



Corporate financial and investment policies when future financing is not frictionless[☆]

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ABSTRACT

We study a model in which future financing constraints lead firms to have a preference for investments with shorter payback periods, investments with less risk, and investments that utilize more pledgeable assets. The model also shows how investment distortions towards more liquid, safer assets vary with the marginal cost of external financing and with firm internal cash flows. Our theory helps reconcile and interpret a number of patterns reported in the empirical literature, in areas such as risk-taking behavior, capital structure choices, hedging strategies, and cash management policies. For example, contrary to Jensen and Meckling [Jensen, M., Meckling, W., 1976. Theory of the Firm: managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 305–360], we show that firms may reduce rather than increase risk when leverage increases exogenously. Furthermore, firms in economies with less developed financial markets will not only take different quantities of investment, but will also take different kinds of investment (safer, short-term projects that are potentially less profitable). We also point out to several predictions that have not been empirically examined. For example, our model predicts that investment safety and liquidity are complementary: constrained firms are specially likely to decrease the risk of their most liquid investments.

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1. Introduction

Keynes (1936) originally pointed out that the ability of capital markets to provide financing for projects can affect firms' financial policies (p. 196). Keynes argued that if a firm can always costlessly access external capital markets, then it has no reason to save cash internally. Alternatively, if a firm faces incremental costs each time it raises capital, then it can increase its value by maintaining a more liquid balance sheet. Keynes focused his discussion on corporate cash policies, but the argument is much more general: any decision that affects a firm's ability to finance its projects will be affected by the distribution of financing demand and costs across time.

In this paper, we extend the above insight into the question of how real investments are affected by intertemporal financing frictions. In particular, we show that when future projects are valuable and capital markets are imperfect, factors related to a firm's ability to smooth the financing of investment over time become relevant to capital budgeting decisions today. This argument is

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quite general and has relevance to any situation in which a firm potentially faces costly financing decisions in the future, regardless of whether the firm currently faces costly financing. Indeed, we argue that a number of existing empirical findings can be explained through this idea, in which firms take actions today to minimize the impact of future financial constraints.¹

We formalize these arguments in a simple framework. Suppose that a firm can choose among a menu of projects that differ across a number of dimensions, including not only the value of the cash flows produced, but also their timing, risk profile, and the liquidity of the assets the firm must acquire. The net present value (NPV) rule implies that the appropriate calculation for determining the value of an investment is to compare the investment's initial cost to the discounted expected cash flows from the project using the discount rate that reflects the project's risk. However, investment decision-making becomes more complex when firms face capital markets imperfections. In the absence of competitively-priced external funding, observed spending can depart from what would result from standard capital budgeting approaches, introducing significant distortions in the firm investment process.

Our model characterizes the nature of these distortions. In particular, when credit constraints are likely to bind in the future, capital budgeting rules are distorted towards projects that generate earlier cash flows, and against those that generate back-loaded flows. This distortion occurs because cash flows from current investments can provide financing for future valuable projects that otherwise would go unfunded. A practical implication of this distortion is that rather than being valued solely on the basis of its own independent merit, a project's valuation will also be influenced by the firm's position in the capital markets and by the project's position in the firm's investment schedule. We also model firms' choices between projects that differ with respect to their risk profile. When financing constraints are likely to bind in the future, firms prefer projects with safe cash flows over projects with the same (or even higher) NPV but risky cash flows, because safer cash flows can help mitigate future financing constraints, particularly in poor states of the world. The model also shows how firms will distort their investment policy towards projects that generate more tangible, verifiable cash flows (i.e., collateralizable projects) when they face financing constraints. Finally, the model shows that constrained firms will tend to distort the risk profile of the most liquid projects, rather than that of illiquid ones. In short, because illiquid projects have a lower impact on future financing capacity, their riskiness matters less for a constrained firm. As a result, project liquidity and safety become complementary attributes in the firm's investment policy.

In addition to advancing a number of new, untested predictions regarding firm investment policies (see Section 2), our analysis provides new insights into the following much-debated research questions: 1) Why firms do not appear to “risk-shift” when standard theory says they should? 2) Why are firms typically “underleveraged”? 3) How do firms decide on the liquidity of their asset portfolio, in particular, how much cash to hold? 4) Why do managers appear to hedge operationally in addition to financially, even if operational hedges come at a real cost to the firm? 5) Why do firms in countries with underdeveloped capital markets make different types of investments than firms in countries with developed capital markets? and 6) Why does financial development add so much to corporate growth by changing not only the quantity of investments, but also their type and mix?

Let us briefly discuss some of these questions here. One of the most widely-discussed arguments in corporate finance is the Jensen and Meckling (1976) “risk-shifting” story, by which firms have incentives to increase project risk when they become highly leveraged and near financial distress. While this argument has been taken to be an important consideration in capital structure decisions, there has been very little direct evidence of risk-shifting in practice.² One of the extensions of our basic model (Section 1) describes how financing constraints can lead to an effect that offsets a firm's incentives to risk-shift. In particular, when leverage leads firms to expect higher costs of external finance in the future, they distort investments toward *safer* projects. This effect is one possible reason why there is virtually no evidence that firms actually increase risk in the manner suggested by Jensen and Meckling. In addition, our analysis suggests an additional reason why firms limit their leverage. Higher leverage creates incentives for firms to distort real investments towards safer and liquid but potentially less profitable projects.

Our analysis also adds to the literature on corporate cash holdings. Previous work has suggested that a firm's cash balances and incremental savings out of new cash flows should be a function of the firm's position in the financial market (e.g., Almeida et al., 2004). We extend and refine this analysis in Section 2 by considering additional ways in which a constrained firm can transfer resources through time. In particular, we show that the sign of “cash–cash flow sensitivities” *need not* be positive when the firm has access to liquid investments other than cash. An increase in current cash flows, for example, can reduce future costs of external financing through its effect on liquid capital investments, thereby reducing the demand for cash. Consequently, whether cash–cash flow sensitivities are positive or negative becomes an empirical question. We review the available evidence in Section 3.

Our arguments also have implications for the burgeoning literature on international comparisons of corporate financial policy. Much of this literature documents that there is substantial variation across countries in the ability of firms to raise external finance (see, e.g., La Porta et al. 1997, 1998). Our model suggests that a high cost of external finance should affect not only the quantity of investments made in different countries, but also the types of investments that we observe. In particular, where costs of raising additional external finance are expected to be high, we should observe a preference for investments that use more tangible assets and generate more collateral. The empirical literature largely supports these predictions (see, e.g., Demirgüç-Kunt and Maksimovic, 1999). A consequence of our theory is that financial development should make firms in emerging markets more prone

¹ We use the term “financial constraints” more broadly than is common in the literature. If a firm's current and/or future investments differ from the “unconstrained” (first-best) solution due to costly financing arising from capital markets imperfections, we consider that firm to be financially constrained. For example, we see deadweight costs arising from financial distress as a particular manifestation of financial constraints. We also consider firms that face credit constraints arising from poor development of financial markets and institutions as financially constrained firms.

² One likely exception is the behavior of S&Ls in the 1980s. Note, however, that because of implicit government guarantees (i.e., bailouts) it is likely that S&Ls were less concerned with future financing constraints than other firms.

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