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Value Creation 2.0

A Framework for Measuring Value Creation in Private Equity Investment



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This report was published by INSEAD's Global Private Equity Initiative (GPEI). It was written by Bowen White, Associate Director at the GPEI, under the supervision of Michael Prahl, Distinguished Fellow at the GPEI, and Claudia Zeisberger, Academic Director at the GPEI and Professor of Decision Sciences and Entrepreneurship and Family Enterprises at INSEAD.

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GPEI welcomes private equity investors interested in the center's research efforts to reach out to us in Europe or Singapore. For further information on GPEI, please visit www.insead.edu/gpei.

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Overview

In the past decade and a half, we have witnessed a nearly five-fold increase in private equity assets under management, on the back of strong performance and growing investor interest.¹ In the wake of this steady rise and lessons learned from the global financial crisis, the PE industry has increasingly focused its attention on measuring the basic drivers of private equity performance.

Sources of investment returns, particularly operational value creation, are key topics on today's private equity agenda. As the industry has matured, the ability to access debt and structure deals is no longer considered a core differentiator. What matters more is the ability of PE investors to add a unique perspective and generate value operationally during the holding period. Not only is this a core differentiator for general partners (GPs) but an important point of focus for limited partners (LPs) when allocating capital.

INSEAD's Global Private Equity Initiative (GPEI) recognized that there was need, and a wide industry audience, for a holistic, bottom-up view of the drivers of financial and operational value creation in private equity. Conventional frameworks neither provide insight into the underlying drivers of operating improvements nor correct for broad industry performance. We therefore developed **INSEAD Value Creation 2.0** (IVC 2.0) – a framework that combines the strengths of existing models used by practitioners and academics and augments them in the following ways:

- IVC 2.0 deconstructs value creation across a host of financial and operational levers
- IVC 2.0 attributes value creation to capital structure re-engineering, industry performance and Alpha

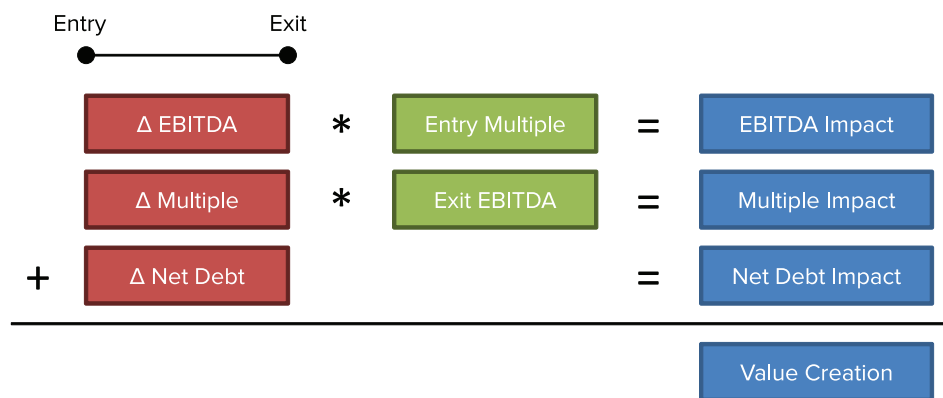
In this report, we begin by discussing the conventional framework used by PE practitioners to measure sources of value creation. After reviewing individual drivers of value identified in the academic literature, we explore different methods developed since the eve of the global financial crisis to identify sources of private equity returns more precisely. Among these, we focus on the Created Value Attribution framework developed by Duff & Phelps, which is tested and applied to 28 individual transactions, two of which are the subject of a detailed case-based assessment. Thereafter, INSEAD Value Creation 2.0 is presented.

As part of a research stream within the GPEI centered on private equity as a transformation agent, this project is the first to focus on the question of value creation in private equity. As always, we welcome feedback from the industry, as well as opportunities to interact and collaborate with interested parties.

Conventional Framework

The conventional framework analyzes transaction data to isolate three main drivers of value creation in private equity investment: change in annual operating cash flow at entry and exit, change in the valuation multiple applied to operating cash flow at entry and exit, and the net cash flow generated for shareholders during the holding period. The first two account for the change in a company's enterprise value during the holding period and are typically measured by the change in earnings before interest, taxes, depreciation and amortization (EBITDA) and a company's EBITDA multiple. The third driver – net cash flow generated for shareholders – is measured by the change in a company's net debt position over the course of the holding period. The mathematical underpinnings of the framework are shown in Exhibit 1, and a detailed analysis of each driver is made in the section that follows.

Exhibit 1 | Value Creation 1.0 - Conventional Framework



EBITDA Impact:

The EBITDA impact quantifies the portion of value creation attributable to the changes in operating performance during the holding period. Using EBITDA as a proxy for operating cash flow is an industry convention and provides a measure of enterprise performance insulated from differing global accounting standards and portfolio company capital structures. However, it does not set a company's performance in the context of its peers and thus does not differentiate between company-specific operating improvements and those captured by the industry as a whole. Moreover, it provides no insight into the sources of changing operating performance, e.g., whether it was achieved through changes in the topline or the business's cost structure, nor does it quantify the impact of acquisitions and disposals on revenue and margin. If not corrected, this approach tends to overstate operating improvements in the context of acquisitions and to understate changes in the context of divestments.

Multiple Impact:

This quantifies the change in the price paid per unit of operating cash flow between entry and exit. Assessing the change in multiple is consistent with the private equity industry's convention for valuing a business on a comparable multiple basis, as opposed to the discounted cash flow analysis utilized in the context of acquisitions by strategic investors, academic finance, and public markets. Again, this simplistic approach does not differentiate between whether changes in valuation multiples are attributable to market cycles, industry performance or company-specific changes. Simply measuring the change in valuation multiple fails to capture any evolution of the company's multiple in the context of acquisitions, or value captured in the context of a roll-up strategy.

Net Debt Impact:

The change in a company's net debt position is measured in dollar terms and represents the free cash flow generated for shareholders during the holding period. This cash can be used to pay down debt, pay dividends to shareholders if permitted, or retained on the balance sheet. Measuring changes in net debt is particularly relevant in the context of leveraged buyouts, where cash flow from operations funds voluntary and mandatory repayment of debt financing. However, this approach does not quantify the direct impact of financial leverage on investment returns. In addition, measuring the aggregate change in net debt offers no insight into the underlying sources and uses of cash during the holding period.

Summary

While the conventional framework offers an easily applied methodology and a complete picture of the value created for private equity investors, this simplistic approach offers no insight into company-specific value creation. Changes in EBITDA, valuation multiple and net debt can result from any number of intrinsic and extrinsic drivers (industry performance, organic/inorganic initiatives, or changes in capital structure) that are not captured by the framework. As a result, it falls short as a tool for LPs to evaluate a GP's value-add during the holding period, and for GPs to more accurately gauge strategic and operational decision-making over the course of portfolio investments.

Distinct Value Drivers from Academia

As the private equity asset class has evolved, academic studies have tried to quantify the impact of individual drivers on enterprise value creation and investment returns. Many of these focus on providing a technically accurate measure of individual drivers across large samples of PE investments. While rarely part of a comprehensive framework, they can be useful to pinpoint areas of focus for developing a more in-depth assessment of value creation in private equity. The main findings are summarized below.

Operating Improvements:

Research exploring change in operating performance during the holding period and its impact on investment returns focuses almost exclusively on large leveraged buyouts (LBOs). In most studies of LBOs, boosting margins and productivity are found to be the primary drivers of improvement in industry-adjusted operating cash flow, while revenue growth is either in line with or below that of industry peers.¹ Margin and efficiency improvements were particularly pronounced in the first wave of U.S. buyouts in the 1980s, when industry-adjusted operating margins and operating efficiency increased by 35% and 21% respectively.² In a study of 3,200 U.S. firms acquired in buyout transactions between 1980 and 2005, 74% of industry-adjusted total factor productivity gains reflected a propensity among portfolio companies to close low productivity plants and open new, higher productivity plants post-buyout relative to control firms.³ Performance improvements in U.S. and European buyouts during the 1990s and 2000s were more mixed; operating and efficiency improvements were broadly in line with, or only marginally higher than, that of industry peers.⁴

Industry Performance:

The majority of research on PE value creation attributes a portion of returns to industry performance. Several studies do so by adjusting portfolio company operating performance, for example by deducting the EBITDA growth rate realized by a group of industry peers from that realized by a PE-backed company. Adjustments are also made to drivers of enterprise value – for example by deducting the change in transaction multiple realized by a group of comparable companies – or to equity returns realized by PE investors – principally by subtracting the return realized in public equity markets from that of a given investment.

Controlling for industry operating performance provides insight into the effectiveness of strategic decision-making during the PE holding period. For example, industry-adjusted sales growth for a sample of U.S. buyouts in the 1980s was found to be negative in the years immediately following the LBO, reflecting marked post-buyout divestment activity during this period.⁵ Similarly, controlling for industry performance in a study of U.S. buyouts in the 1990s and 2000s reveals a significant improvement in operating efficiency relative to a sample peer group, despite an absolute drop in efficiency across the sample.⁶

¹ A study of European buyouts between 1991 and 2005 found that revenue growth was a key driver of increases in operating cash flow in smaller investments. Source: Achleitner, A. et al (2010). *Value Creation Drivers in Private Equity Buyouts: Empirical Evidence from Europe*. The Journal of Private Equity, Spring 2010, 17-27.

² Kaplan, S. (1989). *The Effects of Management Buyouts on Operating Performance and Value*. Journal of Financial Economics, 24(1989), 217-254.

³ Davis, S.J., et al (2014). *Private Equity, Jobs, and Productivity*. American Economic Review 2014, 104(12), 3956-3990.

⁴ For example: Guo, S et al (2009). *Do Buyouts (Still) Create Value*. The Journal of Finance, LXVI(2), 479-517; and Acharya, V. et al. (2013). *Corporate Governance and Value Creation: Evidence from Private Equity*. The Review of Financial Studies, 26(9), 2139-2173.

⁵ Kaplan, S. (1989). *The Effects of Management Buyouts on Operating Performance and Value*. Journal of Financial Economics, 24(1989), 217-254.

⁶ Guo, S., et al (2009). *Do Buyouts (Still) Create Value?* The Journal of Finance, LXVI(2), 479-517.

Tax Shields:

Various studies have isolated the impact of tax shields resulting from higher tax-deductible interest expense on private equity performance and LBOs specifically. A study of U.S. LBOs in the 1980s found that a bigger tax shield produced an 11% increase in pre-LBO equity value.⁷ In a study of 100 large U.S. LBOs conducted between 2003 and 2008, bigger tax shields generated an increase in pre-LBO enterprise value of between 8% and 11%.⁸

Corporate Governance Mechanisms:

Corporate governance mechanisms resulting from LBOs have been credited with driving value creation in private equity, particularly as levers to reduce agency costs and improve operating performance.⁹ Agency costs arise in companies when management teams invest free cash flow which might have otherwise been distributed to shareholders or invested in NPV positive projects in a suboptimal manner.¹⁰ While the impact of such mechanisms cannot be explicitly measured in dollar value, regressions of large samples of PE investment can isolate their significance related to performance.

Multiple studies find that the high debt-servicing requirements and increased bankruptcy risks associated with LBOs mitigate agency costs by reducing free cash flow at the discretion of management and improving operating efficiency.¹¹ Management incentive plans that award large payouts in the event of strong investment performance, and management co-investment requirements in leveraged buyouts are frequently employed to reduce agency costs and align economic interests.¹² Finally, the ability to monitor portfolio company performance and drive change rapidly in the context of control buyouts has been shown to contribute to higher portfolio company performance.¹³

Summary

While analysis of LBOs in the academic literature highlights drivers of value in private equity investment, there is no comprehensive attribution of enterprise value creation. The vast majority of studies leaves large residual values unaccounted for and tends to employ simplifying assumptions in order to assess large datasets and populate incomplete transaction information. Hence, these frameworks do not provide a holistic view of value creation for a given investment and often produce findings that are inconsistent with actual performance.

⁷ Based on a 30% marginal tax rate and debt retirement in 8 years after the LBO. Source: Kaplan, S. (1988). *Management Buyouts: Evidence on Taxes as a Source of Value*. The Journal of Finance, 44(3), 611-632.

⁸ Jenkinson, T. and Stucke, R. (2011). *Who Benefits from the Leverage in LBOs?* Retrieved from: <http://ssrn.com/abstract=1777266> or <http://dx.doi.org/10.2139/ssrn.1777266>

⁹ Nikoskelainen, E. and Wright, M. (2007). *The impact of corporate governance mechanisms on value increase in leveraged buyouts*. Journal of Corporate Finance, 13, 511-537.

¹⁰ Jensen, M.C. (1986). *Agency costs of free cash flow, corporate finance, and takeovers*. American Economic Review, 76(2), 323–330; and Jensen, M.C. (1989). *Eclipse of the public corporation*. Harvard Business Review, 67, 61–75.

¹¹ Guo, S. et al (2009). *Do Buyouts (Still) Create Value?* The Journal of Finance, LXVI(2), 479-517.

¹² Bruton, G. D. (2002). *Corporate Restructuring and Performance: An Agency Perspective on the Complete Buyout Cycle*. Journal of Business Research, 55(9), 709-724.

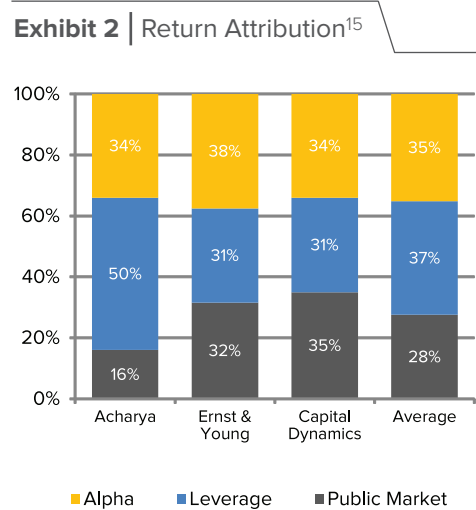
¹³ Cotter, J.F. and Peck, S.W. (2001). *The Structure of Debt and Active Equity Investors: The case of the Buyout Specialist*. Journal of Financial Economics, 59(1), 101-147.

Emerging Frameworks

Since the cyclical peak in private equity investment in 2006/07,¹⁴ various academic and practitioner-led studies have drilled deeper in an attempt to discover the sources of value creation in PE investments. Several of these offer frameworks to assess sources of PE returns – controlling for leverage and public equity market performance – while others provide insight into the underlying drivers of value creation at the enterprise level. Each has its own strengths and weaknesses both in terms of methodology and application.

Measuring Private Equity Outperformance

Over the last decade, various reports published by academics, investors and service providers have isolated private equity “Alpha”. Alpha in this context represents the outperformance of PE investments after controlling for leverage and public equity market returns. Exhibit 2 summarizes the findings of three prominent sources employing this approach. These reports isolate leverage and public market returns in different ways. Some isolate the full impact of leverage and compare unlevered portfolio company and public market returns, others the portfolio company leverage in excess of that employed in public markets to quantify the effect of incremental leverage. The proxies provided for public market returns also vary, from a bottom-up selection of a single publicly-listed peer to a top-down selection of a group of sector comparables based on the ICB (Industry Classification Benchmark) sector codes or valuation/financial performance benchmarks.



While this approach provides a more comprehensive evaluation of performance than individual value drivers isolated in other academic studies, it has several shortcomings. Comparing portfolio investment performance to public equity market returns provides no insight into changes in underlying operating performance, and, moreover, introduces a host of public market biases that can distort measures of company value. Indeed, the various methods used to isolate the impact of leverage and public market return suggest a lack of accepted best practice, as well as the difficulty of identifying meaningful comparable benchmarks in the context of large datasets. Finally, this approach employs a formulaic assessment of the impact of leverage rather than directly analyzing the impact of leverage on company cash flows.

¹⁴ For example, buyout capital deployed peaked in 2006/07 at \$687 and \$673 billion respectively.
Source: (2015). *Global Private Equity Report 2015*. Bain & Company, Inc.

¹⁵ Sources: Acharya, V. et al. (2013). *Corporate Governance and Value Creation: Evidence from Private Equity*. The Review of Financial Studies, 26(9), 2139-2173;
(2014). *Taking Stock: How do Private Equity Investors Create Value? A study of 2013 European exits*. Ernst & Young. Value Creation in Private Equity. Capital Dynamics and the Technische Universität München.

Capital Dynamics – A Step Towards Enterprise Value Attribution

In reports published in 2009 and 2014, Capital Dynamics and Technische Universität München presented a framework attributing private equity returns to individual drivers at the enterprise level. The framework attributes value creation to the financial and operational risk borne during the holding period, with value drivers similar to those applied in the conventional framework.¹⁶ It quantifies the return – represented by the money multiple (MM) in Exhibit 3¹⁷ – attributed solely to financial risk by unlevering the returns realized by the LBO sponsor as a first step. It then attributes the unlevered return generated operationally via changes in EBITDA, changes in valuation multiple, and the free cash flow generated during the holding period.¹⁸ The framework

provides an additional layer of granularity relative to the conventional framework by decomposing changes in EBITDA and multiple into six operational drivers – changes in sales, changes in margin, company-specific (GP) and market drivers of change in the valuation multiple, and two mix effects¹⁹ – that provide a more robust view of the sources of value creation.

Exhibit 3 | Investment Value Drivers

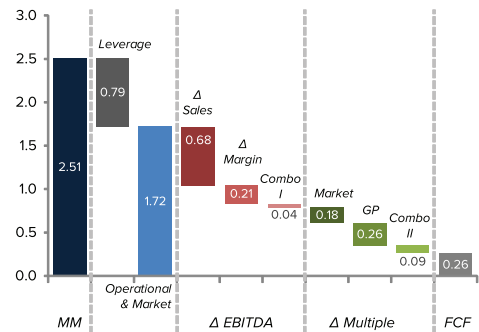
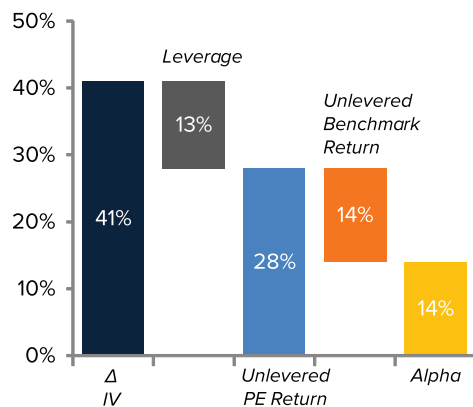


Exhibit 4 | Return Attribution



However, similar to the studies highlighted earlier, the Capital Dynamics approach ultimately determines Alpha by controlling for investment returns via leverage and public market returns. Exhibit 4 shows the average value created by each driver from the 2014 study. While the 2014 report provides an explanation for the source of Alpha at the enterprise level – that outperformance is driven by superior EBITDA growth at PE portfolio companies relative to public benchmarks (42% vs. 12% respectively) as a result of superior organic and inorganic value creation initiatives – its detailed breakdown in Exhibit 3 does not consistently and explicitly differentiate between industry, capital market and company-specific sources of value creation.

¹⁶ The reports assessed datasets of 241 and 701 global LBOs respectively. Sources: (2009). *Studie: Wertschöpfung in Private Equity nicht nur von Fremdkapital abhängig - Zwei Drittel der Wertsteigerung durch operative Faktoren und Bewertungsveränderungen*. Capital Dynamics and the Technische Universität München; and, (2014). *Value Creation in Private Equity*. Capital Dynamics and the Technische Universität München.

¹⁷ Exhibit 3 displays the average impact of each driver across a sample of global LBOs assessed in the 2014 report.

¹⁸ As unlevering the return results in a 100% equity-financed investment, free cash flow rather than a change in net debt is the applicable measure of cash flow generated during the holding period.

¹⁹ Combo I refers to the combination of sales and margin; Combo II refers to the combination of EBITDA and multiple. (2014). *Value Creation in Private Equity*. Capital Dynamics and the Technische Universität München.

Duff & Phelps - Created Value Attribution

In 2011, Duff & Phelps began developing the Created Value Attribution (CVA) framework, at the request of their clients, to identify operational drivers of value creation in private equity investment. The CVA links the change in specific drivers of operating performance directly to changes in both enterprise value and investment performance.²⁰ Using the conventional framework as its base, the CVA deconstructs investment performance and isolates sources of operational value creation in terms of internal and external drivers. In a second step, it identifies and recombines these individual drivers into four fundamental sources of value creation: industry, capital market, deleveraging, and Alpha.

The section that follows provides a detailed breakdown of the sources of value identified by Duff & Phelps. To provide texture, we present statistics from a sample of 28 PE-backed portfolio companies to which the CVA framework has been applied. The section concludes with descriptive case studies featuring output from two applications of the CVA.²¹

Sample Overview:

This section provides insight from the first 30 applications of the Duff & Phelps CVA to private equity investments. To arrive at an anonymized and normalized dataset, Duff & Phelps divide the total change in investment value and the change in value attributed to each CVA driver by each investment's aggregate invested capital.²² To control for outliers, we removed two investments in which the total change in investment value was more than two standard deviations outside the mean, resulting in a sample of 28 investments.²³

The vast majority of investments in our sample were North American buyouts, 20 made before the financial crisis and 8 since. Of the 28, 8 were unrealized at the time of CVA analysis. Realized investments were held over terms ranging from 2 to 10 years, with an average holding period of 5 years; unrealized investments had been held over terms ranging from 2 to 7 years, with an average holding period of 4 years. The sample contains 15 investments in firms with an enterprise value below \$100 million at acquisition, 6 with enterprise values from \$100 to \$500 million, and 7 with enterprise values above \$500 million. In all, 23 investments were made in companies with a majority of sales in North America. Of the remainder, 3 were made in global firms and 2 in emerging markets-focused firms. For the vast majority of investments the GP had actual or effective control of the company.

The robustness of our sample output is limited by its small size and the risk of selection bias, which arises from the fact that firms with a history of operational value creation had an incentive to engage with Duff & Phelps and to select investments that produced above-average operating improvements.

²⁰ (2014). *Created Value Attribution: Assessing How Value is Created in Private Equity Investments*. Duff & Phelps.

²¹ All data presented in each case study was provided directly by Duff & Phelps clients or at their direction.

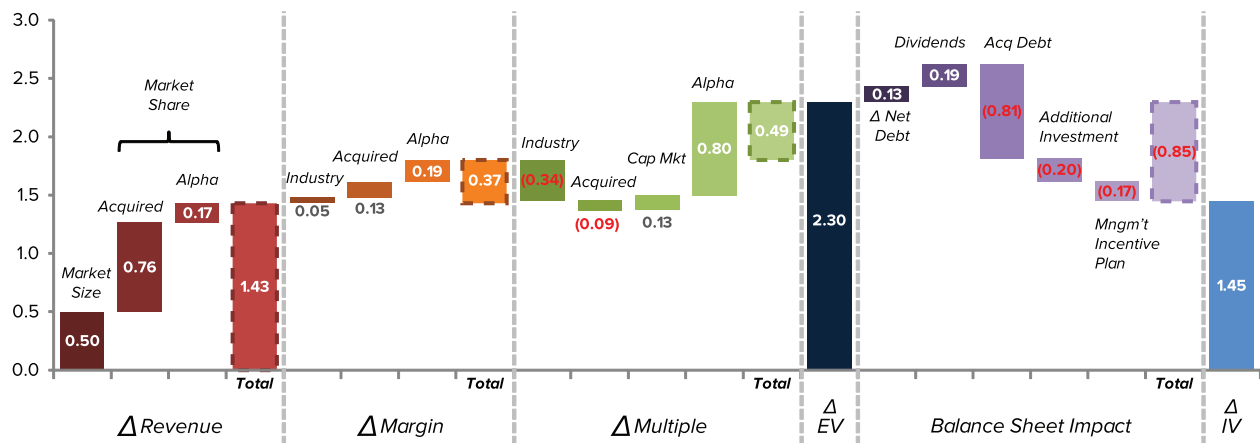
²² Aggregate invested capital represents the total value of portfolio company equity at the time of investment.

²³ The mean total change in investment value for all 30 investments is 1.98 times aggregate invested capital, with a standard deviation of 245%; total change in investment value for the two excluded investments was 11.01x and 7.86x. The mean for our adjusted sample of 28 investments, as presented in the following pages, is 1.45x.

Deconstructing Value Creation

Exhibit 5 displays the value creation drivers identified in the CVA framework. In addition to 15 drivers represented by individual bars in the graph, there are four summary categories: change in Revenue, change in Margin, change in Multiple, and Balance Sheet Impact. The categories to the left of the change in enterprise value (“ Δ EV” in the graph) represent drivers of enterprise value creation, while the figures to the right of Δ EV provide a bridge between the changes in enterprise value and investment value (“ Δ IV”). The figures here represent the average change in value as a proportion of invested capital across our sample of 28 investments.

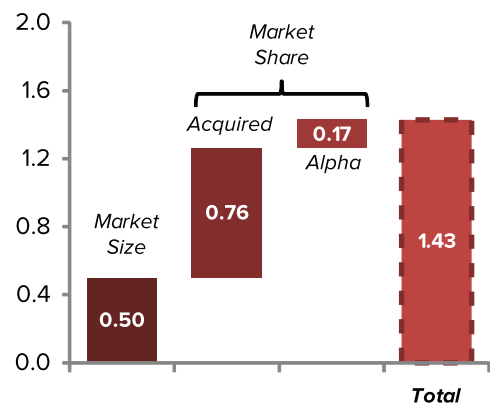
Exhibit 5 | Value Creation Drivers



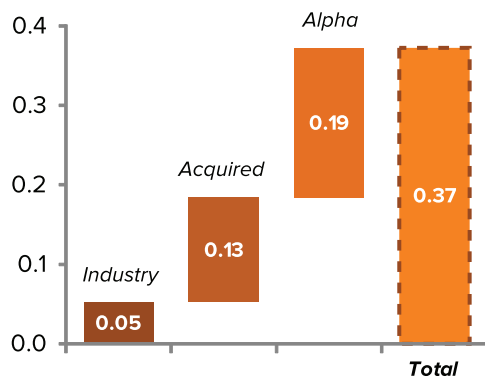
The average change in investment value across the sample was 145% – or a money multiple of 2.45x – while enterprise value saw a 230% increase of invested capital. Changes in revenue represent the largest category of enterprise value creation, while Alpha driving improvements in portfolio company multiple represents the largest individual driver. Additional descriptions of individual drivers and categories are given below.

Change in Revenue:

As mentioned above, revenue growth was far and away the main source of enterprise value creation across our sample of 28 investments, accounting for 62% [1.43/2.30] of the average increase in enterprise value.²⁴ The Duff & Phelps CVA conceptually divides change in revenue into those realized via changes in market size (representing industry performance) and in market share. Change in market share represents company-specific change in revenue and is divided into changes captured via acquisitions and created via Alpha during the holding period. As illustrated in the graph, nearly 90% of average revenue growth across our sample was driven by industry performance or acquisition, with the remaining 10% attributed to Alpha.



²⁴ Revenue fell at only three of the companies in our sample. Changes in revenue across the sample ranged from -99% to 1,141% of initial investment value.

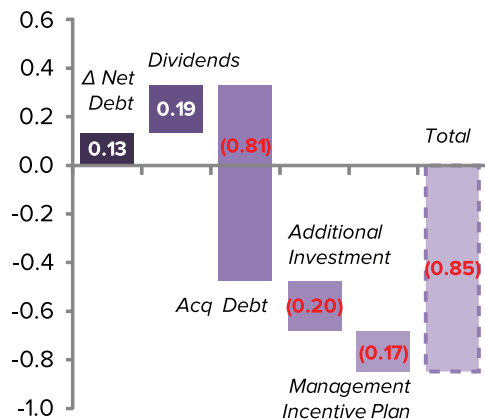
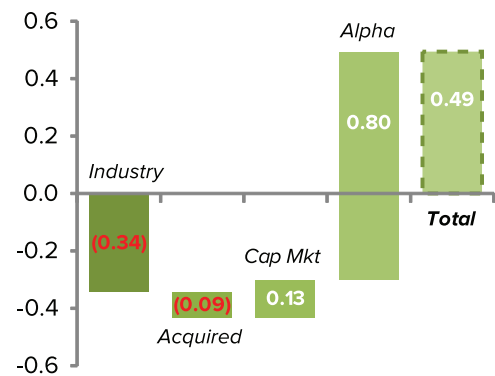


Change in Margin:

Improved margins account for 16% [0.37/2.30] of enterprise value creation across our sample. Drivers of change in portfolio company margin are isolated in a similar manner to revenue and attributed to industry performance, acquisition, and Alpha. As the graph illustrates, roughly half of the value created via margin change is directly attributable to operating improvements unique to the parent company (Alpha), and the other half to industry performance and the impact of acquisitions.

Change in Multiple:

The remaining 22% [0.49/2.30] of enterprise value creation across our sample is contributed by change in valuation multiple. In addition to industry, acquisition and Alpha drivers, the CVA also attributes change in the multiple to change in capital market conditions, specifically industry cost of capital.²⁵ While both industry and acquisition impacts drive down the valuation multiple across our sample, Alpha and change in cost of capital more than offset this decrease.



Balance Sheet Impact:

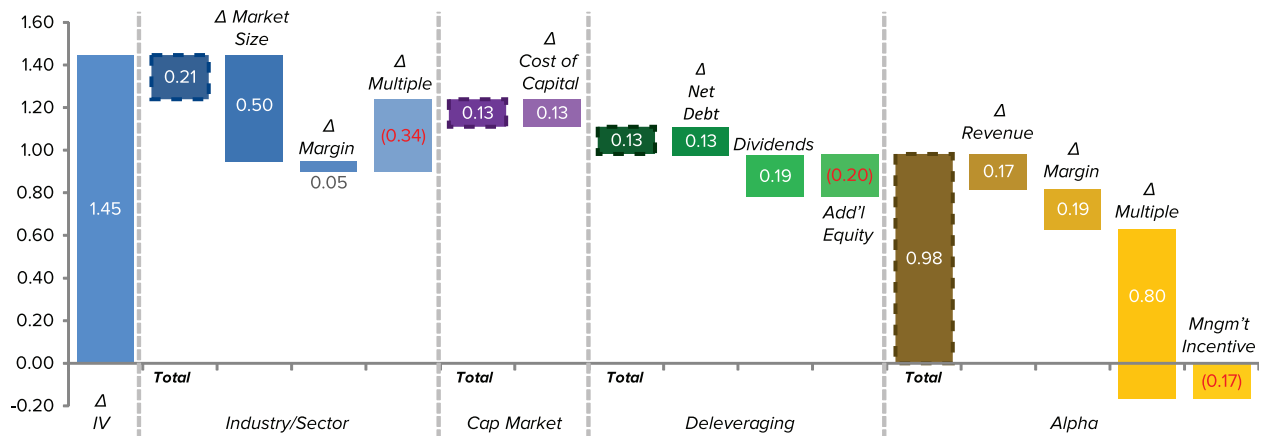
The CVA bridges the change in enterprise value and the change in investment value by accounting for sources and uses of cash during the holding period. Changes in capital structure resulting from debt repayment and excess cash between entry and exit are captured as change in net debt; cash paid out to shareholders during the holding period is isolated as dividends. The CVA isolates capital raised for acquisitions as acquisition debt, and identifies additional investment raised to fund organic business operations. Finally, the CVA deducts the compensation awarded via management incentive plans as an operating expense.

²⁵ The capital market impact of a change in cost of capital is estimated by measuring the cost of capital of industry peers at entry and exit. This measure does not account for a change in the company's capital structure.

Reconstruction & Value Attribution

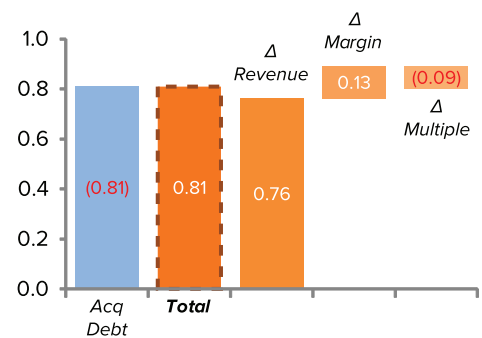
Having isolated the individual drivers of value creation, the CVA allocates them to one of four fundamental sources of value: industry/sector, capital markets, deleveraging, and Alpha. The reconstruction incorporates drivers of enterprise value creation – changes in revenue, margin, and valuation multiple – and balance sheet impacts to provide a holistic view of value creation. This provides a comprehensive view of externally-driven value creation and Alpha created via company-specific improvements in operating performance. As shown in Exhibit 6, Alpha accounted for 68% [0.98/1.45] of the average investment return across our sample of 28 companies, followed by industry/sector (14%), capital market (9%) and deleveraging (9%) impacts.

Exhibit 6 | Fundamental Sources of Value Creation

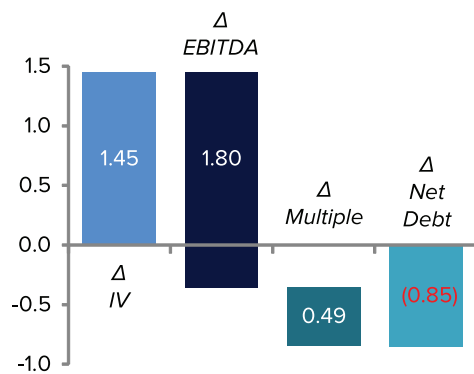


Two assumptions of the CVA are worth noting to understand output in Exhibit 6. First, the framework treats acquisitions as fair market value transactions that do not create value for PE investors; as can be seen in Exhibit 7, the purchase price represented by acquisition debt is perfectly offset by the value captured through changes in revenue, margin and multiple. As a result, these drivers are removed from the reconstructed framework in Exhibit 6. Value created post-acquisition through operational synergies is captured as Alpha.²⁶ Second, although not an explicit use of operating cash flows, management incentive plans are regarded as an expense of creating Alpha.

Exhibit 7 | Acquisition Impact



²⁶ Isolating the performance of newly acquired divisions of a company over time and their impact on value creation is extremely difficult.

Exhibit 8 | Conventional Framework

Comparing output from the conventional framework and the CVA underscores the transparency provided by the latter. Applying the conventional framework to our sample of 28 companies yields output detailed in Exhibit 8, which identifies change in EBITDA as the primary driver of value creation across the sample. This change and the additional value created by an improving average transaction multiple comfortably offset the negative impact of change in net debt across the sample.

A closer inspection of CVA output in Exhibit 5, however, reveals that only 20% [0.36/1.80] of EBITDA growth is attributable to Alpha, split roughly evenly between changes in revenue and margin. The remaining change in EBITDA is attributable to industry performance [31% or 0.55/1.80] and acquisitions [49% or 0.89/1.80]. Exhibit 5 also reveals that Alpha created via an improved multiple [0.80] more than offsets the negative impact from industry multiples [-0.34], while nearly the entire change in net debt is attributable to funding raised for acquisitions.

Summary

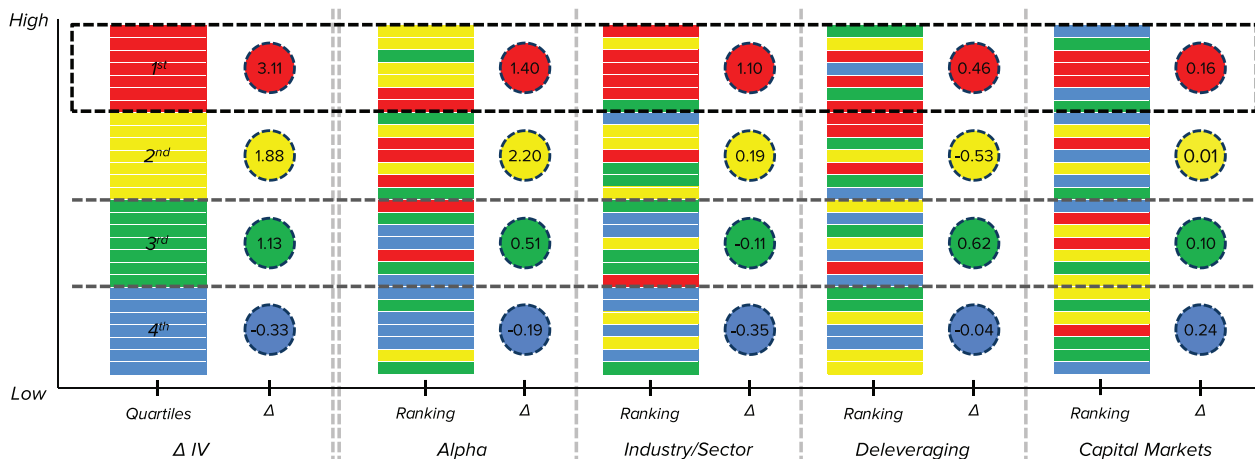
The CVA addresses a wide range of shortcomings in the attribution of value creation in private equity by individual drivers in academia and across holistic frameworks. Principally, it attributes investment performance directly to enterprise drivers of value creation and isolates company-specific Alpha created via operating improvements. In addition to separating changes in EBITDA into underlying changes in revenue and margin, the CVA further controls for the impact of industry performance and acquisitions across the drivers of enterprise value creation. Similar to corporate finance valuation best practice, the CVA controls for industry performance by benchmarking with a group of comparable companies rather than employing broad metrics of industry performance or a single operating company. It ultimately provides a clearer view on performance by highlighting both the evolution of a company's capital structure and the sources and uses of cash flow during the holding period.

Despite this vast improvement on current value creation frameworks and the additional insight into operational value creation, the CVA has some limitations. Since it is a highly complex, time-consuming process, its applicability to large datasets is impractical. As a methodology, it does not quantify the direct impact of financial leverage and a changing capital structure on performance, resulting in an incomplete picture of total investment performance, the impact of tax shields on value, and cash flow performance during the holding period. Finally, the CVA's treatment of acquisitions does not test for the widely held belief that value can be captured via multiple arbitrage in a roll-up strategy.

Sample Analysis - Drivers of Top Performing Investments

Although the small size of our sample negates the significance of statistical analysis, closer examination of our results reveals trends related to top-performing investments. Exhibit 9 presents the value created across each of the CVA's four fundamental sources of value creation – Alpha, industry/sector, deleveraging and capital markets – in our sample of 28 investments. We rank each (in descending order) by the total change in investment value (ΔIV) and color-code each according to its performance quartile, as presented in the bar on the left of the exhibit. For example, an investment in the first quartile is represented by a red slice, an investment in the second quartile is represented by a yellow slice, and so on. This color-coding is maintained throughout the exhibit. We then rank the investments again in descending order of value created in the four fundamental sources. Finally, each circle represents the average value created for investments in each quartile across the categories represented in the exhibit.

Exhibit 9 | Quartile Analysis by Source

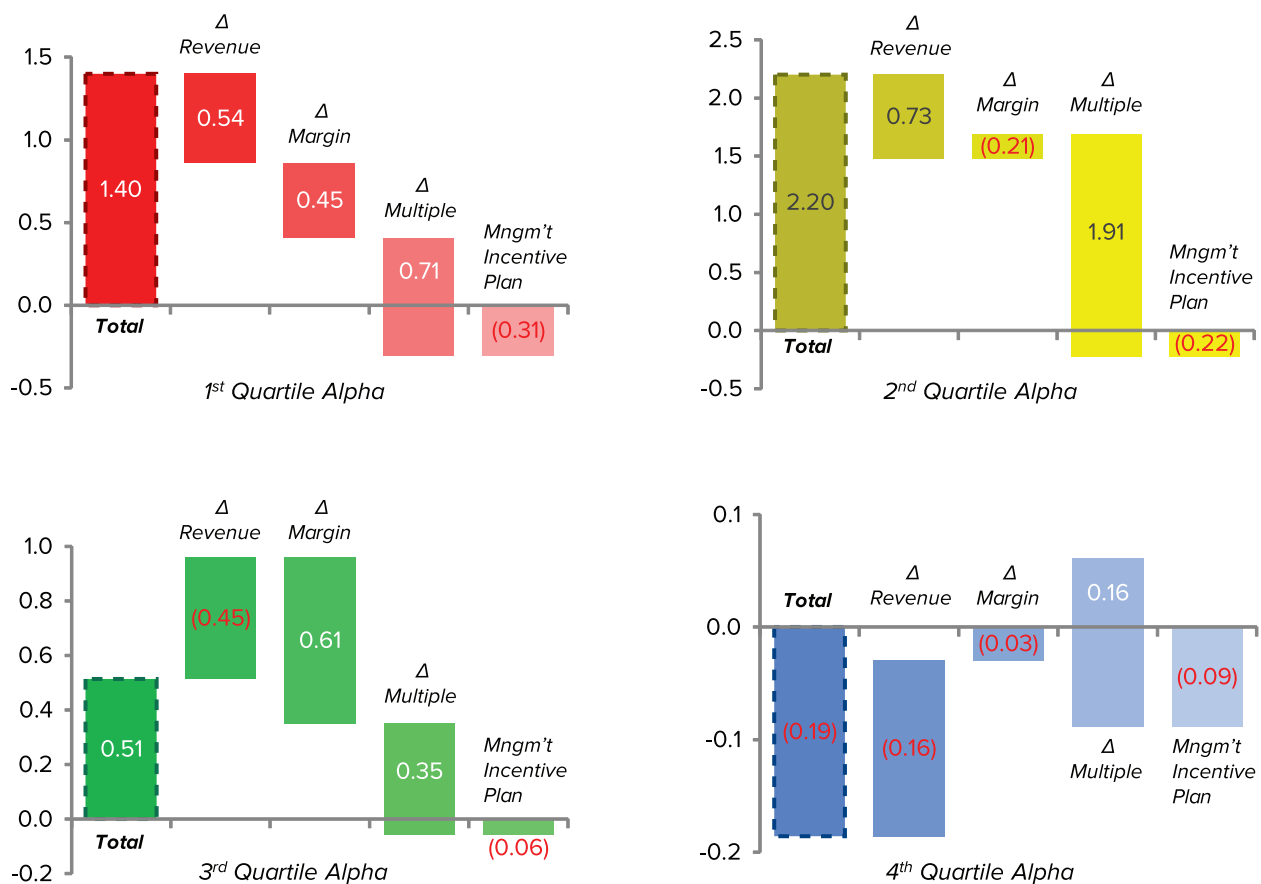


Focusing on investments from the top two performance quartiles (red and yellow) in Exhibit 9, one observes an interesting divergence. Top quartile investments colored red consistently occupy positions in the top half of each fundamental source of value creation, as shown in the bars for each category. As presented in the red circles, top quartile investments on average generate the majority of their value from Alpha [45% or 1.40/3.11 of total change in investment value] and from industry/sector performance [35% or 1.10/3.11 of total change in investment value], with less substantial but positive contributions from deleveraging [15% or 0.46/3.11] and capital market performance [5% or 0.16/3.11]. In addition, the top performers operated in industries that performed extremely well relative to the sample, as changes in industry performance of five top quartile investments ranked among the top six in this category.

Tracking second quartile performing investments (yellow), one observes a more varied dispersion of value creation as presented in the bars for each category. Second quartile investments occupy a high proportion of top Alpha generating investments, as four of the top five performers in this category are from the second quartile. In fact, the amount of Alpha generated in second quartile investments exceeded the quartile's total change in investment value [117% or 2.20/1.88 of total change in investment value] with additional positive contributions from industry/sector [10% or 0.19/1.88] and capital market performance [1% or 0.01/1.88], but a large negative change in value from deleveraging [-28% or -0.53/1.88].

This divergence in performance between first and second quartile investments can also be seen when examining the composition of Alpha for each quartile. As shown in Exhibit 10, first quartile investments realized consistent contributions to Alpha through changes in revenue [39% or 0.54/1.40], margin [32% or 0.45/1.40], and valuation multiple [51% or 0.71/1.40], whereas the contribution to Alpha of second quartile investments varied widely, with 87% [1.91/2.20] of Alpha generated through changes in the valuation multiple, 33% [0.73/2.20] created through revenue changes, and value destroyed [-10% or -0.21/2.20] via changes in margin.

Exhibit 10 | Alpha Composition by Quartile



Summary

While our analysis of the sample underscores the insight provided by the CVA framework, the small sample size negates our ability to transpose the trends observed to industry quartile performance as a whole. For example, one investment has a significant impact on second quartile Alpha; removing this investment from our calculations reduces Alpha created through a change in multiple from 1.91 to 0.73, broadly in line with the first quartile. Analysis of a large unbiased dataset is needed to test the validity of the framework and form robust conclusions.

Case Study I: Growing the top-line at Golden Gate

In January 2008, funds advised by Vietnamese PE firm Mekong Capital acquired a 15% stake in Golden Gate, a quick-service chain restaurant founded by Dao The Vinh. Following an initial foray into the beverage industry selling tea directly to consumers, Golden Gate opened a restaurant selling locally-inspired cuisine in 2005 that was an instant success with consumers. The investment and management expertise provided by Mekong unlocked further value in the restaurant chain, as the number of outlets grew more than ten-fold and EBITDA grew nearly eight-fold over the term of Mekong's investment.

Given the outsized metrics highlighted in the paragraph above, it is unsurprising that the change in EBITDA was the largest source of value [61% or 6.76/11.01] for Mekong's investment when assessed via the conventional framework – as presented in Exhibit 11 – with an additional robust gain from an improved multiple [30% or 3.29/11.01]. Given the lack of leverage in the transaction, it is also unsurprising that the change in net debt had a minimal relative impact on the value created [9% or 0.95/11.01].

Applying the CVA provides significantly enhanced insight into the drivers of value creation in the Golden Gate investment. The growth strategy described above is reflected quantitatively in Exhibit 12, as revenue growth accounted for more than 100% of Golden Gate's change in enterprise value but at the expense of margins, the deterioration of which destroyed roughly half of the value generated through top-line gains. Company-specific changes in revenue and margin dwarfed those experienced by industry comparable companies. Value created via an increasing multiple, on the other hand, was driven almost entirely by improvements realized across the industry, while company-specific change resulted in a drop in valuation multiple. Dividends accounted for the majority of balance sheet change during the holding period.

Exhibit 11 | Conventional Framework

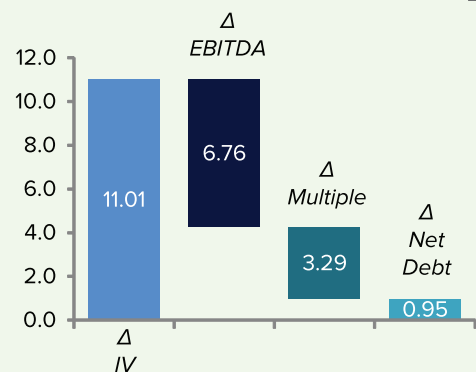


Exhibit 12 | Value Creation Drivers

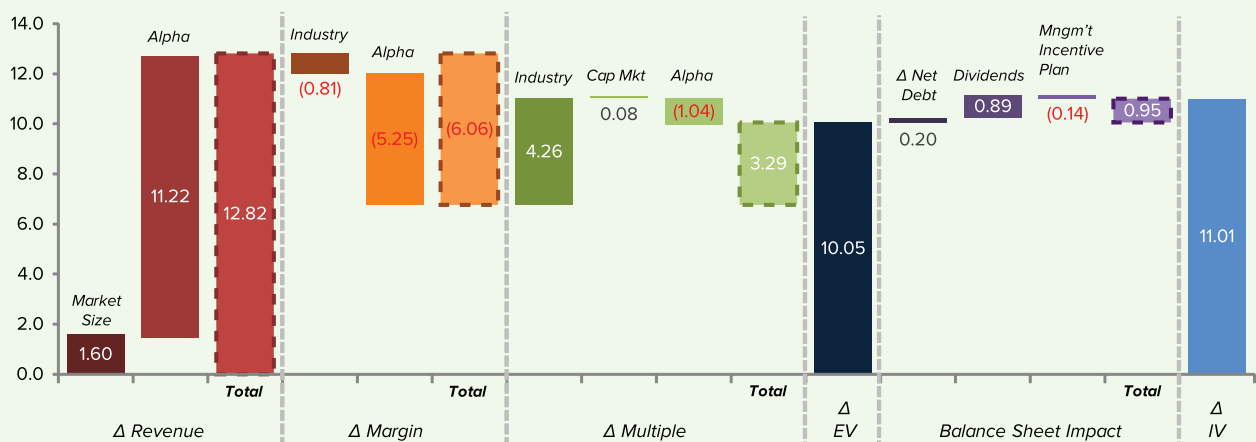
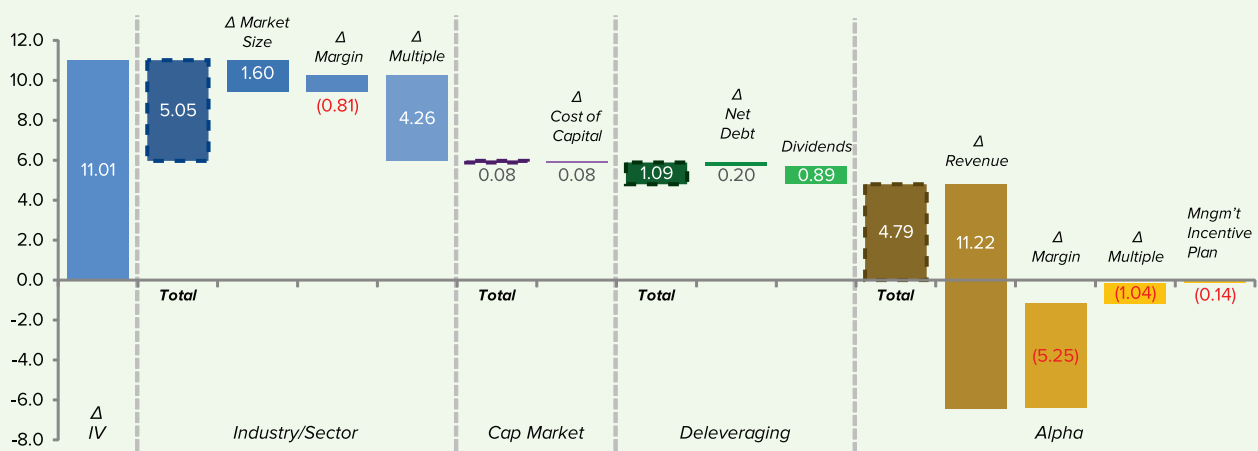


Exhibit 13 displays the CVA's reconstruction of the drivers of value creation according to their fundamental source, revealing that industry/sector [46% or 5.05/11.01] and Alpha [44% or 4.79/11.01] sources contributed roughly the same amount of value in the Golden Gate investment. The company's growth strategy is once again made clear in the Alpha section of the exhibit, as value created via increased revenue is offset not only by value destruction related to margins but to company-specific drivers of changes in multiple, suggesting that the rapid expansion of the business may have adversely affected the company's risk profile. Deleveraging accounted for the remaining 10% [1.09/11.01] of value creation, with a negligible contribution from capital markets.

Exhibit 13 | Fundamental Sources of Value Creation



Summary

Employing the CVA to analyze the Golden Gate investment provides a significantly improved understanding of the underlying drivers of value creation, and uncovers the key roles played by industry/sector and Alpha in value creation during the holding period. The principal limitations of the CVA – the indirect assessment of leverage as a driver of value creation and the lack of measurement of any value creation via multiple arbitrage – are immaterial in this instance due to the lack of leverage applied in the transaction and acquisitions during the holding period.

Case Study II: Strategic repositioning at Project Logistics

Funds advised by Clayton, Dubilier & Rice (CD&R) acquired a controlling stake in a high-margin market leader in the distribution and sales industry (dubbed 'Project Logistics' for the purpose of this case study). During the holding period, CD&R undertook initiatives to enhance investment value both organically and inorganically at Project Logistics. In addition to collaborating with existing management team members, CD&R brought in fresh management talent to drive organic change via category management, sales force optimization, pricing improvements and IT enhancements. Project Logistics also expanded operations inorganically during the holding period, acquiring and integrating a leading competitor. These operating changes resulted in a nearly two-fold increase in company EBITDA at the time of CD&R's exit to a strategic buyer.

Examining value creation via the conventional framework, as presented in Exhibit 14, would suggest that changes in EBITDA drove roughly 26% [0.59/2.29] of total value creation, while the vast majority of value creation [79% or 1.81/2.29] resulted from multiple expansion. Changes in net debt, on the other hand, resulted in a 5% decrease [-0.10/2.29] in total investment value.

Applying the CVA provides a more nuanced understanding of the underlying drivers of value creation in CD&R's investment, as shown in Exhibit 15. Zooming into the underlying drivers of enterprise value, we see that acquired revenue accounts for more than 100% of the value attributable to changes in company revenue, while a reduction in company-specific revenue offset roughly half of this increase. The opposite holds true for value increases stemming from margin change, as the decrease in margin stemming from acquisitions was almost perfectly offset by improvements in company-specific margins. The vast majority of enterprise value change, however, was driven by improvements in the company's valuation multiple, predominantly via company-specific drivers. Finally, we see only a marginal reduction in value resulting from balance sheet impacts.

Exhibit 14 | Conventional Framework

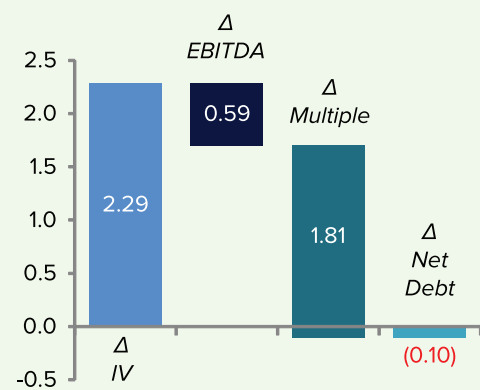
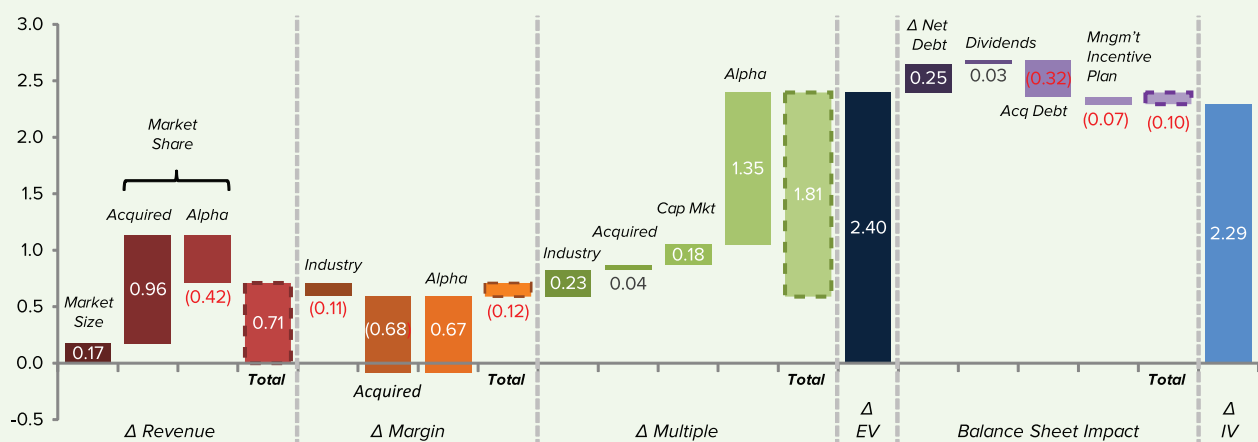
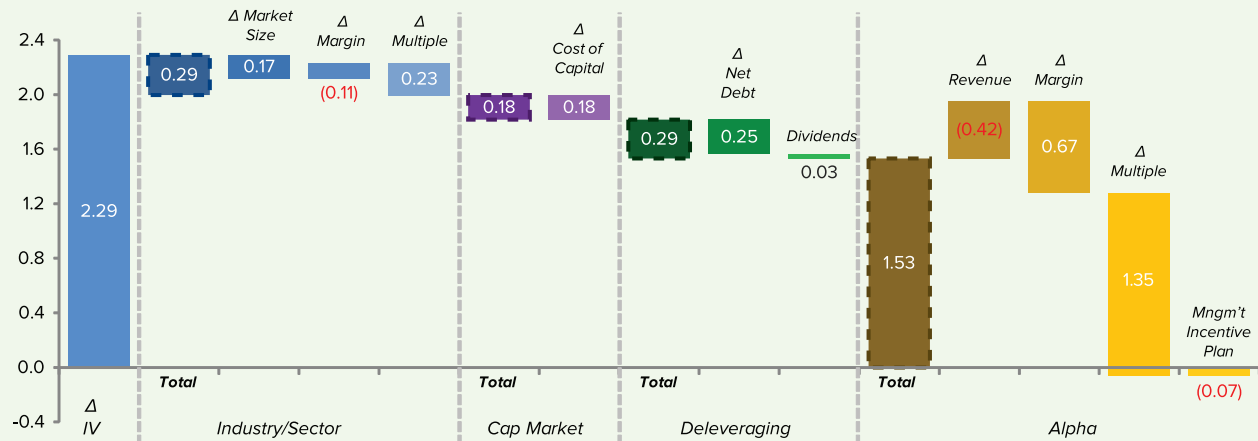


Exhibit 15 | Value Creation Drivers



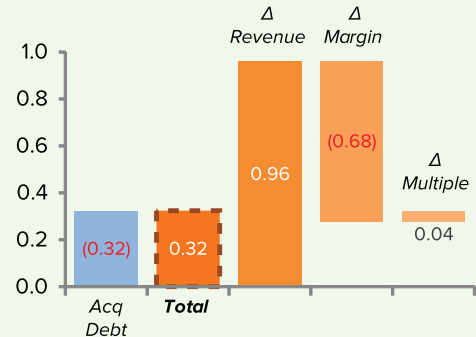
As can be seen from the CVA's fundamental sources of value creation in Exhibit 16, the vast majority of value creation was contributed by Alpha drivers [67% or 1.53/2.29], with the change in multiple again presenting itself as the dominant driver [59% or 1.35/2.29]. In addition, the strategic repositioning of the business and improvement in margins at the expense of revenue is made clear. The remaining sources of value creation – industry/sector [13% or 0.29/2.29], deleveraging [12% or 0.29/2.29] and capital markets [8% or 0.18/2.29] – had a more peripheral effect on value creation.

Exhibit 16 | Fundamental Sources of Value Creation



The CVA's methodology for incorporating the impact of acquisitions in the context of Project Logistics is presented in Exhibit 17. As can be seen, nearly two-thirds of the value captured as a result of revenue increase is offset by a reduced margin in the combined entity. A relatively small but positive impact on value was realized through a change in the combined entity's valuation multiple, implying that the multiple of the acquired entity was greater than that of the parent company.

Exhibit 17 | Acquisition Impact



Summary

Applying the CVA framework to the Project Logistics investment provides greater insight into the sources of value creation during the CD&R holding period. The significant repositioning of the business can be seen in terms of company-specific changes in margin and revenue and the impact of the company's acquisition of a leading competitor. However, the impact of leverage and evolution of the company's capital structure is not explicitly accounted for, nor is the impact of multiple arbitrage on the value creation process.

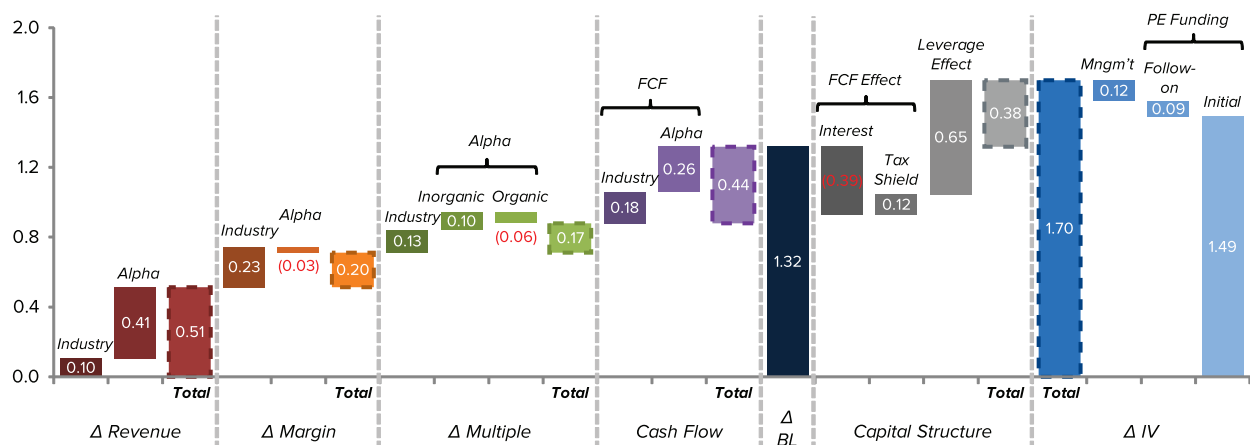
INSEAD Value Creation 2.0

In an effort to rationalize the discussion around best practice in measuring private equity value creation, INSEAD's GPEI developed a value creation framework that incorporates strengths from existing frameworks and introduces new concepts. INSEAD Value Creation 2.0 (IVC 2.0) measures value creation across operational and financial levers and isolates the company-specific value created by PE investors and management teams during the holding period. This section of the report provides insight into the framework's methodology and presents IVC 2.0 output from GPEI's analysis of an anonymized U.S. midmarket leveraged buyout.²⁷

Deconstructing Value Creation

Exhibit 18 presents the value creation drivers identified by the IVC 2.0 framework.²⁸ Each driver is attributed to one of five categories: change in Revenue, change in Margin, change in Multiple, Cash Flow Impact, and Capital Structure Impact. IVC 2.0 first generates a baseline investment return ("Δ BL" in the exhibit) by applying the capital structure of the average industry participant to the company's operating performance; this return is deconstructed across the categories to the left of Δ BL. The framework then measures the impact of incremental debt financing employed by the PE firm, quantifying the changes in free cash flow and return on equity in the Capital Structure Impact category, to arrive at the total change in investment value.²⁹ In a final step, IVC 2.0 allocates the total change in investment value to different sources of funding.

Exhibit 18 | IVC 2.0 Value Creation Drivers

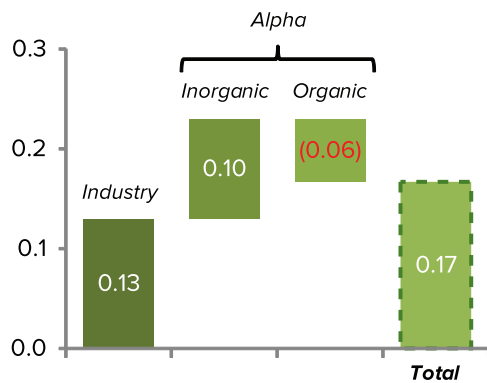


While IVC 2.0 deconstructs changes in Revenue and Margin in a manner similar to Duff & Phelps' CVA, the remainder of our framework employs methodologies unique to IVC 2.0, as detailed below.

²⁷ The portfolio company analyzed in this section executed a bolt-on acquisition and received a round of follow-on funding.

²⁸ In the interest of clarity, we removed a portion of the deconstruction that details the full treatment of acquisitions by IVC 2.0. Refer to Appendix A for a deconstruction including acquisition drivers and p.24 for further detail on acquisition methodology.

²⁹ Change in investment value is measured as a percentage of total invested capital, as is the case in the CVA.

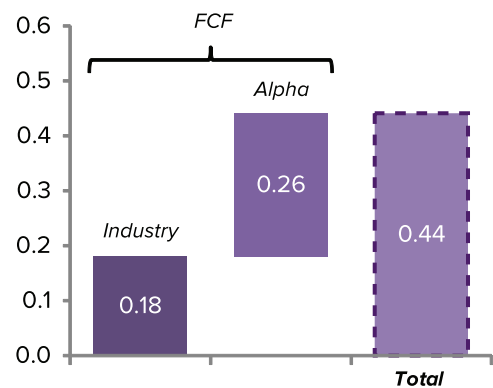


Change in Multiple:

The value created through change in a company's valuation multiple is divided between industry and company-specific drivers. The industry driver is determined by measuring and deducting the change in multiple among a group of comparable companies from that realized in the investment. Company-specific change in the valuation multiple is represented by Alpha, which is divided into inorganic and organic drivers. Inorganic value creation measures multiple arbitrage resulting from the difference in valuation multiples at parent and target companies at the time of acquisition.³⁰ Organic value creation quantifies the change in the growth profile or riskiness of future cash flows at the parent company.

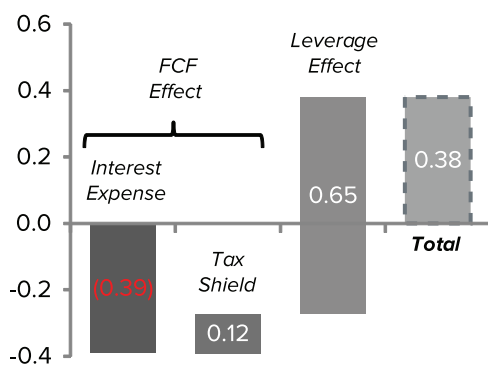
Cash Flow:

IVC 2.0 measures cash generated from operations and deployed as investment throughout the holding period and quantifies its impact on value creation. In addition to free cash flow³¹ resulting from operating activity (see Cash Flow chart), the framework also isolates the cash used to fund acquisitions and non-maintenance capital expenditure. Free cash flow is divided into industry and Alpha drivers by measuring the annual free cash flow growth rates among a group of comparable companies and deducting them from the growth rates realized by the PE-backed company.



Capital Structure:

IVC 2.0 measures the value created through optimization of a portfolio company's capital structure. It quantifies this impact by measuring the difference in investment performance produced by the capital structure employed by the PE investor and the average industry participant. Specifically, the framework isolates the incremental impact on interest expense and tax shields – the free cash flow effect – and the increased return on capital due to reduced equity financing – the leverage effect.³² This marks a departure from other academic frameworks, which typically measure the impact of leverage formulaically, and from the Duff & Phelps CVA, which only captures the free cash flow effect.³³

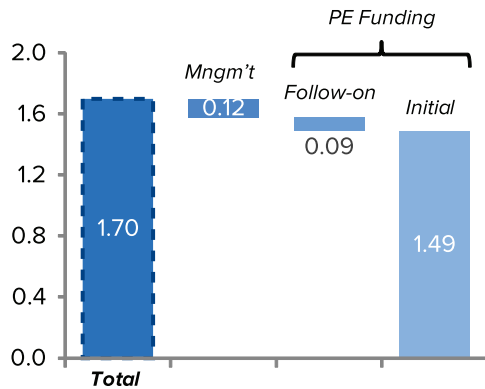


³⁰ The value recognized via multiple arbitrage results, for example, from the reduced cost of capital in the acquired business in the context of a larger, more diversified parent entity.

³¹ Free cash flow is defined as cash flow generated from operations minus taxes, interest payments, changes in working capital, maintenance capital expenditure and mandatory debt amortization.

³² In the event that a PE investor employed less leverage than the average industry participant, the framework would capture a reduced return on equity due to increased equity financing, reduced interest payments and a reduced tax shield.

³³ The free cash flow effect is captured by the change in net debt and dividends drivers under Deleveraging in the CVA.



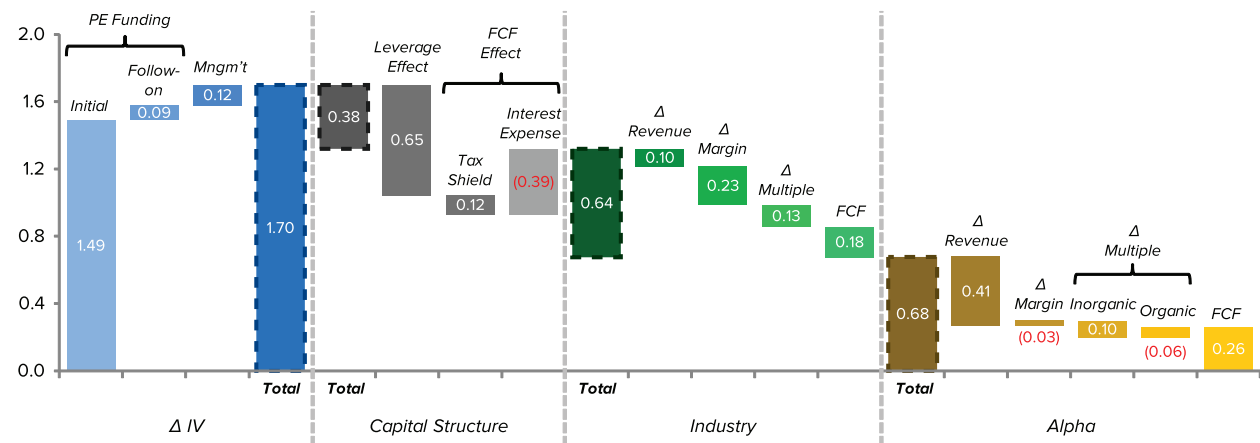
Change in Investment Value:

IVC 2.0 allocates the total change in investment value to different sources of funding according to ownership group (PE and management in this case) and round of investment (initial and follow-on funding). Values in the graph represent the cash return generated for each set of shareholders. Attributing value creation in this manner provides a clear view on performance for each set of shareholders and explicitly separates equity financing from debt financing activity.

Reconstruction & Value Attribution

Following deconstruction, IVC 2.0 allocates each driver identified to one of three underlying sources of value: Capital Structure, Industry and Alpha. The reconstruction process thus separates value created through re-engineered capital structures and operating performance, with the latter further divided into value generated through industry drivers and operational value created by private equity and management team decision-making. Exhibit 19 presents the reconstruction of our anonymized buyout.

Exhibit 19 | IVC 2.0 Value Creation Drivers



The manner in which IVC 2.0 treats inorganic value creation and acquisitions merits comment. The framework first incorporates the impact of an acquisition via a “sum of the parts” methodology, measuring the impact of an acquisition on the parent company’s revenue, margin and multiple, similar to the CVA. It then employs an additional variable to measure the value created by multiple arbitrage. The total value recognized from the “sum of the parts” methodology is perfectly offset by the acquisition’s purchase price, leaving multiple arbitrage as the only driver of inorganic value creation. Industry-adjusted change in the valuation multiple post-acquisition is attributed to Alpha, as the impact of valuation arbitrage is fully captured at the time of acquisition. Similarly, changes in revenue and margin resulting from post-acquisition synergies are attributed to the combined entity and captured as Alpha.

Exhibit 20 | Inorganic Value Creation

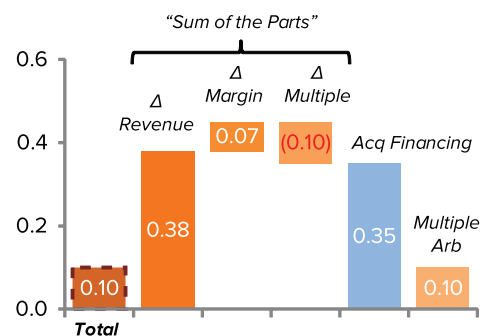
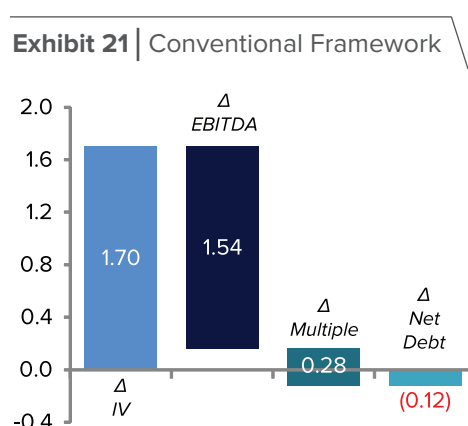


Exhibit 21 presents the sources of value creation identified by the conventional framework for our anonymized buyout, with changes in EBITDA accounting for the vast majority of value creation [91% or 1.54/1.70]. IVC 2.0 provides a more nuanced view of this driver by controlling for the impact of acquisitions and the increased equity return realized through capital structure optimization, i.e. the leverage effect. As shown in Exhibit 18, IVC 2.0 attributes 42% [0.71/1.70] of value creation to changes in EBITDA, with changes in revenue [30% or 0.51/1.70] predominantly attributable to Alpha and changes in margin [12% or 0.20/1.70] accounted for entirely by industry performance. IVC 2.0 controls for the same effects when measuring the change in the valuation multiple, attributing 10% [or 0.17/1.70] of value creation to the change in multiple relative to the 16% [0.28/1.70] identified by the conventional framework. IVC 2.0 attributes value realized from the change in multiple to industry performance and multiple arbitrage.



Output generated by IVC 2.0 diverges significantly from the conventional framework with regard to the impact of company cash flow and debt. While the conventional framework reports a negative return from the Δ Net Debt driver [-7% or -0.12/1.70], IVC 2.0 attributes roughly half of all value creation to free cash flow [26% or 0.44/1.70] and change in capital structure [22% of 0.38/1.70]. The reconstruction of IVC 2.0 output by underlying source in Exhibit 19 reveals that capital structure re-engineering accounted for 22% [0.38/1.70] of total value creation in our anonymized buyout, industry performance for 38% [0.64/1.70], and company-specific operating Alpha for the remaining 40% [0.68/1.70].

Summary

The INSEAD Value Creation 2.0 framework provides insight into the sources of private equity investment return by attributing value creation to change in capital structure, industry performance, and company-specific Alpha. It improves on existing methodologies by measuring the direct impact of capital structure optimization on company cash flows and return on equity, and attributing increases in enterprise value and free cash flow to industry and Alpha sources. IVC 2.0 thus provides a clear view into Alpha generated through investor and management team decision-making across financial and operational drivers.

The methodology and assumptions underpinning IVC 2.0 leave some questions unresolved. The process of attributing industry performance to a group of comparable companies, while providing accuracy and following valuation best practice, is a time-consuming process and not easily adapted to assessing large datasets. The methodology to measure inorganic value creation rests on assumptions that are not easily tested, as the evolution of an acquired business segment's financial performance and valuation multiple is exceedingly difficult to track. Finally, while IVC 2.0 provides a solid foundation for identifying the drivers of company-specific value creation in private equity, additional research would be required to disentangle the value created by PE professionals and by portfolio company management irrespective of private equity influence.

Conclusion

The ability of GPs to consistently add value through operational improvements has become a key driver of investment returns and fundraising success in the private equity industry. The focus on this sharpened following the 2006/07 cyclical peak in PE investment activity, and post-GFC, with the heightened risk of leveraged capital structures and prolonged holding periods. Yet industry stakeholders have never had the tools to evaluate this ability, which, in the context of LP allocation decision-making, is particularly problematic.

INSEAD Value Creation 2.0 allows PE players to attribute value creation in PE-backed companies with much greater granularity. It offers a significant improvement on existing models in as far as IVC 2.0:

- Isolates the impact of capital structure re-engineering on value creation
- Controls for industry performance across enterprise value creation and operating cash flows
- Attributes Alpha to organic and inorganic sources of value creation

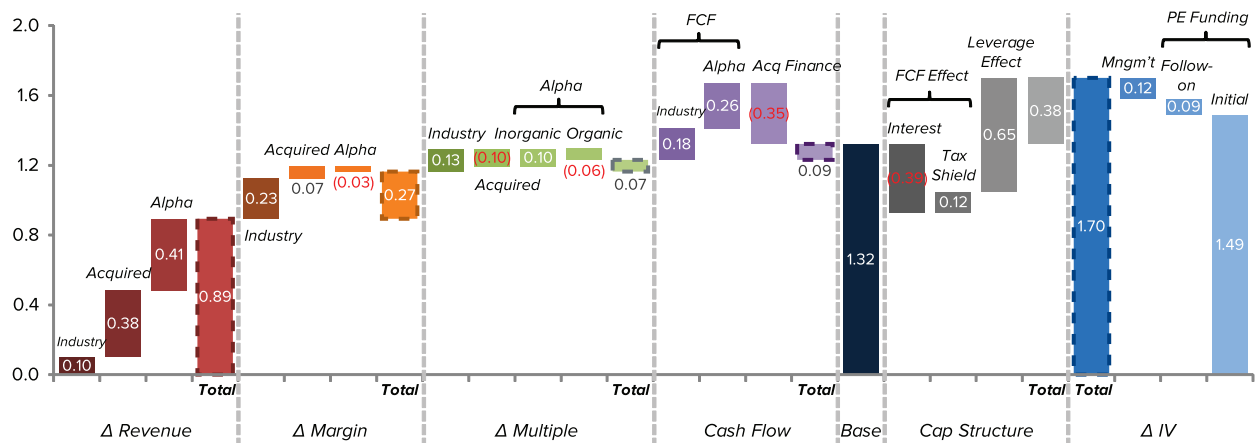
The application of an advanced value creation framework across a large dataset provides powerful information to improve allocation and investment activity. For LPs, it draws a clear distinction between funds that add value and those that don't. For GPs, IVC 2.0 data coupled with focused interviews enhances understanding of the value created by the specific actions of management teams, boards and PE partners. Applied to past investments and funds, IVC 2.0 offers insight into the strengths and weaknesses of an investment team, as well as their biases, arming partners of PE firms with information to improve future investment behavior in a measureable way.

INSEAD's GPEI is looking for partners with which to explore the concept of value creation across a set of investments and thereby help LPs or GPs better understand the sources of Alpha in their investments. Our vision is to see this model applied across funds that focus on different sectors and strategies in a collective effort to shed light on the real drivers of private equity value creation.

Appendix A

Appendix A presents the full deconstruction of value creation for our anonymized buyout, notably including drivers quantifying the impact of a bolt-on acquisition on changes in revenue, margin, and valuation multiple as well as cash flow categories. As the total value realized through changes in revenue, margin and valuation multiple are perfectly offset by acquisition financing, these drivers were removed from the main deconstruction in the text (Exhibit 18) to make it easier to understand.

Exhibit 22 | IVC 2.0 Value Creation Drivers



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About Us

INSEAD GLOBAL PRIVATE EQUITY INITIATIVE
(www.insead.edu/gpei)

The Global Private Equity Initiative (GPEI) drives teaching, research and events in the field of private equity and related alternative investments at INSEAD, a world-leading business school. It was launched in 2009 to combine the rigour and reach of the school's research capabilities with the talents of global professionals in the private equity industry. The GPEI aims to enhance the productivity of the capital deployed in this asset class and to facilitate the exchange of ideas and best practice.

INSEAD's global presence – with campuses in France, Singapore and the UAE – offers a unique advantage in conducting research into established markets for private equity, while at the same time exploring new frontiers in emerging markets to arrive at a truly global perspective on this asset class. The GPEI also focuses attention on newer areas shaping the industry such as impact investing, growth equity, infrastructure PE, and specific groups of LPs like family offices and sovereign wealth funds.

The GPEI looks to partner with stakeholders in the private equity industry to collaborate on research ideas and projects. Its core supporters are:

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The increased focus on independence and governance, along with regulatory changes, has resulted in a wide range of alternative asset investors and managers, including private equity firms and hedge funds, and limited partners, including pension and endowment funds, to seek objective valuation advice. Independent reviews of fair value policies, procedures and results provide comfort to investors and other constituents regarding the entity's valuation assessment.

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