO's returns are due to sentiment fluctuations.
  - I also want to discuss the sorts of tests that could show this in a convincing way.

Model I – FF Rational Risk Premia

- Fama and French (1993) argue that the high premia earned by high BM stocks are a result of these stocks starting to co-move with a "distress" factor.
- Here, the underlying model of returns might be a standard factor model:

$$\tilde{r}_{i,t} = E_{t-1}[\tilde{r}_{i,t}] + \sum_{j=1}^{J} \beta_{i,j}\tilde{f}_{j,t} + \beta_{i,D,t-1}\tilde{f}_{D,t} + \tilde{\epsilon}_{i,t}$$

where $\beta_{i,D,t-1}$ is firm i's loading on the distress factor, $\tilde{f}_{D,t}$ at time t. Expected returns are a linear function of all factor loadings:

$$E_{t-1}[\tilde{r}_{i,t}] = r_{f,t} + \sum_{j=1}^{J} \beta_{i,j}\lambda_j + \beta_{i,D,t-1}\lambda_D$$

Model II – Fluctuations in Sentiment

- Almost exactly the same return generating process can describe returns when there are sentiment fluctuations (as in Barberis and Shleifer (2003)):

$$\begin{aligned} \tilde{r}_{i,t} &= E_{t-1}[\tilde{r}_{i,t}] + \sum_{j=1}^{J} \beta_{i,j}\tilde{f}_{j,t} + \beta_{i,D,t-1}\tilde{f}_{M,t} + \tilde{\epsilon}_{i,t} \\ E_{t-1}[\tilde{r}_{i,t}] &= r_{f,t} + \sum_{j=1}^{J} \beta_{i,j}\lambda_j + \beta_{i,M,t-1}\lambda_{M,t-1} \end{aligned}$$

- Here, though, the movements in prices linked to $\tilde{f}_{M,t}$ result from changes in sentiment/Mispricing, as opposed to "rational" shifts in risk-premia. The premium $\lambda_{M,t-1}$ arises from mispricing, rather than rational risk aversion.

Model III - Fundamental Mispricing

- HJ motivate this model with their example of oil mispricing.
- Mathematically, a *time-invariant*, J-factor model describes the variance-covariance matrix of returns:

$$\begin{aligned} \tilde{r}_{i,t} &= E_{t-1}[\tilde{r}_{i,t}] + \sum_{j=1}^{J} \beta_{i,j} \tilde{f}_{j,t} + \tilde{\epsilon}_{i,t} \\ E[\tilde{r}_{i,t}] &= r_{f,t} + \sum_{j=1}^{J} \beta_{i,j} \lambda_{j,t-1} \end{aligned}$$

- Now, however the expected returns associated with the J factors, $\lambda_{j,t-1}$, vary through time as a result of changing factor mispricing (as in the oil example).

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Exmpirically Discriminating between Models I and II

Rational (FF) Model:

$$\tilde{r}_{i,t} = E_{t-1}[\tilde{r}_{i,t}] + \sum_{j=1}^{J} \beta_{i,j}\tilde{f}_{j,t} + \beta_{i,D,t-1}\tilde{f}_{D,t} + \tilde{\epsilon}_{i,t}$$

Sentiment Model:

$$\tilde{r}_{i,t} = E_{t-1}[\tilde{r}_{i,t}] + \sum_{j=1}^{J} \beta_{i,j}\tilde{f}_{j,t} + \beta_{i,M,t-1}\tilde{f}_{M,t} + \tilde{\epsilon}_{i,t}$$

- It is possible to discriminate between these two models in situations like index inclusion:
  - Here, the identification comes from $\sigma^2(f_{D,t}) = 0$.
- Here, where issuers are probably fundamentally different than non-issuers, you can't argue that $\sigma^2(f_{D,t}) \neq 0$.
- Here, discrimination between the models must, in the end, rely on showing that $\tilde{f}_{D/M,t}$ does or does not covary with changes in marginal utility.

Empirically Discriminating between Models II and III

$$\tilde{r}_{i,t} = E_{t-1}[\tilde{r}_{i,t}] + \sum_{j=1}^{J} \beta_{i,j}\tilde{f}_{j,t} + \beta_{i,D,t-1}\tilde{f}_{M,t} + \tilde{\epsilon}_{i,t}$$

- However, discriminating between the "sentiment" and "fundamental mispricing" models *can* be done based on returns alone.
- The sentiment model embeds the hypothesis that, as firms *become* misvalued, they *start to* covary with other misvalued firms.
  - This can be tested, but hasn't been here.
- In Daniel and Titman (1997), we looked at whether the returns covariance value firms changed as they became value firms.
  - We found no evidence of increased covariance.
  - It would be interesting to apply these same tests to other factors such as HJ's UMO.

References I

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