

Episode 6

Can the Market Multiply and Divide? Non-Proportional Thinking in Financial Markets

April 8, 2019

Kelly Shue's research challenges the conventional wisdom that size is the fundamental determinant of volatility and offers investors a window on an under-appreciated driver of asset price movements. This Conversation is based on

Can the Market Multiply and Divide? Non-Proportional Thinking in Financial Markets (March 2018) Kelly Shue and Richard Townsend

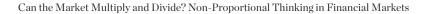
<u>Read in SSRN</u>



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JonathanKelly, thanks for joining us. You recently wrote an article called "Can the Market Multiply and Divide?
Non-Proportional Thinking in the Financial Markets." Can you explain to us what non-proportional
thinking means?KellyProportional thinking means thinking in percent or proportions, and non-proportional thinking means

Proportional thinking means thinking in percent or proportions, and non-proportional thinking means thinking in dollar units. Investors in financial markets should always be thinking in percent or return units, because the share price of a financial security has no inherent meaning. The share price is determined simply by how many shares of stock are divided into a company's market capitalization.

Why might investors start thinking in dollars when they shouldn't? Because media outlets, such as the Wall Street Journal, have historically reported only the dollar price in share movements relative to the previous day, and modern iPhone apps, for example, show the daily price change by default, so the user has to go into settings and turn on return units.

To see how non-proportional thinking can distort financial returns, let's consider two otherwise identical stocks: one is \$20 per share and the other is \$30 per share. The \$20 per share stock's market capitalization is divided into more shares, so it has a lower share price.

Suppose a piece of news arrives: both companies have a new CEO, who is known to be skilled. What should happen is that both the \$20 stock and the \$30 stock go up in value by the same percentage return, but if investors think in dollar units, they might reason that both stocks should go up in value by one dollar each.

This leads to a return overreaction for the lower-priced stock because the return is just a dollar divided by the share price. The same thinking is also going to lead to a return underreaction for the higher-priced stock, and all of this is going to lead to mispricing in financial markets.

Jonathan Can you talk us through some of those implications? You have mentioned underreaction and overreaction. It sounds like it has to do with volatility.

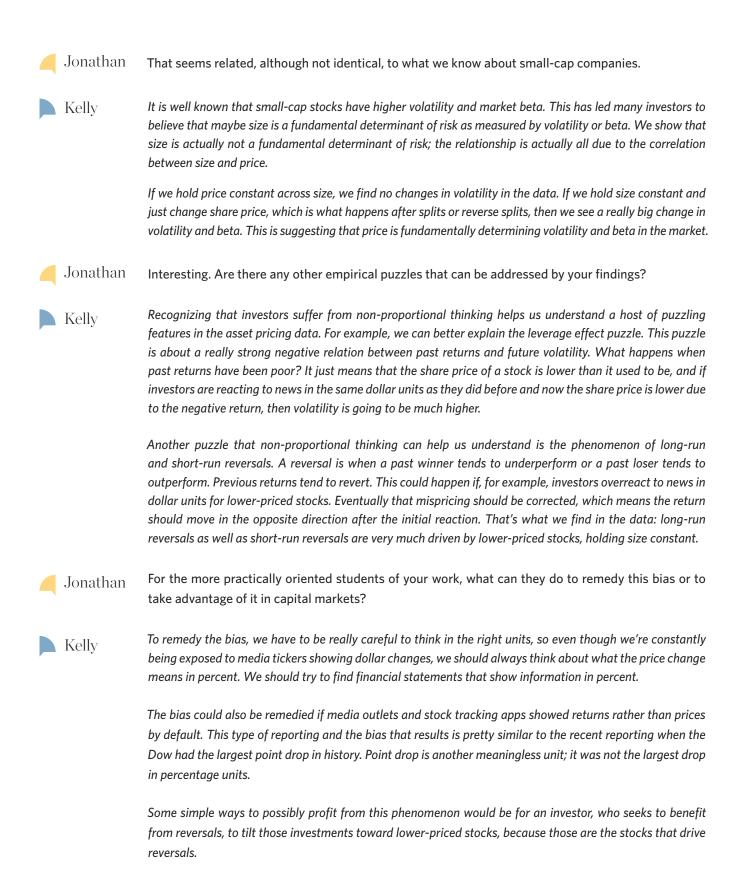
Kelly In non-proportional thinking, when investors react to news in dollars, it leads to greater return reactions for lower-priced stocks and that translates into higher return volatility for the lower-priced stocks and lower return volatility for higher-priced stocks.

The same predictions actually apply to measures of market beta. For aggregate market news, when investors react in dollar units, the lower-priced stock is going to move too much with the market, leading to a higher beta. And this is what we find in the data. All else equal, lower-priced stocks have much higher volatility as well as higher market beta.

The cleanest evidence of this is right after a stock split. After a stock split nothing fundamental about the stock changes, but the share price is half of what it was before. If investors continue to react to news in dollar units, then the return reactions are going to be too big after the split. That's what we observed. The day after a stock split, volatility is 20% to 30% higher than it used to be, beta is also higher by about 30%, and it stays higher for the next six months to one year after the split.











The other way to benefit from this bias would be a pure volatility bet. An investor could buy straddles that pay off when realized volatility is higher than what is estimated by option traders.

Jonathan Thank you for explaining what non-proportional thinking is and how it impacts a stock's volatility and beta as well as the small-cap effect and mean reversion.



Thank you very much.





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