

Conglomerate Firms, Internal Capital Markets, and the Theory of the Firm

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Abstract

This article reviews the conglomerate literature, with a focus on recent papers that have cast strong doubt on the hypothesis that conglomerate firms destroy value on average when compared to similar stand-alone firms. Recent work has shown that investment decisions by conglomerate firms are consistent with value maximization; conglomerate firms trade at an average premium relative to single-segment firms when value weighting; and the valuation premia and discounts, both for conglomerates and single-segment firms, are driven by differences in the production of unique differentiated products. A profit-maximizing theory of the firm that considers how firms select their organizational structure can explain these recent findings and much of the large variation in findings in the conglomerate literature. We also review the literature showing how market imperfections create additional benefits and costs for internal capital markets and a potential for managerial distortions.

1. INTRODUCTION

The conglomerate firm, and the study of internal capital markets through which it directs investment flows, has been a focus of intense research interest in recent years. We review the recent work and how it relates to earlier literature in this area. We also take the opportunity to provide our own perspective that reflects what we have learned from the recent research trends.¹ Our central perspective is that a profit-maximizing theory of the conglomerate firm is required as a starting point to understanding the diverse set of results the literature has documented.

Although there is a natural tendency to conflate the study of conglomerate firms and internal capital markets, the two are conceptually distinct. A firm with an internal capital market is one that finances its projects centrally, either from its own resources or from a pool of capital raised externally. The advantage of an internal capital market is that individual investment projects do not need to access external financial markets or financial intermediaries. The principal disadvantage is that the central concentration of capital may provide incentives for opportunistic behavior by managers. Although almost every established firm has some form of internal capital market, both the advantages and the scope for opportunistic behavior are likely to increase as the number of projects that can be funded is large.

A diversified firm is one that operates in more than one industry. Such firms have received a great deal of attention because there is a, perhaps implicit, belief that the skills, knowledge, and organizational culture required to operate in different industries differ substantially. If so, inefficiencies that might occur in an internal capital market are likely to be exacerbated in firms that operate across many industries.² Moreover, following Jensen's (1986, 1993) free cash flow theories, there is a suspicion that a firm that chooses to cross into industries where it has not demonstrated expertise is not acting in the interests of its shareholders. Thus, besides their obvious importance in the economy, diversified firms are of empirical interest because they are likely to provide evidence of failures of internal capital markets.

Early work, by Lang & Stulz (1994) and Berger & Ofek (1995) provided a striking indication of potential misallocation of resources in the form of the conglomerate discount: They found that a conglomerate was valued less by the market than a comparable portfolio of single-segment firms. Shin & Stulz (1998) and others showed that conglomerates' segments seem to be relatively slower to invest than single-segment firms in high-opportunity industries than in low-opportunity industries.

More recent work has revisited these findings and highlights the importance of a theory of organizational form that can explain the following: (a) what types of firms become conglomerates, (b) why firms choose a multiple-industry organizational form, and (c) what the costs and benefits are of choosing a multiple- versus single-industry organizational form. The recent literature also highlights the centrality of a theory of specialist and generalist management talent. Firms adopt organizational structures that best deploy the economy's pool of specialist managers with talent that has the highest return in a single industry, and managers with general ability can be used across multiple industries.

Maksimovic & Phillips (2002), which we review in this article, provides such a neoclassical theory of firm organization based on Lucas (1978). In Maksimovic & Phillips, the key scarce ingredient that can be used across industries is managerial talent. Managers with general talent that can be used across industries choose to create and operate conglomerates. This simple

¹Space limitations prevent us from adequately discussing many instructive contributions. For a more comprehensive analysis of the earlier literature, see reviews by Stein (2003), Maksimovic & Phillips (2007), and Khanna & Palepu (1997), which discuss research on business groups, mostly in developing countries.

²There may also be gains in the form of additional opportunities for diversification and a greater choice of projects.

framework is capable of generating multiple predictions about conglomerate and single-firm growth, diversification patterns, acquisition activity, and valuation, in a both static and dynamic framework. The focus on agency problems and potential failures of corporate governance in the earlier literature might have diverted attention from the extent to which simple neoclassical value-maximizing models can explain observed growth rates by conglomerates.

Given these theoretical considerations of how firms choose different organizational forms based on underlying differences in managerial ability and asset complementarities, the question arises as to whether the standard matching of conglomerates' segments with single-segment firms within traditional industry classifications in the early empirical papers adequately controls for differences between the managerial abilities and the differences in asset complementarities between these two organizational forms.

Other papers we examine in this review have directly investigated the workings of internal capital markets in detail—taking the multiple-industry structure as given. Many start with Stein (1997), which focuses on the financial benefits of conglomerate firms and provides a model in which firms in particular industries face potential financial constraints and conglomerate firms can engage in winner-picking across industries. More recent papers have examined the role of divisional power and social ties within the conglomerate, the effect of the conglomerate's ability to reallocate resources on its ability to commit to projects, and the conglomerate's potentially preferential access to capital in adverse economic conditions. Lastly, we discuss recent research that does not take the industry choices of firms as given and examines the actual industry choices of conglomerate firms. Hoberg & Phillips (2012a) emphasize asset complementarities and product relatedness across industries that give rise to firms choosing particular industries in which to adopt a multiple-industry structure. Below, we set the stage by discussing the original seminal articles and then discuss the more recent work.

2. THE BASIC FACTS: WHERE ARE WE NOW?

Much of the literature on conglomerates and internal capital markets has been driven by the desire to answer a very practical question: Are internal capital markets maintained by conglomerate firms an efficient organizational form that adds value, or are they on balance inefficient organizations created and driven by agency conflicts within firms? Although the question itself is old, two influential papers in the early 1990s have served to shape this debate by presenting strong evidence that in the United States, conglomerate firms were valued less than comparable single-segment firms. Using the standard source on financials of public firms, COMPUSTAT, Lang & Stulz (1994) and Berger & Ofek (1995) decomposed conglomerate firms, which span many three-digit standard industrial classification (SIC) industries, into their constituent industry segments and then valued these segments using the comparables approach to valuation. To implement this approach, these papers estimated the average (or median) market-to-book and market-to-sales ratios of single-segment firms that operated in matched-industry SIC codes.³ They then computed a benchmark market-to-book or market-to-sales ratio for each multisegment firm in their sample using the appropriate single-segment firm estimates, weighted by the assets that each conglomerate firm employed in each of its segments. These papers found that the typical conglomerate is valued by the market at a discount to the computed benchmark valuation.

³Berger & Ofek (1995) expand the industry definition when the number of specialist firms in a four-digit SIC code in a given year is less than five, considering instead all single-segment firms in the same three-digit SIC code. If the number of single-segment firms in the three-digit SIC code is still less than five, they further expand the industry definition to the two-digit SIC level.

Lang & Stulz (1994) and Berger & Ofek (1995) spurred a large literature directed at explaining this conglomerate discount. We review this below. However, several more recent contributions question whether the conglomerate discount is a real empirical phenomenon or an artifact of the measurement process.

Instead of COMPUSTAT, Villalonga (2004a) uses the Business Information Tracking Series (BITS) database, from the Census Bureau, to identify single-segment firms in four-digit SIC codes and to compute conglomerate discounts. BITS data encompass all US business establishments, private and public, in some 50 million establishment-year observations. Villalonga (2004a) links the BITS dataset with COMPUSTAT, enabling her to determine the composition of a COMPUSTAT firm more precisely, and then recomputes the conglomerate discounts of the COMPUSTAT firms that she has linked, using as comparables those COMPUSTAT firms that BITS data identify as being single-segment firms. Villalonga finds that diversified firms trade at a significant premium over single-segment firms, as so classified using BITS. When COMPUSTAT segment data are used to classify firms, Villalonga obtains the standard conglomerate discount obtained in the earlier literature. Custódio (2012) has recently shown that merger accounting can explain large parts of the valuation discounts of conglomerate firms. The reason is that acquirers, who are frequently conglomerate firms, write up the book value of the targets assets when making cash acquisitions, thereby lowering their Tobin's q .

More recently, Hund, Monk & Tice (2012) use COMPUSTAT data to argue that the diversification discount is an artifact of equal weighting and the matching process. In particular, when value weighting conglomerate firms, conglomerate firms have a premium on average. When they revisit the actual matching of firm segments of diversified firms with focused firms in the same industry, they argue that the discount is an artifact of matching without controlling for size, age, and profitability. This results in the matching of older, larger, more profitable, and less volatile conglomerate firms with younger, smaller, less profitable, and more volatile single-segment firms and with diversified firms that have a lower option value of growth.

Recently, Hoberg & Phillips (2012b) question whether SIC codes should be used at all to match firms. They reexamine the stock market valuation of conglomerate and single-segment firms using the text-based analysis of Hoberg & Phillips (2011). They first reconstruct optimal benchmarks for both single-segment and conglomerate firms based on each firm's product-text similarity and also the similarity of accounting characteristics. Armed with these optimal benchmarks, Hoberg & Phillips construct a measure of firm product uniqueness, which captures how well a firm's product offerings can be replicated with competing peer firms. They show that single-segment firms that optimally match with conglomerate segments are older, larger, and have fewer growth opportunities.

More interestingly, Hoberg & Phillips (2012b) examine the cross-sectional valuation of conglomerate and single-segment firms and find that for both, the more unique a firm's products are, the higher the firm's stock market valuation. Although not the focus of this paper, the conglomerate discount disappears on average. The paper can help explain the cross-sectional valuation of both conglomerate and single-segment firms. The more unique the firm's products are, as captured by the difficulty of replicating its product text with matched competitors, the higher its stock market valuation. For both conglomerate firms and single-segment firms, firms that are easy to replicate trade at stock market discounts relative to matched peer firms. The results are thus consistent with investors in the stock market placing higher valuation on firms that produce more unique, harder-to-replicate products.

The findings in Villalonga (2004a); Hoberg & Phillips (2012b); and Hund, Monk & Tice (2012) highlight the fact that in empirical research the definition of a conglomerate and the resulting valuation discounts/premia are partially driven by the availability of data and the industry classifications, rather than on theoretically founded distinctions. How the comparable

single-segment firms are chosen is critical to the inferences drawn in much of the work on conglomerates.

A closely related question is whether the conglomerate discount, as defined by Berger & Ofek (1995), can be explained by the self-selection of firms that diversify and the diversifiers' selection of targets. Campa & Kedia (2002) and Villalonga (2004b) find that when the endogeneity between the decision to be diversified and firm value is taken into account, the diversification discount always drops, and sometimes turns into a premium. The most direct evidence on the selection of targets is provided by Graham, Lemmon & Wolf (2002). They show that although diversifying acquirers develop a conglomerate discount following diversification, the greater part of the discount occurs because diversifying firms on average acquire assets already valued at a discount relative to the industry benchmarks, lowering the relative valuation of the combined firm. This portion of the discount is unrelated to the costs associated with any agency costs or inefficiencies in internal capital markets.

A second early strand of research attempted to address directly whether diversified firms respond to market opportunities as well as single-segment firms. Neoclassical theory suggests that the firm's level of investment should depend only on its perceived investment opportunities measured by the firm's marginal Tobin's q . Assuming that the proxies used to measure marginal q are adequate, estimates of the sensitivity of investment to Tobin's q can be used to estimate this relation. In tests, the coefficient is higher in single-segment firms than in conglomerates, suggesting that conglomerates' segments are insufficiently responsive to differences in investment opportunities. This implies that conglomerates overinvest when opportunities are low and underinvest when they are high [Scharfstein 1998; Rajan, Servaes & Zingales (RSZ) 2000].

In an imperfect financial market, the firm's investment may depend on its cash flow as well as its marginal Tobin's q . In the case of a firm with an internal capital market, a segment's investment may depend both on its own cash flows and on the cash flows of the whole firm. Shin & Stulz (1998) investigate how the sensitivity of a segment's investment depends on its and the firm's cash flows, as well as measures of investment opportunities. They find that (a) a segment's investment is more sensitive to its own cash flows than on the cash flows of the firm's other segments, (b) in highly diversified firms, a segment's cash flow is less sensitive to its cash flow than in comparable single-segment firms, (c) a segment's investment increases with its q but is not related to the other segments' q s, and (d) the segments with the highest q s have the same cash flow sensitivity as other segments.

Thus, Shin & Stulz (1998) find that the internal capital market does not equalize the effect of cash shortfalls across segments. At the same time, a segment's investment is affected by the cash flows of the other segments, notwithstanding differences in Tobin's q across segments. They conclude that conglomerates' internal capital markets do not meet their standard of efficiency.

A key issue in interpreting these results is whether conglomerate segments and single-segment firms are sufficiently similar so that they should respond to market signals about industry prospects identically. Differences in productivity or access to capital may confound this interpretation. Also, there are potential measurement error issues in calculating conglomerates' q (Whited 2001). We turn to some of these issues next.

3.1. Neoclassical Model

Maksimovic & Phillips (2002) analyze how a firm decides endogenously whether to be a focused single-segment producer or to produce in several industries. They give an equilibrium justification for the endogeneity of the discount and also empirically show that there is a size-efficiency relationship that holds for conglomerate and single-segment firms.

To illustrate their model, assume that there are two industries. Each firm is endowed with a two-dimensional vector of talent that determines its ability to produce in each of the n industries. A firm with a higher organizational ability or talent in an industry can produce more output with the same amount of input, and thus have higher productivity, than firms with lower ability or talent. Thus, differences in talent have greater economic import when output prices are high relative to input prices.

Maksimovic & Phillips (2002) assume that firms use the variable inputs of labor and capacity units to produce output. As in Coase (1937) and Lucas (1978), it is assumed that there are diseconomies of scale within firms. Specifically, we assume that firms exhibit neoclassical decreasing returns to scale, both in each industry and at the level of the firm, so that marginal costs of production increase with output.⁴ A firm will not necessarily produce only in the industry in which it has the highest talent. Instead, it will choose to produce in the industry in which it has the highest talent until the rising marginal costs of production make it optimal to diversify into other industries. Thus, firm structure follows the comparative organizational abilities of firms.

For concreteness, consider a population of firms that can operate in a maximum of two industries, which we denote as industry 1 and industry 2, respectively producing outputs q_1 and q_2 . All firms are assumed to be price-takers. The productivity of each firm can be modeled by a vector (d_1, d_2) , where the firm's innate productivity in industry i is d_i . If they choose to operate in industry i , firms that have a higher productivity, d_i , produce more output, q_i , for a given level of inputs. The profit function of each firm is given by

$$d_1 p_1 q_1 + d_2 p_2 q_2 - \alpha q_1^2 - \alpha q_2^2 - \beta (q_1 + q_2)^2, \quad (1)$$

where the p_i and the prices of output in industry $i = 1$ or 2 and α and β are positive cost parameters. The profit function embodies the assumption of neoclassical diminishing returns within each industry (the α terms) and the assumption that when organizational talent is a scarce resource, costs depend on the firm's total size (the β term).

The model can be solved at the firm level to give the firm's optimal participation (q_1, q_2) , in each of the industries as a function of its own productivity vector (d_1, d_2) , and output prices (p_1, p_2) . The optimal (q_1, q_2) depend on the margins $v_i = d_i p_i$, and if the firm produces in industry i its output will be increasing in v_i . The firm will be a conglomerate and produce in both industries if $\theta v_1 < v_2 < \frac{v_1}{\theta}$, where $\theta = \frac{\beta}{\alpha + \beta}$. For values of v_1 and v_2 outside of this range, a firm will choose to be a single-segment firm.

Figure 1 illustrates which firms choose to be either conglomerates or single-segment firms. Firms in region II optimally choose to be conglomerates, whereas firms in regions I and III choose to produce in a single segment. Specialization is optimal if the firm is much more productive in one industry than in the other; diversification is optimal if the productivities d_i are similar. When the diminishing returns in each industry α are severe relative to the diseconomies of total size β , the area of conglomeration in region II will be larger. Thus, the decision to diversify depends in part on the firm's comparative productivity in the two industries and the relative size of the costs of specializing within one industry α compared to the costs of producing at large scale β in both industries.

The same arguments can be generalized to the case of n industries. All things equal, there is an inverse relation between segment size and productivity. The relation between firm size, number of segments, and productivity depends on the distribution of managerial talent. If talent has

⁴For a more comprehensive discussion of the model, fixed costs or minimum scale, implications for the conglomerate discount, investment in capital, and simulations of segment size, see Maksimovic & Phillips (2002, 2007).

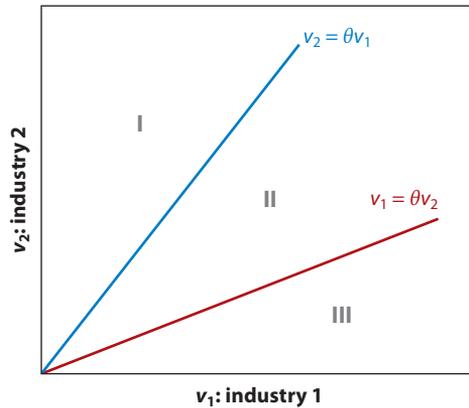


Figure 1

Optimal firm organization. Each firm is represented as a point in $v_1 - v_2$ space. The firm operates as a single-industry firm in regions I and III and as a conglomerate in region II. The slope θ depends on the relative magnitudes of diseconomies of scale in each industry relative to diseconomies of aggregate size.

a common cross-industry component, then more productive firms will be larger and are likely to diversify into a larger number of industries. If the distribution of talent has no common component, so that the ability of a manager or managerial team is independent across industries, then the most productive firms are likely to be smaller. Maksimovic & Phillips (2002) illustrate these points with a simulation in which each manager is described by a vector of standard normal variables measuring his talent in each industry. When talent has a common component across industries, productivity for a conglomerate's main division is high and declines less in secondary divisions. If talent is industry specific, they show that the decrease in productivity is higher as firms add divisions.

Figure 2 provides empirical evidence using Census data and shows how a segment's Total Factor Productivity (TFP) varies with segment size.⁵ As predicted, controlling for the number of segments in a diversified firm, TFP decreases as the segment's relative size within the firm falls. Consistent with the existence of a common talent component, larger firms are more productive on average than smaller firms and especially so for multiple segments, not just their biggest segments.

Maksimovic & Phillips (2002) also examine how the conglomerate firms grow in response to demand shocks. A conglomerate firm can winner-pick by reallocating its organizational talent and capital to industries that have positive demand shocks and in which it has a comparative advantage and by reducing its exposure to industries in which it is underperforming. A positive demand shock in an industry sets up incentives to increase its output in that industry and, given decreasing overall returns to scale, decrease its operations in other industries. However, if there is fixed productive capacity in an industry and a market for capacity (through mergers and acquisitions) in equilibrium there are additional effects. The increase in demand also increases the price of capacity, increasing the opportunity cost of producing in that industry. This makes expansion, or even remaining in the industry, relatively less attractive to the less productive producers, leading to the prediction that following a positive shock, highly productive producers increase in size more than

⁵Maksimovic & Phillips (2002) use very detailed plant-level Survey of Manufactures Longitudinal Research Database data from the Census Bureau to classify each firm's plants into three-digit SIC codes. Thus, their classification of firms' assets is not subject to the same aggregation issues that characterizes COMPUSTAT segment data.

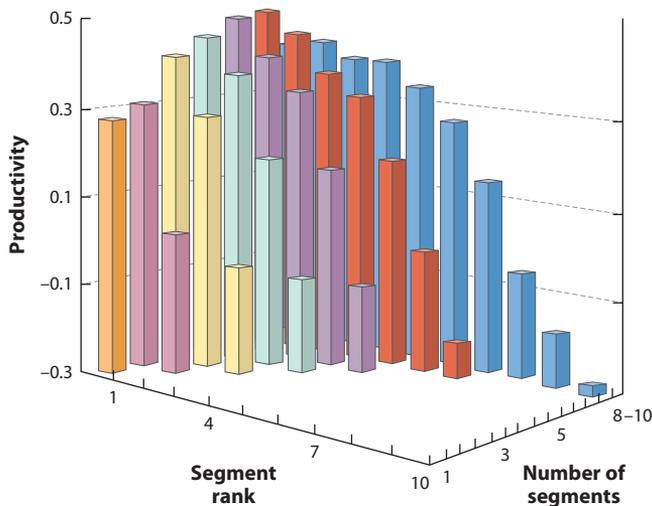


Figure 2

Productivity ordered by segment size, with segment 1 being the largest segment. Segment productivity is productivity relative to the industry average, thus productivity above (below) zero represents a segment that is above (below) the industry-year average.

less productive producers, with the least productive producers shrinking in size or selling capacity and transitioning into other industries. Maksimovic & Phillips report responses to shocks consistent with those predictions in their sample of US manufacturing industries.⁶

Recently, Arikan & Stulz (2011) provide additional evidence of a broadening of firm scope early in the firm's life cycle. Firms start to acquire early and the acquisition rate of firms over time follows a U-shape in the post-initial-public-offering years. Young firms acquire at the same rate as mature firms. Moreover, firms engage in diversifying acquisitions early, with a 0.41 probability that a firm's first acquisition is a diversifying acquisition. These diversifying acquisitions realize positive excess returns. The pattern of acquisitions described by Arikan & Stulz (2011) is consistent with the neoclassical model.

The neoclassical model has been extended and applied in different contexts. Gomes & Livdan (2004) provide a test of a dynamic version of the model without a market for assets. Yang (2008) specifies a structural model of asset sales in a neoclassical model and calibrates it using Census data on manufacturing firms. Maksimovic & Phillips (2001) show that the flows of assets across firms in US manufacturing are mostly between conglomerates and are consistent with the predictions of the neoclassical model. Maksimovic, Phillips & Prabhala (2011) show that the decisions by acquirers to keep or sell plants in different divisions belonging to target firms can be predicted using the neoclassical model. Acquirers whose marginal plants have low productivity (suggesting that they are close to or exceeding their efficient size even before they engage in the acquisition) sell a larger proportion of acquired plants within three years of an acquisition than acquirers whose marginal plants before the acquisition are productive.

⁶However, they find small segments of conglomerates are sold or closed down much more aggressively than comparable single-segment firms or main divisions of conglomerates with equal productivity. They also identify a sample of conglomerates that subsequently refocused and show that these conglomerates did not invest optimally in response to demand shocks in years prior to their breakup.

Overall, the neoclassical model provides a framework for analyzing both the size and productivity of firms' units. It also generates testable predictions about the growth of these units and the flow of assets across conglomerate firms. These predictions are broadly consistent with the data and suggest that conglomerate firms are formed in response to valuable investment opportunities. However, the model does not address the potential effect of market imperfections in the financial and product markets, as well as possible agency conflicts within firms. We turn to these next.

3.2. The Bright Side of Internal Capital Markets

If we move away from a neoclassical world with perfect financial markets and profit-maximizing managers, is there an advantage to internal capital markets? Stein (1997) lays out the benefits. The starting point is that the financial market has less information about the value of investment projects than do managers and that each manager has a private benefit from running the particular project they control. As a result, for some parameter values the managers have an incentive to induce the financial market to fund bad projects. In Stein's model, for some parameter values the financial market rations capital to managers to reduce the cost of the informational asymmetry, leading to inefficiently low investment.

Stein argues that an internal capital market mitigates this problem. To show this, he introduces a second level of hierarchy involving an internal monitor. The monitor has several managers reporting to him and allocates capital to those managers. Just like the first-line managers, the monitor is self-interested and has an incentive to dupe the financial market. However, he differs from the financial market because he has access to better information about the projects. He differs from the first-line manager because he can select which of the available projects to fund so that his compensation is not tied to the outcomes of all the projects, but only a subset of the best projects he funds.

Stein shows that as a result of the monitor's incentive structure and his informational advantage over the financial market, the monitor will engage in winner-picking, funding only the best projects. Moreover, both the improved incentives of the monitor and the predictability of project outcomes that comes with a larger scale of operations reduce the costs of informational asymmetry faced by the market, relaxing the credit constraints faced by the firm. Although the foregoing suggests that larger firms would always be more efficient, Stein argues that as the firm's size increases the efficiency of the monitor declines, fixing the size of the firm to be finite.

To provide a trade-off between a focused and conglomerate organizational form, Stein's model introduces an additional set of considerations. Suppose that the monitor observes a project's outcomes with error. Then capital will be misallocated. It turns out that the type of errors made makes a difference to the optimal organizational form. If the errors are correlated across projects in the same industry segment, then there is an advantage to operating a focused internal capital market. This is because the monitor's choice of best projects is not distorted by correlated errors. In that case, the scope of the firm is determined by a trade-off between the advantages of diversification due to winner-picking and disadvantages that result from not taking advantage of the correlation structure of errors made by the monitor.

The notion of winner-picking has attracted a lot of attention in the literature. The study of estimation errors made by headquarters has attracted a great deal less attention in the literature, despite its centrality to the identification of the costs of diversification in Stein's model. In particular, given the recent work on misvaluation in markets, it would be interesting to have some notion of the differential forecasting ability of internal misvaluations by conglomerate firms relative to that of markets.

Guedj & Scharfstein (2004) provide clear evidence on winner-picking within an internal capital market. They compare the research and development strategies and subsequent outcomes of small

biopharmaceutical firms with those of larger firms. The former are typically focused on one stand-alone project, such as the development of a specific drug, whereas the latter usually have the option of picking among several drugs to develop.

Guedj & Scharfstein (2004) find that small firms are more likely to advance drugs that have completed early trials into the next stage than large firms. However, small firms also have considerably worse results at the next stage. This pattern is especially evident for those stand-alone firms that have large cash reserves.

As in Stein (1997), single-product firms do not abandon projects optimally, whereas managers of multiproject firms shift resources in response to new information. In that light, firm size can be viewed as a response to an agency conflict between the managers of single-product firms and shareholders. Unfortunately, because all the projects involve cancer drugs, the study does not address estimation errors at the heart of the diversification costs in Stein.

Khanna & Tice (2001) examine the responses of discount retailers in response to Wal-Mart's entry into their local markets. They identify 24 stand-alone incumbent discount retailers and 25 incumbent discount divisions of diversified discounters. They investigate the incumbents' responses to Wal-Mart's entry while controlling for factors such as productivity and size.

Khanna & Tice (2001) find that conditional on staying in a market following Wal-Mart's entry, diversified firms invest more than focused firms and their investment is more sensitive to their own productivity levels than that of focused firms. They also find evidence that diversified firms transfer funds away from failing discount divisions. Moreover, diversified firms appear to be quicker in deciding whether to stay and compete with Wal-Mart or to exit the market. Overall Khanna & Tice conclude that internal capital markets work well for these firms and that the competitive responses of diversified firms are more efficient than those of focused retailers. As in the case of Guedj & Scharfstein (2004), Khanna & Tice's evidence pertains to internal capital markets in general and does not address the question of diversification per se.

Anjos & Fracassi (2011) argue that there are additional informational advantages to adopting a conglomerate form that spans industries. They conjecture that it is advantageous for firms to acquire information that is dispersed across industries. However, it is costly to acquire information possessed by unrelated firms in industries with which the firm does not normally transact. The greater the "distance" between industries, the higher the cost of a single-segment firm becoming informed about innovation in the other industry. By contrast, Anjos & Fracassi posit that information travels freely between the units of a conglomerate. Thus, conglomerates reduce the cost of information acquisition by making available information from each of their participating segments.

If conglomerates facilitate the transmission of information across their segments, then the pattern of diversification becomes very important. Conglomerates that have segments "near" each other are less valuable as conduits of information than conglomerates whose segments are located "far" from each other. For example, if two industries transact substantially with each other, as measured by input-output tables, they can be defined as being directly linked. The distance between two industries can then be defined as the minimum number of links between the two industries. All the industries in the economy can be depicted as a network, in which some industries are more central than others.

Anjos & Fracassi (2011) obtain a measure of industry-adjusted centrality—an asset-weighted measure of the extent to which access to the conglomerate's information flows advantages its segments over single-segment firms in the same industry in obtaining information from other industries. Consistent with their claim that conglomerates use information more, they show that conglomerates with greater industry-adjusted centrality generate a higher number of industry-adjusted patents and citations.

Tate & Yang (2012) examine a second informational advantage of conglomerates: information about the quality of potential employees. They show this result by examining workers after plant closures, using detailed data from the Census Bureau. Displaced workers experience smaller wage losses when they switch jobs or industries internally and when they move to a new firm in a new industry in which their old firm also operates. This suggests that diversified firms are using proprietary information about the workers to select the most productive workers at new locations. Tate & Yang also show that diversified firms exploit the option to redeploy workers internally: They redeploy workers from declining industries to expanding industries at a higher rate than the external market.

3.3. Product Market Competition

Winner-picking in internal capital markets is possible because the firm can divert capital from projects with poor prospects to other projects. The key insight is that divisional managers are less entrenched than managers of stand-alone firms and can be more easily prevented from continuing bad projects from which they draw private benefits. Although this flexibility may seem to be a self-evident advantage, there are circumstances where such flexibility reduces value.

In many cases, it is to the advantage of a firm in an imperfectly competitive industry to choose optimally a level of commitment to an aggressive investment strategy. In early work, Brander & Lewis (1986) and Maksimovic (1988) argue that this can be achieved by choice of capital structure. Thus, a firm may choose a capital structure that creates incentives to commit to an aggressive and seemingly value-destroying strategy that causes competitors to scale back, thereby validating the strategy. Phillips (1995) considers the polar case on how debt may constrain firms in their product-market strategy, as it may commit them to invest less if debt imposes constraints on firms accessing financial capital to undertake investment.

Organizational form will also affect the firm's ability to commit to a strategy. A diversified firm may not be able to demonstrate commitment precisely because it is able to deploy its assets easily. By contrast, the managers of a single-segment firm, similar to a single-project firm studied by Guedj & Scharfstein (2004), can commit to fight over a market segment until its resources run out, even if doing so reduces value. Lyandres (2007) provides another motivation for the inability to commit to an aggressive product-market strategy. In Lyandres, conglomerate firms do not choose a single-segment financial structure and thus have fewer incentives to commit to increase production.

Evidence is provided by Santalo & Becerra (2008). They replicate Berger & Ofek (1995) but depart from them by staying within a consistent four-digit SIC industry definition when determining the set of comparable single-segment firms. They then estimate the typical diversification-discount regressions, augmenting them with a measure of the number of specialized single-segment firms in the industry. They find that diversification creates value when there are few single-segment competitors, while it destroys value when diversification takes place in industries that consist of a large number of single-segment competitors.

In Matsusaka & Nanda (2002), the internal capital market can reduce value. In their model, managers have a private benefit of investment. Thus, they overinvest if they can. This effect is moderated in stand-alone firms because these firms must access the outside capital market, which constrains overinvestment. By contrast, a firm with an internal capital market is less constrained than a stand-alone firm and is therefore more likely to overinvest. This cost of an internal capital market has to be set against the advantages from the option the firm has of investing in states in which stand-alone firms are constrained. In equilibrium, the benefits of internal capital markets can be greater or less than the costs, and therefore diversification can add or destroy value, depending on the relation between the firm's cash flow and its investment opportunities.

Mathews & Robinson (2008) model the interplay between a diversified firm's flexibility in deploying assets to the industry and the single-project firm's flexibility to commit to specific capital allocations in advance. Specifically, the firm with multiple projects has the option to direct capital into the industry when the level of demand is revealed. Thus, it can cap the value of the market opportunity available to a competing stand-alone firm, which has to raise capital in advance before the demand is revealed. When demand is sufficiently uncertain this may be enough to deter participation from stand-alone firms. However, because the stand-alone firm does not redeploy capital easily, it can commit to using the capital it has raised for the market opportunity in that market. This ability to commit is particularly valuable when product-market uncertainty is low.

Boutin et al. (2013) explore the case where the ability of the internal capital market to mobilize resources, specifically cash holdings, gives the conglomerate firm an advantage. In their study of the entry and survival of conglomerate and single-segment firms into markets in France, they find that the impact of group cash holdings on entry of conglomerate firms is more important in environments where financial constraints are pronounced and in more financially dependent sectors. The cash holdings of incumbent and entrant groups also affect the survival rate of entrants in the three-to-five-year postentry window. Their findings suggest that internal capital markets operate within corporate groups and affect the product-market behavior of affiliated firms by mitigating financial constraints.

3.4. Dark Side of Internal Capital Markets

A considerable body of research studies the potential disadvantages of internal capital markets. We focus on two flavors of this argument. First, several authors have argued that internal capital markets are associated with bargaining between different units of the firm, which results in a systematic misallocation of resources within the firm. Second, it has been argued that managers of firms engage in empire building. In this view, conglomerate firms are not efficient organizations for channeling assets to their most productive uses but are likely to be agglomerations of assets acquired by managers who obtain private benefits from controlling large firms.

The position that firms' internal capital markets are prone to distortions due to bargaining is most clearly laid out by RSZ (2000). They start from the position that although top management can direct capital expenditures across divisions it cannot commit to a future distribution out of the value created by the divisions. As a result, the distribution of the surplus is determined through negotiations between divisions after the surplus has been realized.

RSZ assume that the outcome of the ex post bargaining between divisions is itself determined by the distribution of capital across divisions. Hence, in RSZ, top management uses the initial allocation of investment to divisions to substitute for its inability to commit to a distribution of surplus. This will in general be less efficient in motivating divisional managers to invest efficiently than the case where top management can provide the appropriate incentives by committing to a specific distribution of profits that the divisions realize. Thus, the capital expenditures of conglomerates will be less efficient than those of single-segment firms. However, they are value maximizing given the constraints that top managers face.

Specifically, RSZ assume that each division can invest in two types of projects. Efficient projects are value maximizing; defensive projects produce less value, but the revenues can be better defended against redistribution to other divisions. The divisional manager's incentive to choose a defensive project is higher when there is a high diversity of investment opportunities, because that is the case when the division's high profits are more likely to be lost to other divisions. The model predicts that to mitigate these incentives, top management transfers capital from large high-value divisions to low-value divisions. RSZ provide evidence consistent with this prediction.

RSZ assume implicitly that the divisional structure within a firm is given. However, by altering the divisional structure, the top management can mitigate these conflicts. This might be done by rearranging the reporting structure across existing divisions as in Ozbas (2005). Ozbas shows theoretically how conglomerate multiple-division firms can improve the incentives of divisional managers to report truthfully through organizational processes such as rigid capital budgets, job rotation, centralization, and hierarchies.

Alternatively, the firm can trade divisions and assets with other firms to create a divisional portfolio that reduces ex post bargaining costs. Such markets exist and are likely to be quite liquid in many industries. Maksimovic & Phillips (2001) document the existence of an active market for partial-firm sales in the US manufacturing sector and show the transactions to be on average consistent with efficient reallocation. In terms of the number of plants transferred from one firm to another this market rivals in size the merger market. Interestingly, the typical participants in the market are large conglomerates that have multiple three-digit SIC segments and it is the smaller, less efficient segments of a conglomerate that are most likely to be sold to other conglomerates.

Seru (2013) examines firm R&D by conglomerate and single-segment firms and finds that after diversifying mergers, R&D declines. His control set is firms whose diversifying proposed mergers were canceled for exogenous reasons. Although he documents that R&D declines, it may be that managers of firms whose mergers are canceled keep innovating to be a more attractive acquisition target in the future. By contrast, successful acquirers switch to commercialization. Thus, it is the potential of an acquisition that raises ex ante R&D. Phillips & Zhdanov (2013) show that this incentive effect of acquisitions is powerful. Apple Inc.'s purchase of PA Semi, a maker of low-powered computer processors that are now used in the iPad, fits this example. Postacquisition researchers previously employed by PA Semi left Apple; however, their product was clearly a commercial success.

Gormley & Matsa (2011) investigate a different type of agency problem—empire building by managers who wish to reduce their exposure to their firm's risk. They point to circumstances where diversification is initiated by managers of firms that learn that their firms are exposed to an exogenous increase in legal liability arising from its workers' exposure to newly identified toxic chemicals. Such firms often undertake aggressive growth through diversifying acquisitions. These acquisitions are associated with high takeover premiums and negative abnormal returns. Although not the primary objective of their paper, these findings suggest that firms with poor corporate governance that encounter a negative shock can embark on value-destroying diversification.

Glaser, Lopez-de-Silanes & Sautner (GLS) (2013) provide more direct evidence on the resource allocation of a large European-headquartered conglomerate that operates worldwide and has 5 divisions and 22 business units. They obtain proprietary panel data on business-unit profitability, planned capital allocations, and additional allocations following cash windfalls realized by the conglomerate. They also obtain biographical data on the 43 business-unit CEOs who were employed during the sample period, measuring their attainment, power within the firm, and ties with the conglomerate's top leadership. These data enable them to address two important questions: Does the capital budgeting system within the conglomerate allocate capital to projects with the best projected outcomes? Does the personal bargaining power of managers influence the allocation of capital?

GLS find that the ex ante capital allocations that arise from the firm's capital budgeting process are efficient relative to the firm's own realized earnings-before-interest-and-tax and sales projections and consistent with Maksimovic & Phillips (2002). They do not find a relation between their measures of unit CEOs' power and capital allocations and suggest that power and connections are not important factors in this firm's normal capital budgeting. Next, GLS study how allocations are affected by unexpected exogenous cash windfalls that the conglomerate's

headquarters received from sales of equity stakes in other businesses. Here, they find that managers with more bargaining power get significantly larger (than predicted by fundamentals) windfall capital allocations for their own business units.⁷ Thus, although there is no evidence that bargaining power matters in the formalized allocation processes, it does predict the distribution of unexpected cash windfalls.

These results suggest that the allocation of resources within conglomerates is more complex than predicted by simple models. They also point to the need for research on the selection of managers by conglomerates' units. GLS find that there seems to be a negative correlation between managerial power and the Tobin's q of his or her business unit.

4. INTERNAL CAPITAL MARKETS: DYNAMIC ISSUES AND FINANCIAL DEPENDENCE

One of the central justifications for an internal capital market is that the multiple-industry structure may allow firms to allocate capital from divisions that have extra funds to divisions that do not produce sufficient capital themselves yet have profitable projects. The central question is therefore whether the multiple-industry structure relaxes potential financial constraints and may as well help firms avoid the deadweight costs of financial distress.

Billett & Mauer (2003) provide some of the earliest evidence on this question. They recognize that a division's opportunities may not be best proxied by the average or median q of firms in their industry and thus construct a fitted q . Billett & Mauer demonstrate that funds flow toward financially constrained efficient divisions of conglomerates and that these types of transfers to constrained segments with good investment opportunities increase firm value. They show that the higher the transfers to financially constrained segments with good investment opportunities, the higher the overall valuation of the conglomerate. Billett & Mauer thus provide evidence that financing constraints are important to the relation between internal capital markets and excess value of the conglomerate relative to single-segment firms.

Maksimovic & Phillips (2008) examine whether conglomerate firms relax single-segment financial dependence, engage in winner-picking, and expand in high-growth industries through acquisitions and investment. For each stand-alone firm or conglomerate segment, they construct a measure of financial dependence that captures when a firm should invest more in a division than that division's internal cash flow. A firm can overcome its predicted financial dependence either through raising capital or, if it is a conglomerate, by transferring funds from other divisions.

Maksimovic & Phillips (2008) find that in growth and for consolidating industries, multiple-industry conglomerates enable financially dependent divisions to invest and acquire assets at a higher rate than similar financially dependent stand-alone firms. This effect is especially strong for the most efficient segments of conglomerate firms. They also examine plant closures and find no evidence that conglomerates postpone plant closures. Given plant closures do not require extensive financial capital, that there is no effect of the conglomerate firm on plant closures gives additional credence to the role of conglomerate firms in relaxing financial constraints.

Hann, Ogneva & Ozbas (2013) examine whether coinsurance among a firm's business units can reduce systematic risk through the avoidance of countercyclical deadweight costs. They

⁷This is interesting, because initial allocations have slack built in and are usually underspent. Thus, even after the additional windfall gains, successful business units run by powerful CEOs may still not overspend the originally projected budget. Duchin & Sosyura (2013) report evidence that divisional managers with better connections to the CEO receive more investment capital. However, these managers with better connections may have been placed in positions that have more growth potential and thus require more capital.

examine the cost of capital for diversified firms and find that diversified firms with a lower correlation in cash flows have on average a lower cost of capital than comparable portfolios of stand-alone firms. Holding cash flows constant, their estimates imply an average value gain of approximately 5% when moving from high- to low-correlation groups of firms. They show that conglomerate firms benefit through a lower cost of capital from relaxing potential costs of financial distress. Their results are stronger for firms that are *ex ante* classified as financially constrained.

Several recent papers investigate the conglomerate firms and the allocation of capital during times of industry distress and the recent financial crisis. Dimitrov & Tice (2006), Gopalan & Xie (2011), Kuppuswamy & Villalonga (2010), and Matvos & Seru (2012) examine whether in economic and financial crises, conglomerate firms fare better and cut investment less than single-segment firms that face potential financial constraints. Dimitrov & Tice (2006) show that during recessions, industry-adjusted sales growth rates drop more for bank-dependent focused firms than for bank-dependent diversified firms. This result holds after controlling for endogeneity of the diversification decision and survivorship bias. Conglomerate firms exhibit less cyclical behavior than single-segment firms who are more adversely affected by recessions.⁸

Gopalan & Xie (2011) provide evidence that conglomerate firms enable firm segments to avoid financial constraints during times of industry distress. They show that segments of conglomerate firms in times of industry distress have higher sales growth, higher cash flow, and higher expenditure on research and development than single-segment firms. These findings are of larger economic magnitude for segments of conglomerate firms with high past performance, for unrated firms, and in competitive industries. In contrast, single-segment firms increase their cash holdings. They also show that the diversification discount reduces during industry distress.

Two recent articles examine how conglomerate firms fared in the recent financial crisis. Kuppuswamy & Villalonga (2010) examine whether the coinsurance effect mattered during the 2008–2009 financial crisis. They find that diversified firms increase in value relative to single-segment firms during the crisis, a result that is not driven by the endogeneity of either financing constraints or firms' diversification choices. They show that after controlling for the selectivity bias inherent to firms' diversification choices, diversified firms experienced a statistically and economically significant increase in value relative to single-segment firms during the financial crisis.

Kuppuswamy & Villalonga (2010) also examine why diversified firms experienced an increase in value relative to single-segment focused firms during the financial crisis. They find support for two explanations. First, the financial crisis increased the value of the debt coinsurance feature of conglomerates where lenders are willing to maintain lending to more diversified firms, given that assets with imperfectly correlated cash flows provide more stable backing for loans. Second, they also find that conglomerate firms had more efficient internal capital allocation during the financial crisis.

Kuppuswamy & Villalonga (2010) show evidence of more efficient internal capital markets by documenting that the decrease in the diversification discount was significantly larger for mixed industrial-financial conglomerates (rather than purely financial or purely industrial) conglomerates, and for those that had more active internal capital markets. The mixed industrial-financial conglomerates (for example, Berkshire Hathaway and General Electric) comprise 21.5% of the conglomerate segments. It is striking that prior studies of conglomerate firms for the most part excluded firms that had financial segments because of potential worries about risk measurement

⁸Maksimovic & Phillips (2002) show that although conglomerates' main divisions are less adversely affected during recessions than single-segment firms, their peripheral divisions are affected more adversely.

and risk shifting within financial segments. However, if financial segments have value, they should have value in particular during a financial crisis.

To examine the effect of differential investment activity by conglomerate firms, Kuppuswamy & Villalonga (2010) construct a measure of how active a conglomerate firm's internal capital market is. This measure is computed by comparing a conglomerate's segment investment ratio to total segment assets to a similar measure for focused firms to obtain an industry-adjusted investment rate. The size of a conglomerate's internal capital market (labeled ICM size) is then calculated by summing the absolute values of its segments' industry-adjusted investment rates. Thus, larger values indicate a higher level of capital reallocation facilitated by the firm's internal capital market. They then relate this measure of internal capital market activity to changes in the conglomerate premium or discount. They find that the coefficient of $ICM\ Size \times Crisis$ is positive and highly significant. The implication is that during the 2008–2009 financial crisis, internal capital markets increased in efficiency relative to external capital markets. As a result, diversified firms with larger internal capital markets experienced an increase in value relative to single-segment firms.

Matvos & Seru (2012) also examine whether there was a benefit to having an internal capital market in the recent financial crisis. They construct a dynamic structural model of internal capital markets as well as present reduced-form evidence. Their baseline evidence suggests that conglomerates trade at a discount during normal times but that in times of financial dislocation their relative or excess value increases. Using their structural model, they conduct a counterfactual out-of-sample simulation that shows that resource allocation may be inefficient during normal times, but that internal capital markets offset financial market stress by 16 to 30% relative to stand-alone firms.

To capture financial market dislocation, Matvos & Seru (2012) use the TED spread—the difference between the interest rates on interbank loans and short-term US government T-bills.⁹ They interact the dispersion of conglomerate investment and q with the TED spread and a crisis dummy and examine these interactions on conglomerate excess value and investment. They find a strong nonlinearity in the effect of time-varying external capital market conditions, suggesting a larger impact when there are episodes of extreme financial market dislocation. In extreme cases of financial market dislocation, this lower cost of financing can reduce the cost of borrowing for the diversified firm by a significant amount (~6.8% in absolute terms), which can increase a conglomerate firm's value relative to single-segment firms.

5. CONGLOMERATE INDUSTRY AND PRODUCT CHOICE

A question that has received much less attention by the conglomerate literature is how do firms choose industries into which to diversify. Theoretical articles from the early 2000s provide some guidance, but empirical evidence was lacking until 2012. Although Maksimovic & Phillips (2002) predicts that firms diversify into industries in which they have a comparative advantage, they do not predict *ex ante* those industries. Matsusaka (2001) develops a matching model to explain how firms diversify. In his model, firms have different organizational competencies. The organizational competencies are somewhat transferable across industries. As a result, when an industry goes into a secular decline or the firm's competence is no longer a good fit for its industry, the firm diversifies into new industries where it can use its organizational competency. Because the firm may not know

⁹The TED spread is used as a conventional gauge of credit risk, given that it measures the difference between an unsecured deposit rate and the rate on a government-backed obligation (the TED spread) to capture financial market dislocation.

how well it will do in a new industry, the diversification is an experiment. If the firm finds a good match, it may transition into the new industry completely and exit its original industry.

Matsusaka's (2001) model predicts that diversified firms trade at a discount because the match between their organizational competence and their existing main divisions is bad. Because the match in the new industry may also turn out to be bad, many diversification attempts are in fact reversed. However, the announcement of a diversification is a signal that the firm is worth maintaining, resulting in a positive announcement effect. The theory also predicts that successful diversifiers quit their original industry.

Hoberg & Phillips (2012a) examine a fundamentally different question that the conglomerate literature has not addressed before: Within which industry pairs are conglomerate firms likely to operate? Previous papers have taken the industry structure as given and examine either the valuation of conglomerate firms relative to single-segment firms or have examined the investment decisions of conglomerate firms taking the existing industry choice as given.

Hoberg & Phillips (2012a,b) first construct measures of how related industries are and how similar firms are within industry groupings. These cross- and within-industry relatedness measures are constructed using the computational linguistics methods of Hoberg & Phillips (2011). Hoberg & Phillips (2011) extract the text from the product description section of firm 10Ks filed with the SEC and then form word vectors for each firm using this text. Using these word vectors, relatedness measures between every pair of firms can be calculated. Firms are then grouped into industry groupings using these pair-wise relatedness measures.

Hoberg & Phillips construct three different measures of industry relatedness and industry opportunities. First, they construct a cross-industry similarity measure to capture potential asset complementarities. They find that conglomerate firms are more likely to operate within industry pairs the higher the cross-industry similarity.

Second, they construct measures of investment opportunities that lie between industry pairs. Between industry pairs are industries that are closer to each member of an industry pair than the industry pair members are to each other. They find that conglomerate firms are more likely to operate in particular industry pairs that have concentrated, high-value opportunities between them.

Third, they construct within-industry measures including within-industry similarity measures and industry economies of scale. Following predictions by Maksimovic & Phillips (2002), they find that conglomerate firms are less likely to operate within industries that exhibit higher within-industry similarity and higher economies of scale.

The results in Hoberg & Phillips (2012b) are consistent with conglomerate firms producing in industries with high asset complementarities that allow potential synergies through cross-industry production. The results also show that conglomerates are more likely to produce in product spaces that have high-valued opportunities surrounding them.

6. CONCLUSIONS

Recent work has shown that firms endogenously choose organizational forms and the industries in which they operate to create comparative advantage and to mitigate the effects of financial market dislocation. The new results are broadly consistent with a neoclassical model of firm organization by Maksimovic & Phillips (2002). They posit that the managers of each firm have differing comparative advantages of running a business unit in each industry. The scale of each firm's participation in each industry adjusts until the industry's available productive capacity is allocated across firms so that the value of capacity is maximized. The resulting equilibrium organization of firms is a function of the distribution of managerial talent, the demand level in each industry, and

production costs. The model gives predictions about which firms become conglomerates and the number, size, and productivity of each single-segment firm and segment of each conglomerate. The model can also be used to derive predictions about how these variables change for each firm as a result of shocks to industry demand and costs of firms.

Although many results in the papers reviewed above are consistent with this model, the model is silent on the role of managerial influence and agency costs, asymmetries of information, and the effect of organizational form on the firm's ability to commit to markets and projects. Some of the principal papers exploring these imperfections, beginning with Stein (1997), point to additional benefits of internal capital markets, whereas others, for example, RSZ (2000), point to costs. Our view is that the basic building blocks of a theory of the conglomerate firm should begin with a neoclassical model and then explore these additional elements to enrich our understanding of optimal organizational firm choice.

Because the study of internal capital markets pertains to difficult-to-observe flows within firms, data and measurement issues continue to be the focus of recent literature. Recently, Hund, Monk & Tice (2012) have shown that conglomerate firms trade at a premium relative to single-segment firms on a value-weighted basis. They argue that the conglomerate discount previously reported in the literature is an artifact of failing to match on size, age, and profitability. Hoberg & Phillips (2012b) use computational text-based analysis of firm product descriptions to identify the uniqueness of a firm's products. Hoberg & Phillips (2012b) show that firms with unique products—both conglomerate multisegment firms and single-segment firms—trade at valuation premiums compared to text-based and accounting-based matched firms. Firms who do not have unique products and can be replicated by single-segment firms trade at discounts.

The recent financial crisis provides a natural experiment to test the value of internal capital markets. It has enabled researchers to make more firmly founded causal claims about the value of internal capital markets. Kuppusswamy & Villalonga (2010) and Matvos & Seru (2012) have shown that during the crisis, firms with internal capital markets gained in value relative to firms that did not have such markets. The early empirical literature on conglomerates has taken industry choice as given and examined outcomes in valuation or investment inefficiency. Recent work also focuses on conglomerate industry choice. Maksimovic & Phillips (2002) predicts that firms diversify into industries in which they know that they have a comparative advantage. Matsusaka (2001) develops a learning model to explain how firms diversify. In his model, diversification is an experiment. Although single-segment firms may become conglomerates, they may transition into the new industry completely and exit their original industry if they find a good match between their talents and the new industry. Although these articles model the choice of industries, neither predicts *ex ante* the actual industry choice. Recent research has begun to examine the actual industry choice of conglomerate firms. Hoberg & Phillips (2012a) develop new text-based measures of industry relatedness that can capture the effects of asset complementarities and within-industry similarity. Their results are consistent with conglomerate firms producing in industries with high asset complementarities that allow potential synergies through cross-industry production. The results also show that conglomerate firms are less likely to produce in industries with high within-industry product similarity and that exhibit high economies of scale.

The recent papers have shown industry choice and resource allocation are most consistent with a neoclassical model of the firm that emphasizes how conglomerate firms choose industries and investments in these industries that exploit firm and industry asset complementarities. The results also show the benefits of conglomerate firm organization and internal capital markets in periods of financial market dislocation.

Overall, with the recent emphasis of modeling the firm's diversification decisions in industry equilibrium, both in a static and in a dynamic framework, and with the availability of new data

sources, such as Census data, text analyses of firm positioning, and proprietary within-firm data, our knowledge about the value of diversification and internal capital markets is rapidly expanding.

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The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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