



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

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When pricing financial assets, rational agents should think in terms of proportional price changes, i.e., returns. However, stock price movements are often reported and discussed in dollar rather than percentage units, which may cause investors to think that news should correspond to a dollar change in price rather than a percentage change in price. Non-proportional thinking in financial markets can lead to return underreaction for high-priced stocks and overreaction for low-priced stocks. Consistent with a simple model of non-proportional thinking, we find that total volatility, idiosyncratic volatility, and market beta are significantly higher for stocks with low share prices, controlling for size. To identify a causal effect of price, we show that volatility increases sharply following stock splits and drops following reverse stock splits. The economic magnitudes are large: non-proportional thinking can explain the “leverage effect” puzzle, in which volatility is negatively related to past returns, as well as the volatility-size and beta-size relations in the data. We also show that low-priced stocks drive the long-run reversal phenomenon in asset pricing, and the magnitude of reversals can be sorted by price, holding past returns and size constant. Finally, we show that non-proportional thinking biases reactions to news that is itself reported in nominal-per-share units rather than the appropriate scaled units. Investors react to nominal earnings per share surprises, after controlling for the earnings surprise scaled by share price. The reaction to the nominal earnings surprise reverses in the long run, consistent with correction of mispricing.

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