



The tradeoff between risk sharing and information production in financial markets

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Abstract

The production of information in financial markets is limited by the extent of risk sharing. The wider a stock's investor base, the smaller the risk borne by each shareholder and the less valuable information. A firm which expands its investor base without raising capital affects its information environment through three channels: (i) it induces incumbent shareholders to reduce their research effort as a result of improved risk sharing, (ii) it attracts potentially informed investors, and (iii) it may modify the composition of the base in terms of risk tolerance or liquidity trading. Implications for individual firms and the market as a whole are derived.

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1. Introduction

Are stocks held by more investors more closely followed? This is an important question both for companies and policy makers who often take actions to promote a broad equity ownership.¹ The answer is clearly positive if each investor produces a fixed amount of information, indepen-

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¹ For example, companies list on additional exchanges, split their stock, reduce the number of shares in a roundlot or advertise to expand their investor base (see the references below). Governments and regulators advertise shares in privatized companies and grant favorable tax treatment to equity to encourage households to become stockholders.

dent of the number of investors in the company. It is no longer clear-cut if this amount declines with the number of stockholders as we argue in this paper. We show that a tradeoff exists between the number of informed shareholders and their research effort. Everything else equal, a more widely-held stock is a stock in which each shareholder holds, on average, a smaller stake. Because the benefit of private information, unlike its cost, rises with the scale of investment, a more widely-held stock is less actively researched. Putting it differently, *information production is limited by the extent of risk sharing*: the wider the shareholder base, the smaller the risk borne by each shareholder in equilibrium and the less valuable information. This insight echoes the familiar concept from the corporate governance literature which argues that a firm's ownership structure affects corporate control (see Shleifer and Vishny [65] for a survey). However, the information we consider is not used for management monitoring but for portfolio selection. Therefore, and this is a crucial difference, it is acquired *ex ante*, i.e. before cash flows are observed, and is revealed through prices.

We develop a rational expectations model that formalizes this insight. The model builds on two independent strands of research. The first strand, the literature on limited stock market participation, examines markets in which only a restricted set of investors participate because of entry costs (e.g. Merton [51], Hirshleifer [36], Allen and Gale [4], Basak and Cuoco [8], Shapiro [63]). Merton [51], for example, assumes that investors are only aware of the existence of a subset of public companies, an assumption known as the “Investor Recognition Hypothesis” (IRH). This literature assumes that investors who trade an asset, share the same information. Second, we draw on the literature on information acquisition in competitive markets (e.g. Grossman and Stiglitz [28], Verrecchia [72]). In these papers, investors choose how much effort, if any, to put into research. Informed stockholders spend resources on predicting firms' cash flows. Uninformed stockholders do not research stocks but extract from prices part of the information uncovered by informed stockholders. The extraction is only partial because the presence of liquidity traders makes the supply of stocks noisy.² As in the first strand of literature but unlike the second, we endow a stock with a restricted set of shareholders, i.e. we limit exogenously the size of the investor base. As in the second but unlike the first, we allow these shareholders to research the stock. The result is a model in which shareholders' incentives to collect information depend on the size of the investor base. The model also incorporates other relevant features such as heterogeneity in shareholder risk tolerance, variations in liquidity trading and equity issues.³

Agents in the model have mean-variance preferences as is common in the aforementioned strands of literature but they maximize a non-expected utility of the Kreps–Porteus type. These preferences and the generalization of iso-elastic utility by Epstein and Zin [23] and Weil [77] are widely used in asset pricing and macroeconomics. They allow to depart from the traditional expected utility framework in a tractable way and to examine informational scale effects in a ra-

² The presumption in this class of models (Grossman [27], Hellwig [34]) is that a greater number of traders makes the price more informative because the error from aggregating idiosyncratic private signals shrinks, holding fixed the precision of private signals. There is no aggregation error in our model because the number of traders is very large (Verrecchia [72], He and Wang [33]). We focus instead on the relation between the precision of private signals and the number of investors.

³ Differences in risk tolerance capture differences in investment scale across shareholders, for example as a consequence of differences in wealth. More risk tolerant shareholders make, on average, larger trades and hence follow the stock more closely. We show that the entire distribution of ownership, in addition to the number of shareholders and their average risk tolerance, matters to a stock's informativeness (Proposition 8). Furthermore, we model the proportion of liquidity traders in the stock. This is a relevant parameter since private information becomes easier to conceal and therefore more valuable when liquidity trading accounts for a larger proportion of trades.

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