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Information disclosure and price discovery *

Ya Tang

Peking University, Beijing 100871, PR China

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ABSTRACT

In this paper, I present a parsimonious, theoretical model to examine the influence of disclosure on market efficiency and on the cost of capital in the presence of endogenous information acquisition. Because disclosure "crowds out" private-information production, disclosure can either improve or harm market efficiency and the cost of capital, depending on whether investors' private-information production is sensitive to disclosure. This nonmonotonic disclosure-cost-of-capital relation helps reconcile the existing mixed empirical evidence and has implications for the disclosure policies of firms.

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1. Introduction

The accuracy with which asset prices reflect fundamental value is a critical indicator of wellfunctioning capital markets (e.g., Hayek, 1945; Fama, 1970; Peress, 2010; Ozsoylev and Walden, 2011). The process by which prices incorporate fundamental information is termed "price discovery" in the literature, and its effectiveness is called "market efficiency," "price efficiency," or "informational efficiency." Regulators and academics often see improving price discovery as an important goal. For example, O'Hara (1997, p. 270) writes: "How well and how quickly a market aggregates and impounds information into the price must surely be a fundamental goal of market design."

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E-mail address: yatang429@gmail.com

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The idea that public information disclosure improves price efficiency is compelling and intuitive to regulators. For instance, the conceptual framework of the Financial Accounting Standards Board (FASB) states that "(i)nformation about a reporting entity's financial performance helps users to understand the return that the entity has produced on its economic resources. [...] Information about the variability and components of that return also is important, especially in assessing the uncertainty of future cash flows, [...] and is helpful in predicting the entity's future returns on its economic resources" (FASB, 2010). Despite its obvious importance to regulation-related discussions, the market efficiency effect of disclosure is relatively less explored in the literature.¹ In this paper, I fill this gap by proposing a parsimonious model to examine the effect of disclosure on price discovery and on other important issues, such as information production and the cost of capital.

The model is a standard rational expectations equilibrium model extended with disclosure in the context of endogenous information acquisition. In the model economy, rational traders learn about a risky asset's payoff through three sources: stock price, costly information acquisition, and the firm's disclosure. In equilibrium, information acquisition and stock prices are determined simultaneously and are affected by disclosure.

I show that with endogenous private information acquisition, disclosure has opposing effects on market efficiency and thus it can either improve or harm price discovery. The first effect is a positive direct effect—more disclosure simply injects more information into the market, making the price closer to the fundamental value and thereby improving market efficiency. Disclosure also has negative indirect effects that occur through a "crowding out effect" on private information production. Specifically, public disclosure reduces the benefit of becoming informed, which in turn decreases the equilibrium number of traders who collect private information at a cost and hence decreases the total amount of information produced in the economy. When private information production is insensitive to public disclosure, the positive effect of disclosure dominates, and more disclosure helps the process of price discovery. When private information production is sensitive to public disclosure, the negative impact of disclosure on price efficiency could be strong enough to overwhelm the positive effect. As a result, the consequence of more disclosure could be less efficient price discovery.

The non-monotonic relation between disclosure and price efficiency has an important implication for the cost of capital, which is an essential factor for corporate decision making, asset pricing, and the development of institutional infrastructure. The cost of capital is typically measured by the expected rate of return on a risky asset, which is the expected difference between the cash flow generated by the asset and its price (e.g., Easley and O'Hara, 2004; Lambert, Leuz, and Verrecchia, 2007). There is a large empirical literature that reports the association between disclosure and the cost of capital, and the evidence is mixed.² For example, in a recent survey, Beyer, Cohen, Lys, and Walther (2010, p. 309) write: "Overall, the empirical evidence on the relation between voluntary disclosures, financial reporting quality attributes, and cost of capital is still inconclusive. We cannot draw unambiguous conclusions whether the theory and the related empirical evidence so far supports a significant statistical and economic link between information quality and cost of capital."³

In my model, when disclosure increases the informativeness of the asset price, it reduces the uncertainty faced by investors, thereby lowering the required rate of return. Conversely, when disclosure decreases the informativeness of the asset price, it raises the required rate of return by increasing the uncertainty faced by investors. Thus, the non-monotonic relation between disclosure and market efficiency is readily translated into a non-monotonic relation between disclosure and the cost of capital. This helps to reconcile the mixed empirical findings on the cost-of-capital effect of disclosure documented in the literature. That is, given the non-monotonic relationship, different kinds of empirical results could be identified based on different samples or types of firms being used in the

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¹ There are a few exceptions (e.g., Tong, 2007; Gao, 2008).

² See Appendix A for the literature on disclosure and the cost of capital.

³ Similarly, Leuz and Wysocki (2008, p. 35) state: "Overall, the evidence on the cross-sectional relation between a firm's voluntary disclosures, accounting attributes and cost of capital is still evolving and hence it is difficult to draw definitive and unambiguous conclusions whether the empirical evidence supports current theories on the link between information quality and cost of capital."

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