

Innovation and Information in Equity Markets: A Non-Monotonic Relationship

William Brockett, 2018

Motivation: There has, for some time, been a lack of consensus in the field of economics on the relationship between the financial sector and economic growth. Much research has explored the nexus between financial markets and economic growth through the lens of liquidity and by considering the availability of external financing. My research seeks to broaden the debate by offering another mechanism by which financial markets influence economies. I provide theory and evidence that informational asymmetries between equity markets participants and firm-managers influence the rate of innovation and technology adoption in national economies.

Theory: Not all participants in equity markets are equally informed about the companies in which they are considering investing. Institutional investors, who often dedicate many analysts to determine the management practices and productivity of a firm, hold a different degree of information than retail investors, who base many of their investment decisions on market sentiment. Investors may have a “pro-technology bias” and so market sentiment may often be overly optimistic about the adoption of novel technology. This means a market with a high proportion of uninformed investors may value a firm investing at the technological frontier more highly than if it did not. Firm-managers, seeking to maximize equity value, have an incentive to exploit this bias by investing in more innovation and R&D. The greater the proportion of uninformed investors, the greater the firms’ incentives to do this.

This is not the only channel, however, through which uninformed investors influence the decisions of firm-managers. A reduced level of informed trading likely increases market-wide stock price variation unrelated to fundamentals, leading to greater uncertainty in the future market value of the firm. If firm-managers are risk-averse, they are then disincentivized to make risky investments at the technological frontier in markets exhibiting large fluctuations, preferring to make such investments in stable, highly-informed markets.

Two forces arise from the degree of information asymmetry between the market and firm-manager. In markets with a high-proportion of uninformed investors, firm-managers can gain from influencing market sentiment through innovation, exploiting the biases of participants to maximize equity value. Simultaneously, firm-managers are reluctant to make these same investments in highly-uninformed markets, as these markets are less stable. Ultimately, they have the greatest incentive to innovate in equity-markets with an intermediate level of informed investors, in which informed investors stabilize the market while uninformed investors provide an opportunity to signal with innovation.

Empirical analysis and results: I empirically evaluate this theory by considering the relationship between metrics for the degree of information held by market participants in different national economies (heavily influenced by the transparency provided by accounting practices and other financial regulations) and proxies for innovation in each nation, such as yearly patent applications and R&D expenditure. I test my hypothesis by running quadratic regressions of innovation metrics on market-informedness. Although the explanatory power of my hypothesis is not incredibly high (there are other factors influencing innovation, prime among them education levels), I do find at a statistically significant level that there is a non-monotonic (hill-shaped) relationship between market information and innovation. I confirm the hypothesis that an intermediate degree of information-asymmetry leads to the highest levels of innovation. The implication of this finding is that financial regulations leading to greater market transparency may ultimately lead to lesser innovation.

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