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Influence and inefficiency in the internal capital market

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ABSTRACT

I model inefficient resource allocations in M-form organizations due to influence activities by division managers that skew capital budgets in their favor. Corporate headquarters receives two types of signals about investment opportunities: private signals that can be distorted by managers, and public signals that are undistorted but noisy. Headquarters faces a tradeoff between the cost of attaining an accurate private signal and the value of the information the signal provides. In contrast to existing models of "socialism" in internal capital markets, I show that investment sensitivity to Tobin's Q is *higher* than first-best in firms where division managers hold equity (a result consistent with evidence presented in Scharfstein, 1998). When managers face high private costs from distorting information (equity holdings), headquarters may commit to investment contracts that place "too little" weight on private signals and "too much" weight on public signals (i.e. Q). This result has implications for managers in the design of capital budgeting processes and incentive compensation systems.

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1. Introduction

Evidence suggests that diversified conglomerates have active internal capital markets, using cash flow generated by one division to invest in another. While extensive research in financial economics analyzes both the benefits and costs of capital allocation within the firm's hierarchy, a reasonable goal for future research is to understand better what factors explain the variation in efficiency of internal capital markets across firms.[1] In pursuit of this goal, I model a particular type of costly behavior by division managers (influence activities that distort private information about investment opportunities) that leads to novel predictions about inefficiencies in internal capital markets.[2] I find that asymmetric information can lead to investment sensitivity to public signals (i.e. Tobin's Q) that is *higher* than first-best. Instead of a measure of efficient capital allocation, increasing sensitivity to Q may be the firm's attempt to mitigate division manager incentives to distort informative private signals (i.e. managerial recommendations). This is in contrast to much of the internal capital markets literature that implicitly assumes that efficiency increases with divisional investment sensitivity to industry Q.

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[1] See Stein (2003) for a summary of research that discusses both costs and benefits of internal capital markets.

[2] The concept of influence activities (Milgrom, 1988, 1990; Milgrom and Roberts, 1988, 1992; Meyer et al., 1992) in this paper take the form of signal-jamming, in which players "jam" or distort signals that others receive (Fudenberg and Tirole, 1986; Holmström, 1999). See Inderst et al. (2005) for a model on influence costs and hierarchy and Bagwell and Zechner (1993) for a model on influence costs and capital structure.

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Information and knowledge production within the firm's hierarchy is a subject of recent research in organizational economics (e.g. Aghion and Tirole, 1997; Garicano, 2000; Dessein, 2002; Stein, 2002; Marino and Matsusaka, 2005). In this paper, I consider how the M-form organization creates perverse incentives for division managers to distort private signals that are transmitted to headquarters about competing investment opportunities across divisions within the firm. I identify circumstances under which the problem is most pronounced and subsequently show how investment contracts implicit in capital budgeting processes can mitigate this rent-seeking behavior. While this model makes several novel predictions concerning the cross-sectional variation in the efficiency of internal capital markets across firms, the most important result is the following. When "core" division managers hold equity, firms increase the sensitivity of investment to public signals (i.e. Q) for small divisions *above first-best*. When managers hold equity and the private costs of investment distortion are large, headquarters attempts to mitigate influence activities by placing "too little" weight on valuable, but distortable, private signals and "too much" weight on noisy, public signals. Headquarters faces a tradeoff between the cost of an accurate private signal and the value of the information the signal provides. The key result of the paper is consistent with evidence presented in Scharfstein (1998). More broadly, the model predicts that inefficiencies are more pronounced in firms with more influential division managers, less firm-level incentive pay for division managers (i.e. smaller equity holdings), and lower quality in public signals about investment opportunities.

Bower's classic clinical study (1986) documents how better-informed division managers misrepresent project opportunities to decision makers at headquarters. A more recent example of the potential effect of influence activities in the internal capital market is IBM's inability to capitalize on its early success in the development of its personal computer business. Mills and Friesen (1996; 128–129) argue that:

> "it was mainframe-myopia that so severely damaged IBM in the 1990s" and that "division executives began to put the welfare of their own organizations above that of the corporation as a whole. . .in the resistance of the mainframe division to the introduction of new technology."

Based on accounts of IBM's history, it seems that skepticism by the mainframe division about investment opportunities for the IBM PC division was partially to blame for the inconsistent success in personal computers.[3]

One of corporate headquarters' primary responsibilities is efficient resource allocation. However, accurate information about relative investment opportunities is typically unavailable, especially in new products and developing businesses. As a part of the capital budgeting process, headquarters relies on several sources of information from division managers: private information such as managerial assessments or recommendations (that may be distorted) and public information such as industry Q (that cannot be distorted, but is noisy). Examples of the private signal include assessments about new product development, the adoption of a division's product as a standard, or a pending sale to a large customer. To the extent that division managers prefer larger capital budgets, they have the incentive to engage in costly influence activities in order to increase the capital allocated to their division. Division managers of "core" businesses (large, established divisions) are more powerful than managers of developing businesses (small, newer divisions) because they have greater control over valuable firm resources (Rajan and Zingales, 2000). Core division managers can distort the transmission of private information to headquarters about the investment prospects of developing businesses. Headquarters cannot observe the core division manager's action, but does observe the realizations of both signals about the developing division's investment prospects—the possibly distorted, private signal and the noisy, public signal.[4]

Certainly, one extreme way to address the incentive disparity between headquarters and division managers is to eliminate the internal capital market by either spinning off divisions (Gertner et al., 2002; Inderst and Laux, 2005) or instituting policies that limit the role of headquarters in allocating capital (Ozbas, 2005). Another less extreme approach is to rotate division managers across different divisions (similar to General Electric) to lessen incentives to lobby for capital (Stein, 2003).[5] Alternatively, firms can design management processes or incentives to mitigate information distortion. For example, firms design capital budget processes as mechanisms to elicit revelation of private information (Harris and Raviv, 1996, 1998; Antle and Eppen, 1985) or raise hurdle rates in their evaluation of potential investment projects as a crude method of addressing agency problems (Poterba and Summers, 1995). Finally, firms link division manager compensation to firm performance in

[3] Carroll (1993) documents the power struggles between IBM's mainframe and personal computer divisions. The manager of the General Products Division "couldn't finance a personal computer because he had too many projects going"; Frank Cary (chairman) resolved the conflict with the remark "I'll finance it." The author argues "as the mainframe profits disappeared, IBM squandered its opportunities to turn the PC, or anything else into a business that would wax as mainframes waned".

[4] A specific example that motivates this paper's model is based on the author's experience as Vice-President of Corporate Planning and Development for a Fortune 100 firm in financial services. In this capacity, I was involved in investment committee meetings to evaluate new business opportunities. The firm operated in three primary product segments and, at the time, was considering diversification into several businesses related to the core business. In several instances, the Executive Vice President of the core division and member of the firm's investment committee supported investment in new businesses if the unit reported to him, but was less optimistic about the new business prospects if the unit reported directly to the President and Chief Operating Officer. Managers of new businesses had shorter tenure and filled positions at lower levels in the hierarchy than the core division manager. They were never members of the investment committee. In this organization, support from the core business division manager was critical to the ongoing capital commitment and the ultimate success of developing businesses. While the decision not to invest may have been optimal in each of these instances (although subsequent developments by competitors suggested missed opportunities), this anecdote characterizes the mechanism by which division managers can influence resource allocation.

[5] Job rotation would mitigate, but not eliminate the inefficiency arising from influence activities.

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