Investor Sophistication and Voluntary Disclosures

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Abstract. This paper studies voluntary disclosures in a model in which investors probabilistically become informed about whether a firm has received information. The firm’s value is established via a first price, sealed bid, common value auction. The paper demonstrates that the threshold level determining whether the firm withholds or discloses information uniformly declines in the probability investors are informed. The paper also shows that, notwithstanding the risk-neutrality of investors, the expected selling price of the firm strictly decreases (increases) in the probability individual investors are informed when that probability is small (large). These results follow from “winner’s curse” effects.

This paper studies voluntary disclosures in a model in which investors probabilistically become informed about whether a firm has received information. An “informed” investor knows when the firm has received information that it has not disclosed; an “uninformed investor” cannot tell whether the firm’s lack of disclosure is due to its lack of receipt of information or due to the firm having withheld information it has received. Each investor’s information set is private to him: neither the firm nor any other investor knows what any given investor knows. This is thus a model of trilateral information asymmetry, with investors potentially ignorant of what the firm knows, the firm ignorant of what investors know, and investors ignorant of what other investors know. It constitutes an extension of previous models of voluntary disclosure of Dye (1985) and Jung and Kwon (1988), in which the information asymmetry is unilateral: in those models, a firm sometimes receives private information that it may or may not disclose; all investors are unsure when the firm has received information, and they all interpret the firm’s disclosures or lack of disclosures in the same way. The principal reason this extension is of interest is that it may be regarded as the typical situation that firms and investors actually face: managers cannot predict exactly the price reactions attending their disclosures or nondisclosures of information to capital market participants, in part because they do not know the capital market participants’ entire information set, and investors may not know either what rival investors know or whether the firms they follow are withholding value-relevant information.

In this information environment, the paper examines the behavior of investors and an expected value-maximizing firm in a model where the firm’s market value is established as the outcome of a first price, sealed bid, common value auction, with each investor having the same chance $f \in [0, 1]$ of becoming informed (in the sense above). The models of Dye (1985) and Jung and Kwon (1988) are special cases of this analysis in which $f = 0$. When the firm does not disclose information, informed investors have different assessments of the conditional expected value of the firm from uninformed investors, since only informed
investors known the cause of nondisclosure. The absence of common knowledge about the information possessed by the firm, or by other investors, necessitates the development of the formal analysis in the paper to determine both the equilibrium expected market value of the firm in the absence of any disclosures and the firm’s optimal disclosure policy.

The principal results of this analysis are the following. As in the earlier work of Dye (1985) and Jung and Kwon (1988), the paper demonstrates that if the firm cannot commit to its disclosure policy before knowing whether it will receive information, it will select a threshold such that it will disclose its information, when it receives it, if its information is above the threshold, and otherwise it will withhold its information. The present paper demonstrates the new result that this threshold is uniformly declining in the probability \( f \) that any investor is informed. This result is intuitive, because the firm’s primary benefit from withholding information arises from uninformed investors’ inability to recognize whether the firm’s nondisclosure is explained by not having received information or by hiding information. So, if the probability that investors are uninformed decreases, the firm’s benefit from nondisclosure declines, and the firm discloses information more often. Other comparative statics involving this threshold disclosure policy are also obtained.

In Dye (1985) and Jung and Kwon (1988), the firm’s expected selling price, calculated before any information could have been received by the firm, is equal to the expected discounted present value of the firm’s cash flows, regardless of whether the firm could or could not commit to a disclosure policy, regardless of the probability that it receives information; in short, regardless of any parameters of the model. The twin assumptions that all investors are risk-neutral and identical in every way are responsible for this general finding. In this paper, the risk-neutrality of investors is also assumed, but it is demonstrated that if \( a \) the firm cannot commit to always disclosing its information or to never disclosing its information, and \( b \) the probability that any investor is informed is \( 0 < f < 1 \), then the firm’s expected selling price is strictly less than the expected discounted present value of its cash flows. In fact, we show that the firm’s expected selling price strictly decreases in \( f \) when \( f \) is near zero, and strictly increases in \( f \) when \( f \) is near one, when the firm is incapable of committing to a disclosure policy prior to receiving any information. As the body of the paper makes clear, all of these results are systematically related to “winner’s curse” effects (e.g., Wilson, 1977), in which the least well informed investors must condition their perceptions of the expected value of the firm on both their own estimates of the firm’s value and on the recognition that, if they win the auction, they are likely to have more favorable assessments of the firm’s value than other, better informed, investors.2 This phenomenon has two effects, both of which lead to a reduction in the expected market value of the firm: first, it makes these uninformed investors bid more conservatively than they would absent winners’ curse effects, and second, it motivates informed investors to sometimes bid less than what they know the firm to be worth because the informed investors can exploit the conservative bidding behavior of the uninformed bidders.

In demonstrating these findings, the paper develops what are believed to be new results in the study of first price, sealed bid, common value auctions in which any bidder is only probabilistically better informed than rival bidders. Bidders’ randomized Nash equilibrium bidding strategies are completely characterized and shown to be unique without imposing any refinement solution concepts. Also, closed form expressions for the seller’s expected