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Divestitures

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Abstract

This article provides an introduction to divestitures and the research streams that examine these deals. Divestitures are defined as the removal of one or more of a company's lines of business via selloff or spinoff. In this article, we describe how research on divestitures has evolved in the finance and strategy literatures, and we explain how to design and conduct empirical research studies on this topic. We also discuss the implications of divestitures for organization design, and outline some directions for future research in this domain.

Keywords: Divestitures, Selloffs, Spinoffs, Corporate scope, Firm boundaries, Corporate strategy

Corporate strategy is centrally concerned with the question of where firms set their boundaries, that is, in which businesses they choose to participate and in which businesses they choose not to participate. There are a range of strategic activities that companies have at their disposal to address this question. Acquisitions are one approach to corporate scope expansion, wherein a firm can extend its boundaries by purchasing business units from other companies, or even the entire operations of those firms. For example, Berkshire Hathaway expanded its industrial scope into the battery business by buying Duracell from Procter & Gamble, and South African Breweries extended its geographic scope by acquiring U.S.-based Miller Brewing Company from Phillip Morris. By contrast, a firm can reduce its corporate scope by undertaking divestitures, defined as the removal of one or more of its lines of business via selloff or spinoff.[1] Whether divestitures are executed by selloff or spinoff, these deals require that the divesting firm cede majority control of the divested business.[2] Selloffs occur when one company sells a business unit to another company, as in Pearson's sale of the FT Group (which includes the *Financial Times* newspaper) to Nikkei, the Japanese publishing house. In selloffs, there are no restrictions on the ownership structure of either the selling firm or the buying firm; each may be publicly- or privately-held. Spinoffs occur when a publicly-traded company issues shares in one of its divisions or subsidiaries *pro-rata* to its existing shareholders (i.e., by issuing a fixed number of shares in the spun-off entity for every share that investors hold in the divesting firm), resulting in the creation of two separate, publicly-traded companies (the divesting "parent firm" and the divested "spinoff firm"), as in eBay's spinoff of PayPal.[3]

While mergers and acquisitions have been the focus of intense scrutiny in the academic literature, comparatively, divestitures have received much less scholarly attention. This discrepancy is striking when one considers that on average, divestitures account for about one-third of overall deal-making value annually, and, furthermore, that a selling firm's divestiture is often a buying firm's acquisition. For example, while one can say that Berkshire Hathaway acquired Duracell from Procter & Gamble, one can equally say that Procter & Gamble divested Duracell by selling it to Berkshire Hathaway. The research that does exist on divestitures has been conducted in two broad domains: financial economics and strategic management. The finance literature typically treats divestitures as a means of resolving the challenges that often plague diversified firms, such as information asymmetry, managerial entrenchment, and inefficient internal capital markets. By comparison, the strategy literature (especially recent work) views divestitures as a proactive strategic tool that managers can leverage to create value for their firms, oftentimes as part of a dynamic and iterative process of scope expansion and reduction. Regardless of which of these perspectives one espouses, the theoretical and practical importance of divestitures as a topic for research is undeniable, especially now, as more and more companies are using these transactions as a means of altering their corporate scopes.

This article serves as an introduction to and overview of research on divestitures (for reviews, refer to Brauer (2006); Lee and Madhavan (2010)). We begin by describing divestitures, exploring the evolution of the literature on this topic as well as the assumptions that underlie the existing theory, the unit of analysis, and the key constructs in this research domain. We then discuss how to design and implement empirical studies on divestitures. We conclude by outlining implications for organization design and some potential directions for future research.

Historical development of the literature

The finance literature on the diversification discount is the intellectual antecedent of research on divestitures. The diversification discount is the idea that on average, diversified firms trade at a discount, but the question that follows quite naturally from that statement is, "a discount relative to what?" There are three possible answers to this question.

The first, known as the weak form diversification discount, is the notion that diversified firms might trade at a discount relative to single-segment firms operating in the same industries. Evidence in support of this view was provided by early studies using a "chop-shop" approach to impute the value of diversified firms were their business segments to be valued as single-business firms operating in the same industries (Lang and Stulz 1994; Berger and Ofek 1995).

The second possibility, known as the strong form diversification discount, is the idea that diversified firms might trade at a discount relative to what they would be worth had they not diversified in the first place. The challenge with measuring this form of the discount is that the counterfactual is not observable. Thus, scholars have instead compared the value of diversified firms to that of single-segment firms, showing that there is no strong form diversification discount once one accounts for the effects of non-random selection in the firms that choose to diversify (Campa and Kedia 2002; Graham et al. 2002; Villalonga 2004).

Third, and most saliently for divestitures, the semi-strong form diversification discount holds that diversified firms might trade at a discount relative to what they would be worth were they to be split apart into pieces. Scholars have claimed that the positive stock market response that often accompanies divestiture announcements provides evidence in support of the semi-strong form diversification discount (Comment and Jarrell 1995; John and Ofek 1995; Daley et al. 1997; Desai and Jain 1999; Krishnaswami and Subramaniam 1999).

An important question emerges from this description of the semi-strong form diversification discount: exactly what problems do divestitures resolve within diversified firms? First and foremost, divestitures resolve the agency problems that often afflict diversified firms. Managers may undertake value-destroying diversification to entrench themselves or to empire-build (Amihud and Lev 1981; Jensen 1986). Divestitures, especially those that are impelled by the market for corporate control, can undo these harmful diversification moves and also remove the managers that undertook them from their leadership positions (Kaplan and Weisbach 1992; Berger and Ofek 1996, 1999). Second, diversified firms may suffer from inefficiencies in their resource and capital allocation processes, in that managers may use internal capital markets to cross-subsidize businesses that should not necessarily be supported (Lamont 1997; Stein 1997; Scharfstein and Stein 2000; Rajan et al. 2000). Divestitures can also resolve such problems by removing the businesses (and their managers) that may be creating these inefficiencies in the first place (Gertner et al. 2002). Finally, divestitures can reduce the information asymmetry that exists between managers and investors in diversified firms. When a company operates in multiple businesses, especially multiple unrelated businesses, it can be difficult for external parties to understand that firm's overarching strategy or how its operations fit together into a coherent whole (Nanda and Narayanan 1999). Divestitures resolve such problems by removing businesses that may be clouding analysts' and investors' perceptions (Krishnaswami and Subramaniam 1999; Gilson et al. 2001).

The literature on the semi-strong form diversification discount rests on a fairly dim view of managerial behavior: at best, managers lack the bandwidth to run multiple businesses (especially multiple unrelated businesses), and at worst, managers use diversification to extract value from their firms for their own personal gain. Accordingly, divestitures create value because they solve or mitigate these problems. However, this view of managerial behavior may not necessarily be correct: rather than behaving self-interestedly, the managers of diversified firms could equally seek to maximize value for their companies. The strategic management literature has leveraged this alternate view of managerial behavior to analyze the possibility that divestitures might create value by helping firms decide where to set their boundaries.

The most important manifestation of this perspective is that managers use sequenced patterns of acquisitions and divestitures to redeploy resources within their firms. For example, Chang (1996) and Matsusaka (2001) each model patterns of exit from certain divisions followed by entry into other lines of business as explicit processes of search and selection. Similarly, Kaul (2012) depicts innovation as a dynamic process of scope expansion into new domains via resource-seeking acquisitions combined with scope reduction out of existing non-core businesses via divestitures. Furthermore, Capron et al. (2001) show that firms reconfigure their resource bases by divesting assets from existing businesses that receive new resources from horizontal acquisitions, and Bennett and Feldman (2015) find that firms deepen their resource positions within their core businesses by undertaking related acquisitions contemporaneously with unrelated spin-offs. Together, these studies highlight the point that divestitures do far more than simply solve problems within diversified firms, and that they instead serve as mechanisms through which managers can grow and improve their firms.

Along similar lines, managers also appear to use divestitures to actively shape the way that relevant external constituents like securities analysts and shareholders perceive their firms. For example, diversified firms suffer an illegitimacy discount when they are covered by inappropriately-specialized analysts (Zuckerman 1999), which often spurs managers to undertake divestitures to improve these intermediaries' perceptions of their firms (Zuckerman 2000). This point is echoed by Feldman (2015a), who shows that spinoffs (especially "legacy" spinoffs, whereby a firm spins off its original line of business) impel significant changes in the composition and quality of analyst coverage that companies receive. Even further, Bergh et al. (2008) find that managers choose divestiture modes (selloff versus spinoff) based on how easily they can convey information about the divested assets to external constituents, and Litov et al. (2012) show that firms must strike a balance between the rent-generating potential and the informational discounts that are associated with unique corporate strategies (like divestitures). Together, these studies suggest that managers may proactively undertake divestitures (or specific types of divestitures) to clarify how their firms are perceived by relevant external constituents, extending beyond the idea that divestitures simply reduce information asymmetry in diversified firms.

Divestitures in strategic management research

Having described the historical evolution of the literature on divestitures, it is important now to take a step back from these ideas and lay out the key definitions, assumptions, and empirical constructs that underpin the strategy research that has been conducted on this topic.

Assumptions

Research on divestitures in the field of strategic management rests on two key assumptions. First, *managers are value-maximizing*. The foregoing discussion reveals that while the finance literature views divestitures as a solution to the internal and external problems created by self-interested managers running diversified firms, the strategy literature treats divestitures as a proactive tool that value-maximizing managers can use to improve the internal functioning and external perceptions of their firms. Having said this, however, it is worth mentioning that the assumption that managers are value-maximizing does not preclude divestitures from potentially having negative consequences for the firms that undertake them. For example, value-maximizing managers might choose to undertake divestitures at the wrong point in time in an industry divestiture wave (Brauer and Wiersema 2012), or they might underestimate the importance of certain interdependencies that exist between the businesses they choose to divest and their firms' remaining operations (Feldman 2014). As a result, firms may not necessarily enjoy the financial gains that typically accompany divestitures. Importantly, though, this penalty is not attributable to managers pursuing their own interests at the expense of their shareholders, but rather to inadvertent mistakes or misperceptions as to the best courses of actions for the firms they run.

Second, *managers undertake divestitures voluntarily*. Most studies of divestitures, whether they appear in the finance or strategy literatures, explore either the motivations for or the implications of divestitures that managers *choose* to undertake, rather than divestitures that managers are *mandated* to undertake by some external entity such as a regulatory body. While this assumption, on its face, may not appear to be terribly consequential, it actually does have two important implications. One is that it underscores the need for scholars who are conducting empirical studies of divestitures to use statistical methodologies that account for the effects of non-random selection in the firms that choose to undertake divestitures (or certain types of divestitures). The other is that this assumption reveals an interesting opportunity for future research, namely, to identify a context in which certain firms are exogenously impelled to undertake divestitures and to study the causal consequences of those deals for those companies.

Unit of analysis

Research on divestitures generally seeks to address two key questions: what motivates firms to undertake divestitures (or certain types of divestitures), and what are the implications of divestitures for performance? In seeking to answer these questions, scholars studying these deals have primarily used three units of analysis: (1) divesting firms, (2) divested business units, and (3) acquiring firms that buy divested business units.[4] Due to various limitations on observability and data availability, each of these units of analysis is well-suited to address specific research questions and to study certain modes of divestiture in particular.

Divesting firms are the most broadly applicable unit of analysis with which to address why firms undertake divestitures and what implications divestitures have for firm performance, since one can readily observe whether divesting firms systematically display particular characteristics or experience certain performance trajectories. The biggest challenge with using divesting firms as the unit of analysis is the identification of a relevant counterfactual against which to benchmark these companies. More specifically, while one might hypothesize that certain firms are more likely to undertake divestitures or that performance improves when companies undertake divestitures (or particular types of divestitures), the questions that flow directly out of these predictions are "more likely to undertake divestitures relative to which firms?" and "performance improves relative to what?" Comparable firms that do not undertake divestitures are a useful counterfactual (Feldman 2015b), as are companies that retain business units that are comparable to those that the divesting firms divested (Feldman 2014).

The use of divested businesses and acquiring firms as units of analysis is somewhat more complex. Figures 1 and 2 illustrate the two main modes of divestitures, spinoffs and selloffs. Figure 1 reveals that in a spinoff, Firm P (the divesting firm, also known as the "parent firm") issues shares in Business Unit S (a subsidiary or division of Firm P) *pro-rata* to its existing shareholders, resulting in the creation of a new, publicly-traded company, Firm S (the "spinoff firm"). Fig. 2 shows that in a selloff, Firm D (the divesting firm) sells Business Unit B (a subsidiary or division of Firm D) to Firm A (the acquiring firm).

Two points emerge from these diagrams. One is that divested businesses are a suitable unit of analysis with which to explore the performance implications of spinoffs, but not selloffs. When companies undertake spinoffs, they are required to disclose backwards-looking information on the operations and performance of the subsidiaries they are spinning off (Business Unit S). As a result, it is possible to compare the pre-

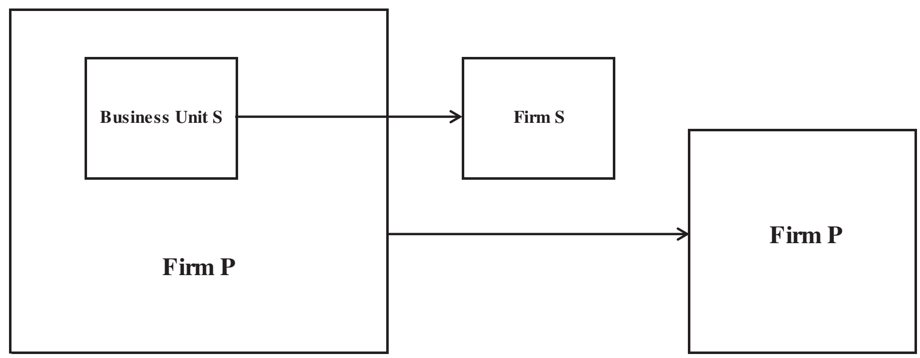

Fig. 1 Illustration of a Spinoff

divestiture characteristics of the spun-off subsidiary (Business Unit S) to the post-divestiture characteristics of the spinoff firm (Firm S), since Business Unit S and Firm S are functionally the same entity, captured in two different "states of the world." The same cannot be said of selloffs (which have no analogous disclosure requirements), since Business Unit B is subsumed within Firm D prior to its sale and within Firm A following its sale, foreclosing the comparison of the pre- and post-divestiture characteristics of Business Unit B. For example, returning to the divestitures referenced in the introduction, one way to explore the implications of eBay's spinoff of PayPal for PayPal's performance would be to compare its performance as a subsidiary within eBay to its performance as a public company. However, it would be extremely difficult, using publicly-available data, to measure the implications of Procter & Gamble's selloff of Duracell for Duracell's performance, since Duracell is part of Procter & Gamble before its sale and it operates within Berkshire Hathaway once its sale is complete.

Taking these ideas a step further, the second point that comes out of Figs. 1 and 2 is that acquiring firms are only an appropriate unit of analysis with which to explore the performance implications of selloffs, but not spinoffs. Acquiring firms have a definitive role only in the former mode of divestiture, but not in the latter. For example, while it would be possible to explore the performance implications of Duracell's selloff for the firm that acquired it (Berkshire Hathaway), it would not be possible to quantify the analogous implications of PayPal's spinoff since there is no acquiring firm involved in that deal. When evaluating the firms that acquire divested businesses as the unit of analysis, it is again important to identify a relevant counterfactual against which to

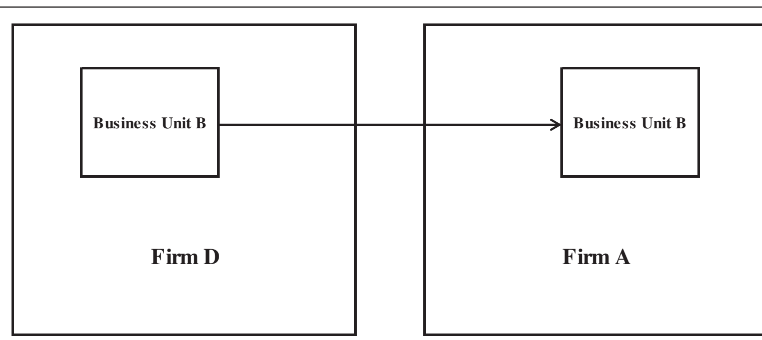

Fig. 2 Illustration of a Selloff

benchmark their performance, such as other companies that operate businesses that are comparable to those that the acquiring firms bought.

In sum, there are two useful heuristics to follow when choosing the unit of analysis for a study about divestitures. First, ensure that the unit of analysis is appropriate for the divestiture mode. For example, as was just explained, it would not be possible to study the performance of firms that acquire divested businesses using spinoffs. Second, identify a relevant counterfactual set against which to benchmark the entities involved in divestitures. It is only possible to clearly answer questions about the motivations for and implications of divestitures when one can compare the entities that were involved in these deals to those that were not.

Key constructs

Research studies about divestitures draw on three key constructs: the entities involved in the divestiture, the characteristics of the divestiture, and the outcomes of the divestiture.

Entities involved in divestitures

To study divestitures, it is first important to identify the entities that are involved in those deals. Consistent with the foregoing discussion, this involves identifying divesting firms, divested business units, and either acquiring firms that buy divested business units (in the case of selloffs) or spinoff firms (in the case of spinoffs). Identifying each of these entities makes it possible to gather data on their attributes, such as their financial characteristics, their industrial classifications (i.e., their SIC or NAICS codes), the composition of their top management teams and boards of directors, their coverage by securities analysts (for publicly-traded companies), and the like. These characteristics can be used to measure the motivations for divestitures (e.g., does inappropriately-specialized analyst coverage drive firms to undertake divestitures?), to quantify the performance implications of divestitures (e.g., how do divestitures affect the return on equity of the divesting firms?), and to control for heterogeneity in the performance consequences of these deals. As mentioned previously, it is also necessary to gather analogous information on the companies that comprise the counterfactual set to the entities that are involved in the divestitures in the sample.

Characteristics of divestitures

Having identified the entities that are involved in a given divestiture, it is next important to describe the characteristics of that deal. The most important of these traits is the mode of divestiture (selloff or spinoff), as this clearly goes hand-in-hand with identifying the entities that are involved in that deal. It is also useful to determine the market value and the relatedness of the divestiture along with other deal-specific traits, such as whether or not a divestiture is a "legacy divestiture" (Feldman 2014). These characteristics can be leveraged to address both the motivations for divestitures (e.g., how does the relatedness of a business unit affect the likelihood that it will be divested?), as well as their consequences (e.g., what are the performance implications of large divestitures?). Finally, it is also helpful to identify the announcement and effective dates of the divestitures. As will now be explained in greater detail, these pieces of information can respectively be used to calculate the returns to divestiture announcements and to identify the post-divestiture years over which the performance implications of divestitures might manifest themselves.

Outcomes of divestitures

Since many studies of divestitures seek to measure the outcomes of these deals for one or more of the entities that are involved in them, it is useful to identify or calculate certain performance metrics. An important such measure is the immediate stock market response to divestiture announcements, which can be calculated using an event study (Anand and Singh 1997). Returning to the above discussion of the entities involved in divestitures, one can also use their financial characteristics to quantify the performance implications of divestitures, using such measures as Tobin's q, compounded monthly or annual stock returns, and the return on assets, equity, or sales. Finally, one could even consider outcomes other than financial performance, such as incentive alignment (Feldman 2015b), efficiency (Bennett and Feldman 2015), or the quality of analyst coverage (Feldman 2015a).

Designing empirical research on divestitures

Having described the theoretical foundations that underpin the literature on divestitures, this article will now address some more practically-oriented issues surrounding the design and implementation of empirical research studies about divestitures.

The research question

As mentioned previously, the existing literature on divestitures generally seeks to answer either or both of the following two questions: what motivates firms to undertake divestitures, and what are the performance consequences of these deals? While the basics within these two broad domains have been reasonably comprehensively explored, nevertheless, there are four approaches that can still be usefully employed to deepen the "state of the field" on divestitures, generating novel theoretical insights and empirical evidence on these deals.

The first is to explore the boundary conditions of existing empirical regularities that have been documented in the literature. For example, an important relationship that divestiture studies have repeatedly confirmed is that these deals tend to be undertaken after a turnover event among the top management team (Bigley and Wiersema 2002; Hambrick et al. 1993; Wiersema and Bantel 1992). Or, as an even simpler example, many studies have shown that divestitures are positively associated with divesting firm performance (Comment and Jarrell 1995; John and Ofek 1995; Daley et al. 1997; Desai and Jain 1999; Krishnaswami and Subramaniam 1999). Numerous questions remain to be investigated, though. For example, is the relationship between divestitures and management turnover more or less pronounced when the turnover event is externally-impelled or voluntarily chosen? Do divestitures have more or less favorable performance implications when they are undertaken in recessionary periods? These and other boundary conditions to well-documented relationships often provide fruitful avenues for expansion and further exploration of existing findings.

The second approach to developing novel research questions about divestitures is to articulate and quantify the mechanisms that are thought to be driving the relationships that have been documented in the literature. For example, numerous studies have theorized that one of the reasons why divestitures might be positively associated with divesting firm performance is that these deals improve the focus of managerial attention within those companies, by removing extraneous businesses that are dissipating that attention in the first place (e.g., Markides 1992, 1995; Daley et al. 1997). However, no study has represented the concept of managerial attention quantitatively, thus rendering that theorizing somewhat speculative. Thus, an important avenue for research that remains available to scholars is to explicitly identify underlying mechanisms like managerial attention and then to explore their role in driving the performance gains that are associated with divestitures.

A third way to generate new research questions on divestitures is to identify novel dependent variables that have yet to be explored. As has been mentioned, various measures of stock market returns are the dependent variable that studies have typically used to represent the outcomes of divestitures (Markides 1992; Comment and Jarrell 1995; John and Ofek 1995; Daley et al. 1997; Desai and Jain 1999). However, this approach limits the conclusions that can be drawn about divestitures to addressing how investors respond to these deals. Thus, studies exploring how divestitures affect other performance metrics, such as operating performance (Bergh 1995; Feldman 2014) or analyst coverage (Krishnaswami and Subramaniam 1999; Gilson et al. 2001; Feldman 2015a) would be a welcome addition to this field.

Finally, the fourth approach to developing research questions about divestitures is to supplement existing findings about these deals with insights from diverse theoretical perspectives. Scholars studying divestitures enjoy the real luxury of being able to draw upon numerous different theories in developing their ideas, such as performance feedback theory (Vidal and Mitchell 2015), information economics (Bergh et al. 2008), the behavioral theory of the firm (Feldman 2014), the resource-based view (Bergh 1995; Chang and Singh 1999) and transaction cost economics (Semadeni and Cannella 2011). This affords them the possibility of easily incorporating new theoretical perspectives into their work. For example, Bennett and Feldman (2015) draw on insights from competitive strategy in their study of how firms use divestitures to refocus their operations on their core businesses. Studies following similar approaches could usefully expand divestiture research into novel theoretical domains, as well as generate new insights by combining diverse theoretical perspectives.

Setting and operationalization

Having presented the general types of research questions that empirical studies about divestitures can usefully set out to answer, it is next helpful to describe the settings in which these questions can be addressed, as well as the operationalization of key constructs. To its detriment, most existing research on divestitures has been conducted about U.S.-based deals (two important exceptions to this statement are Mata and Portugal (2000); Berry (2013)). This constraint is, in large part, due to the fact that data on U.S.-based transactions is relatively easily accessible, primarily from three main sources.

First, electronic databases are a useful source of information. Most importantly, SDC Platinum and Thomson One provide data on all divestitures that companies undertake (and indeed, on all of their corporate strategy transactions, including acquisitions and alliances). While these data are reasonably comprehensive in identifying the dates of and the entities involved in each divestiture, some of the deal-specific information (e.g., was a sale the outcome of an auction or the result of a privately-negotiated transaction?) is less comprehensive. Additionally, Compustat and CRSP can be used to collect data on the financial characteristics and stock market performance of the publicly-traded companies that are involved in divestitures: divesting firms, acquiring firms that buy divested business units (in the case of selloffs), and newly-independent spinoff firms (in the case of spinoffs).

Second, for spinoffs (but not for selloffs), it is possible to hand-collect, using data from the Securities and Exchange Commission, backwards-looking data about the pre-spinoff operations of the subsidiaries that companies are spinning off. As described previously, these data can be used to compare the pre-divestiture characteristics of spun-off subsidiaries to the post-divestiture characteristics of spinoff firms (Feldman 2015b). It is also possible to gather information, using the Compustat segments file, on the characteristics of the business segments operating within the divesting parent companies, facilitating a comparison of the characteristics of spun-off subsidiaries to those of "retained" business segments (Feldman 2014).

Third, and finally, it is also possible to gather proprietary qualitative data on the operations of divesting firms and/or divested business units by gaining privileged access to those entities (Corley and Gioia 2004; Tripsas 2009; Moschieri 2011).

Estimation

In addressing the two research questions that are typically asked in studies about divestitures (what motivates firms to undertake divestitures, and what are the performance consequences of these deals?), the two following models are generally employed:

$$(1) Divestiture_{it} = \theta Y_{it} + \delta_i + \zeta_t + \eta_{it}$$
$$(2) Performance_{it} = \beta Divestiture_{it} + \gamma X_{it} + \delta_i + \zeta_t + \varepsilon_{it}$$

In these models, i is an entity that is involved in a divestiture (e.g., the divesting firm, the divested business in the case of spinoffs, or the acquiring firm in the case of selloffs), and t is the time period (year). X_{it} is a vector of control variables that affect performance (e.g., firm size, firm profitability, divestiture mode, etc.…) and Y_{it} is a vector of control variables that affect the divestiture decision (e.g., management turnover, weak prior performance, etc.…). δ_i are firm fixed effects, ζ_t are year fixed effects, and both ε_{it} and η_{it} are the unobserved error terms in their respective models. By definition, the decision to divest is necessarily made before the firm engages in divestiture. While the divestiture decision and performance consequences could occur nearly simultaneously, there is more typically a time lag between the two. This time lag is a function of the length of time it takes the firm to complete the divestiture and the type of performance variable that is being utilized.

The standard methodological rules apply in the estimation of Models (1) and (2). Estimating the likelihood of a firm undertaking a divestiture requires a binary variable as the dependent variable, calling for a conditional logistic regression as the estimation strategy in Model (1). By contrast, since performance is often measured using a continuous variable (e.g., Tobin's q, return on equity), Model (2) can typically be estimated using a standard linear model. It is often useful to include firm and year fixed effects in these models, especially when panel data is being utilized, since this soaks up the unobserved heterogeneity (attributable to firm- or time-specific characteristics) that could be affecting performance. In both models, it is also necessary for researchers to account for any methodological challenges that might impair their estimation, including multicollinearity, autocorrelation, and heteroscedasticity.

Even more important, however, is the issue of non-random selection, a complication that is highlighted by the side-by-side presentation of Models (1) and (2). Specifically, and as mentioned previously, the problem with any empirical study in which the key independent variable represents a decision (rather than an exogenous event) is that rather than the decision itself leading to some outcome, the characteristics of the actor that undertook that decision could themselves be correlated with that outcome. Put more concretely, while divestitures could be positively associated with divesting firm performance, divesting firms themselves might be particularly strong performers, meaning that the observed positive correlation between divestitures and performance is attributable to the characteristics of the firms that undertook those deals, not to the actual relationship between divestitures and performance.

There are two possible solutions to this problem of non-random selection. One is to use propensity score matching or coarsened exact matching models to identify comparable sets of treatment and control firms (that is, entities that are and are not involved in divestitures), and then to re-run Model (2) on this reduced subsample of "matched" firms. This empirical approach has the advantage of controlling for the observable factors that could be driving the performance differences between the firms that are in the treatment and control groups, allowing for a clear isolation of the true effect of divestitures on performance. At the same time, however, this empirical approach is predicated on the ability of the researcher to identify *all* of the observable factors that could be driving the performance differences between the firms in the treatment and control groups, which is a fairly restrictive criterion to meet.

The second solution to the problem of non-random selection in the divestiture decision is to use treatment effects models. This empirical approach explicitly estimates the likelihood that a firm will undertake a divestiture, following Model (1), above. Then, the predicted values of Model (1) are included as the key independent variable in Model (2). As a result, Model (2) predicts the performance implications of divestitures, controlling for the factors that drive firms to undertake those deals in the first place (Model (1)). Importantly, however, it is necessary to include instrumental variables in the first-stage regression (Model (1)). These instrumental variables must be correlated with the divestiture decision (that is, the dependent variable in Model (1)), but uncorrelated with the unobserved errors in the second-stage performance regression (Model (2)). Additionally, it is necessary to include the "Inverse Mills Ratio" in the second-stage regression to control for the unobservable factors that drive the divestiture decision that is being modeled in the first-stage regression. Thus, just as matching models rest on the assumption that all available observable characteristics are used to match treated and control firms, treatment effects models are also predicated on an important assumption: unobserved factors drive divestiture decisions, and these unobserved factors are being captured by the Inverse Mills Ratio. As a result, the second-stage performance regressions in treatment effects models isolate the true effect of divestitures on performance by controlling for the effects of non-random selection on unobservable characteristics.

Implications for organization design

Returning to the introductory discussion, given that divestitures involve the removal of one or more of a diversified firm's existing lines of business, these deals have important implications for divesting firms. Indeed, by definition, when a firm undertakes a divestiture, it is reducing the scope of its operations—that is, the firm's boundaries are shifting to exclude the divested businesses and enclose only those that remain. The impact of these boundary-changing moves will, in turn, reverberate across the parent firm and the divested unit—operationally, managerially, and organizationally—in numerous and varied areas, such as external partnerships, managerial compensation, and internal resource allocation (Feldman 2015b; Gertner et al. 2002). The process of preparing for, implementing, and responding to this scope change has significant ramifications for divesting firms, especially in the area of organization design.

Modularity is one aspect of organization design that is particularly relevant to divestitures. The principle of modularity is often discussed in conjunction with managing a firm's complexity (Simon 1962). Firms with modular structures are, for example, positioned to reorganize and recombine their components internally to generate innovation, as well as to adjust to changes in their external environments (Ethiraj and Levinthal 2004; Sanchez and Mahoney 1996). In the context of divestiture, the concept of modularity in organization design presents some intriguing opportunities and challenges.

As divestitures have come to be viewed as a proactive strategic tool, these deals have become less of an unanticipated activity and more of an activity that is expected to take place in firms. Therefore, the act of separating and removing a business unit is one for which some organizations will prepare and plan for on an ongoing basis, even if there are no immediate intentions to divest a particular business unit. Modularity in organization design can help to facilitate the separation of the business unit from the parent. Modularity can also ensure that the post-divestiture operations of the firm run smoothly, as interdependencies in activities and shared routines may be less prevalent in modular organizations. Thus, modularization could be an appealing design option for firms that wish to embed divestitures into their *status quo* operations.

Having said this, the pursuit of modularization as a means of "designing for divestiture" can create challenges for diversified firms. While modularity facilitates separation, it also holds possible repercussions for cross-firm operations in the pre-and post-divestiture organizational state of the firm. With a modularized design, each unit is meant to perform without interdependencies with other units. Thus, firms may need to institute formal design mechanisms to drive collaboration between units for initiatives that benefit the firm as a whole, such as cross-selling by the sales force or co-branding across product lines. There are a wide range of organizational mechanisms that may be used to foster and manage these efforts, such as corporate steering committees, the designation of an executive function focused on cross-unit operations, and the rotation of executives across different units (Chandler 1991). Accordingly, designing for divestiture may require decisions that facilitate both separation and cooperation.

Another organization design issue for divestitures concerns the construction and management of any post-divestiture links that may exist between the selling parent and the divested unit (Seward and Walsh 1996; Semadeni and Cannella 2011; Feldman 2015c). This impacts organizational structure and governance issues on both sides of the transaction—be it for the selling firm and the acquirer of its former unit, or for the selling firm and its former unit as an independent spun-off entity. Post-divestiture connections may be initiated due to the needs of the selling parent firm. For example, in spite of the sale, the parent may still rely on the former unit for the supply of a particular good or service, or for the continued use of intellectual property or specialized human capital. When IBM divested its microelectronics business to GlobalFoundries, the companies agreed that GlobalFoundries would provide IBM with certain server processor semiconductor technology for a 10-year period. In other cases, the reverse may be true, wherein the parent provides the former unit (or its acquirer) with resources and (quite commonly for spinoffs) infrastructure and functional support (such as in IT, HR, and accounting). A single divestiture may have numerous post-divestiture links associated with it, and the many organization design choices associated with these linkages—including their monitoring, staffing, financial remuneration, arbitration, and duration, among other factors—may have major implications for the overall success of the divestiture.

Future research directions

Going forward, there are many questions and issues about divestitures that still remain to be addressed by research scholars. Certainly, expanding the geographic breadth of divestiture research is a prime area for future work. Given the wide variety of political, regulatory and managerial contexts in which divestitures are undertaken, the generalizability of current (and typically U.S.-based) findings may be reduced, and subsequent revisions and extensions of our current thinking may thus be required.

Advancing our understanding of how internal and external stakeholders influence the drivers, execution, and ultimate performance of divestitures is another critical topic. From an internal stakeholder perspective, although strides have been made in deciphering the influence of investors, directors, and managers (Brauer and Wiersema 2012; Feldman 2015b, c; Feldman et al. 2015), these studies represent only the beginning of an important research trajectory. Indeed, with the ongoing rise in activist investors taking a vocal part in encouraging and leading divestitures, this evolving research stream is notably vibrant. Furthermore, employees (in divested units, in the remaining parts of divesting firms, or in acquiring firms for selloffs) play an instrumental role in divestiture, but investigations of this central internal stakeholder have been limited (see Moschieri 2011 for an example of an exception). From an external stakeholder perspective, while the cornerstone of this research area has been set through initial work on stock analysts (Feldman et al. 2014; Feldman 2015a; Gilson et al. 2001; Zuckerman 2000), the impact of the likes of suppliers, customers, investment bankers, politicians, unions, and regulatory bodies on the decision to divest and the unfolding of the divestiture process stands largely unexplored. Intriguingly, as cross-border divestitures become more prevalent, the number of external stakeholders involved in a divestiture will not only increase, but the differences in their objectives are likely to become starker. Understanding how their influence impacts divestiture, and how managers may best navigate the tradeoffs and opportunities they may pose, is an important area for future research.

Of course, the pursuit of these research directions is not likely to be easy. Not only are the topics themselves complex and multifaceted, but, as described earlier, comprehensive and detailed divestiture data may not be readily available. To address this gap, directing research efforts towards building international divestiture datasets is a natural next step. Conducting thoughtfully-constructed survey analysis of divesting firms, divested units, acquiring firms, and other stakeholders can also help to fill the data gap, and is an approach that has not yet been fully leveraged in the divestiture literature. Further, identifying unconventional yet meaningful settings, such as sports franchises (Moliterno and Wiersema 2007) that facilitate, for example, an investigation of the mechanisms that drive divestitures, is an intriguing avenue to explore as well. Taken together, it is clear that there are many opportunities, theoretical and empirical, for scholars to contribute to the divestiture literature for years to come.

Endnotes

[1]While there are other ways in which firms can divest businesses, such as equity carve-outs or management buyouts, selloffs and spinoffs comprise the vast majority of divestitures and thus we focus on them here.

[2]In ceding majority control, a firm may still retain a minority share of the business, especially on a temporary basis. In so doing, the selling firm is incentivized to ensure a smooth transition of ownership and management. For simplicity, we consider divestitures in which a business is divested in full.

[3]Spinoffs are distinct from spinouts, which occur when a group of employees founds a new venture in the same industry as their former parent company.

[4]While divestiture research in the strategic management literature is most often performed at the firm or the business unit level of analysis, some works have considered the industry level of analysis. For example, Hatfield et al. (1996); Liebeskind et al. (1996) respectively explore the relationships between selloffs and both industry specialization and industry concentration.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
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