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On the synergy between disclosure and investment beauty contests ☆

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ABSTRACT

Many investments are noted for their "beauty contest" features in that decision makers desire conformity with others' choices due to inherent complementarities. This paper examines the incentives of firms to take preemptive action and publicly disclose their investments in such beauty contests. In this case, it is the beauty contest desire for coordination that incentivizes a firm to disclose because doing so allows it to convey information that establishes norms and thereby influence subsequent actions of others. Disclosure recipients too benefit from this arrangement because they access additional information on which to base their decisions.

1. Introduction

Economic beauty contests represent a wide array of circumstances wherein participants seek not only to make the right choices but also to coordinate behavior with others. A prominent beauty contest in the business realm entails investment complementarities. Investment complementarities arise, for example, when standardized platforms are beneficial, consumers desire compatible products, or product development entails technology spillovers. Each of these circumstances represents a scenario wherein a company desires to make an informed and appropriate investment choice but also to conform to the industry consensus in its choices. For example, in developing products to play high definition movies, companies had to not only consider their assessment of ideal technology (HD-DVD vs. BluRay) but also make a determination of which platform would develop as the industry standard. Similarly, the success of video game developers depends both on the quality of their games and the ability to pinpoint the popular gaming systems on which to develop them. The widespread availability of games, in turn, is a key determinant of a system's popularity. It is the notion that developers mutually benefit when they jointly embrace a particular gaming platform that is the hallmark of an investment "beauty contest." Given the many practical applications, investment beauty contests

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and the role of public information therein are now well established both theoretically (e.g., Angeletos and Pavan 2004, 2007) and experimentally (Cornand and Heinemann, 2014).

In this paper, we revisit the standard economic model of investment beauty contests to consider the cause and consequence of firms making early investment choices and disclosing them publicly. Our examination shows that such disclosures can be a mutually beneficial and endogenous part of beauty contests. Absent complementarities (i.e., the beauty contest feature), there is no incentive for a firm to disclose its investments in our model since a party which has already made its choice gains no benefit from others having additional knowledge.[1] In effect, disclosure entails a free rider problem: while the introduction of information brought by disclosures can assist others' decision-making, the discloser gets no benefit from such an information release. In an investment beauty contest, however, a firm can have incentives for disclosure of investment since the accompanying revelation of private information can coax subsequent firms to conform to its choice and, thus, better coordinate actions.

To elaborate, consider the basic tensions in an investment beauty contest. Each firm has access to both public and private information (signals) about the viability of an investment choice. In the case of equally precise signals, a Bayesian view would suggest that each signal receives equal weight in a firm's investment choice. However, due to the inherent investment complementarities, each firm also seeks to coordinate its investment choice with that of others. Such a desire to conform to the consensus results in each firm placing more (less) weight on the public (private) information than the Bayesian view would suggest, because the public signal serves as a focal point for coordination.

If one firm opts to be an early mover and disclose its investment choice, subsequent movers will have access to the public information, their own private information, and (indirectly) the discloser's private information. These late movers naturally benefit from the additional information at their disposal. Importantly, the disclosing party's investments too are altered. Knowing that its own private information will essentially become public, the discloser no longer opts to overweight the public signal and, thus, reverts to the usual Bayesian view of investment. In a sense, a disclosure helps start an accurate information cascade (e.g., Bikhchandani et al., 1992; Hirshleifer and Teoh, 2003). In this case, the cascade is set off not by the discrete nature of the choice but instead by each firm's inherent desire for coordination due to investment complementarities. In our initial analysis, we demonstrate these features formally by examining the equilibrium in an investment beauty contest in the presence of a fixed (exogenous) number of disclosers.

The natural follow-up to this inquiry is to consider under what circumstances some (or all) firms would have incentives to undertake disclosures. We address this question and derive the conditions under which disclosure arises endogenously. In particular, we show that if the public information is sufficiently noisy (or the private information is sufficiently informative), the equilibrium entails one firm disclosing with the remainder serving as (non-disclosing) information recipients.

The intuition for this equilibrium stems from a consideration of the underlying tensions of the investment game. Since each firm is seeking to make the "best" investment, its action will represent an unbiased estimate of the underlying economic environment. While Bayesian weights specify the minimum variance (most accurate) estimate possible, the investment game also favors coordination and this coordination effect translates into the firms sidestepping accuracy by shifting emphasis toward public (common) information. Disclosure has the potential to alter this relationship. By moving first, a firm makes its own private information effectively public – this translates into the disclosing firm no longer facing a tradeoff between accuracy and coordination and, as such, its accuracy improves. On the other hand, disclosing gives the other firm(s) a more diversified portfolio of common signals on which to coordinate. We show that since coordination is not merely a desire for correlation but rather covariance, this portfolio effect can actually dampen coordination when the already available public information is sufficiently accurate. For this reason, a firm finds disclosing worthwhile only if public information is sufficiently noisy.

Interestingly, this desire for disclosure is limited to one firm even if there are many in an industry. The reason for this is that when there is already one party committed to disclosing, a firm who opts to join in disclosure actually sacrifices accuracy in the process: joining other early-moving disclosers necessarily precludes the ability to wait and exploit the information provided by those early mover(s). As a result, a firm does not want to be part of a pack of disclosing early movers. In this sense, then, our results point to an endogenous "thought leader" in an investment beauty contest in that early disclosure can be optimal, but only for one firm.

Another implication of this result is that when endogenous disclosure by firms is taken into account, the introduction of new public information proves helpful to all. The well-known result of Morris and Shin (2002) is that overweighting (underweighting) of public (private) information by beauty contest participants can make infusion of additional public information harmful. Given their conclusion's importance, its empirical practicality and robustness have been argued on both sides (e.g., Svensson, 2006; Morris et al., 2006; Angeletos and Pavan, 2007; Gao, 2008; James and Lawler, 2011). It turns out that in our setting, the issue is moot. The reason is that firm disclosure introduces an indirect source of common information, and this provides a baseline level of public information that can be expected in any equilibrium. With this increased baseline precision level, additional and more precise public information is preferred.

Besides fully characterizing the investment and disclosure equilibrium in both the two-firm and multi-firm settings, we also supplement the analysis along three dimensions. First, we examine the case when firms are privy to signals of

[1] While unmodeled in this paper, there are other compelling reasons in practice for firms to disclose including satisfying governance and monitoring requirements, facilitating ongoing infusion of capital, etc.