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# Created Value Attribution: Assessing How Value is Created in Private Equity Investments

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In response to the increasing need for investors to ascertain how value is created in private equity investments and ultimately identify General Partners (“GPs”) that create sustainable value-add and “build better businesses,” Duff & Phelps has developed a conceptual and analytical framework to measure and attribute created value to its sources. While the framework was created for the analysis of private equity investments, it is suitable for analyzing value creation for many asset classes and strategies including activist investing and public companies. The Duff & Phelps Created Value Attribution (“CVA”) Framework builds on industry convention by drilling down to fundamental market, industry, and company specific value change factors, including organic and acquired, and then quantitatively maps created value to four fundamental sources: Industry/Sector, Capital Markets (“Beta”), Deleveraging, and Unique (“Alpha”).

## Introduction

How a General Partner creates value has become increasingly important as Limited Partners have grown more sophisticated and demanding. To provide real insight into how value is created, the attribution of value needs to go beyond the industry convention of analyzing changes in EBITDA (earnings before interest, taxes, depreciation and amortization), multiples, and net debt.

Investments with strong returns are sometimes just the result of timing and market movements, and sometimes weak investment returns hide value creation or preservation in a difficult environment. In order to distinguish those portfolio companies (and their GPs) that have truly excelled, it is necessary to isolate or separate value creation that comes from industry, capital market, and deleveraging factors from unique company specific efforts and accomplishments. By isolating unique value creation across multiple portfolio investments, the Duff & Phelps Created Value Attribution (“CVA”) Framework (the “Framework”) can reveal patterns of value creation that ultimately help in identifying GPs that can repeatedly build better businesses and create value through operational and/or strategic value-add.

Our experience has identified three critical analytical steps for analyzing value creation:

1. Deconstruction of the apparent value change drivers (i.e., changes in EBITDA, multiple, and net debt) into their primary components: changes in revenue, margin, cost of capital, growth profile, as well as a number of capital structure and balance sheet items;
2. Integration of portfolio company performance benchmarking analysis to separate the impacts of industry and company-specific value change drivers; and
3. Analysis of value change driver impacts stemming from add-on acquisitions.

The key to our Framework is to isolate unique company specific returns by quantitatively attributing value creation to numerous measurable factors. We present the full technical detail of the Framework here in order to demonstrate why the company specific factors that are isolated are meaningful indications of unique value creation that suggest the ability to create alpha on the part of GPs. In our presentation of the technical details, we utilize an illustrative example based on an actual case study.

## Background

Private Equity net returns have been and will continue to remain the single most important criteria in evaluating fund performance, whether for manager selection, for subsequent fund investments, or for ongoing monitoring with respect to existing commitments. However, the attribution of these returns, i.e., how the returns are created, is becoming more and more important to investors.

There are several reasons for the new focus on created value attribution. One is value for fees. If returns are created through selection, execution and leverage, one may argue that such returns are replicable, to a large extent, through synthetic portfolios utilizing underlying liquid securities, which can be done at costs significantly less than fees typically paid to private equity managers.

The new focus on value creation also reflects the evolution of the private equity industry. In the early days of private equity, excess returns were often, if not almost entirely, achieved through market inefficiencies. Over the last several decades, as the number of private equity investors has increased and their corresponding levels of expertise and sophistication have matured, opportunities for hefty returns based on capitalizing on market inefficiencies have all but disappeared. While deal sourcing and access to debt financing will continue to be essential, it is unlikely proprietary deals and financial engineering will be the major drivers of excess returns in the future.

Excess returns are now expected to be driven primarily through strategic and operational expertise and the leadership provided by the GP. Whether through the operating partner, senior advisor, or other operations-focused models, a large and increasing number of private equity firms are bringing operational expertise to influence their portfolio companies. In addition to operational value-add, private equity firms may also increase the value of a portfolio company through strategic value-add, often taking the form of add-on acquisitions and integration of the acquired businesses with the platform portfolio company.

Additionally, investment returns and impacts have taken on new meaning as environmental, social and governance (“ESG”) aspects of investing have become increasingly important to investors. The basic thrust of ESG as it relates to value creation is that LPs are looking to general partners (GPs) to “build better businesses,” including sustainable and environmentally friendly operational improvements and initiatives. ESG considerations address both the notions of sustainability as well as contributing to the development of the global economy. European investors have been at the forefront of the ESG movement. While few if any U.S.-based investors have any explicit ESG directives, a growing number of U.S.-based institutional investors (e.g., pension funds, endowments, and foundations) are including ESG factors in their investment allocation calculus.

## Industry Convention

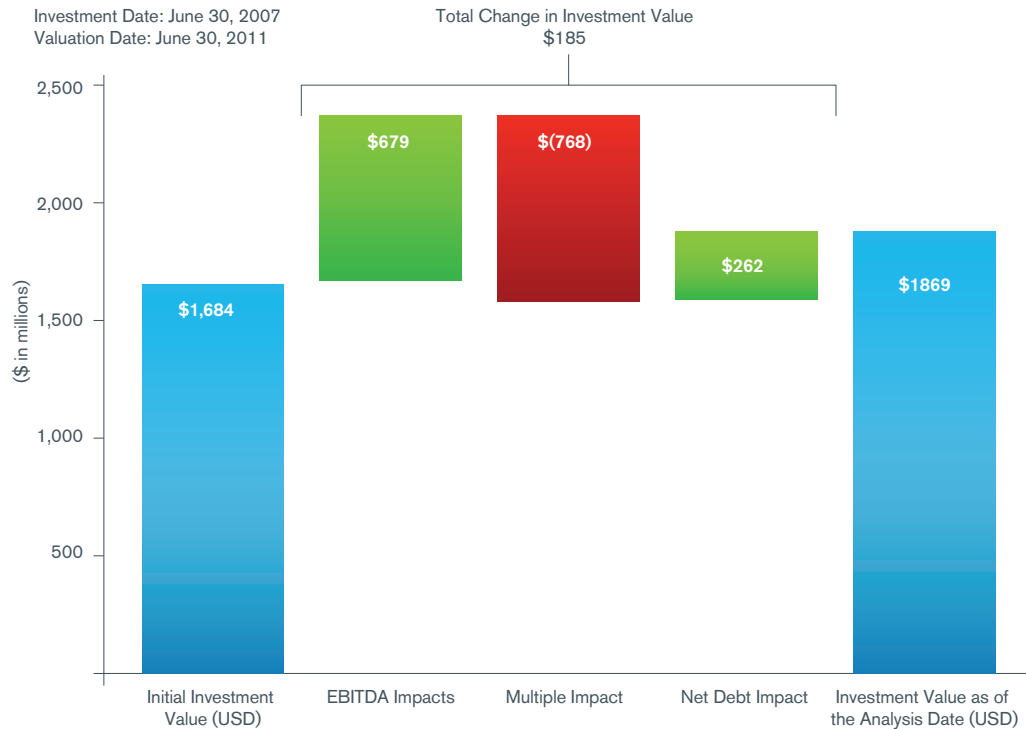
For many investee companies with sustainable operations, the private equity industry has historically assessed pricing and valuation in terms of a multiple of EBITDA. Based on an informal survey, it appears that the industry’s approach to attributing created value has employed a similar approach. The industry convention in attributing value creation (or, perhaps, destruction), is to attribute changes in value to the change in EBITDA, change in the EBITDA multiple, and change in net debt.

Figure 1: Private Equity Industry Convention for Attributing Created Value



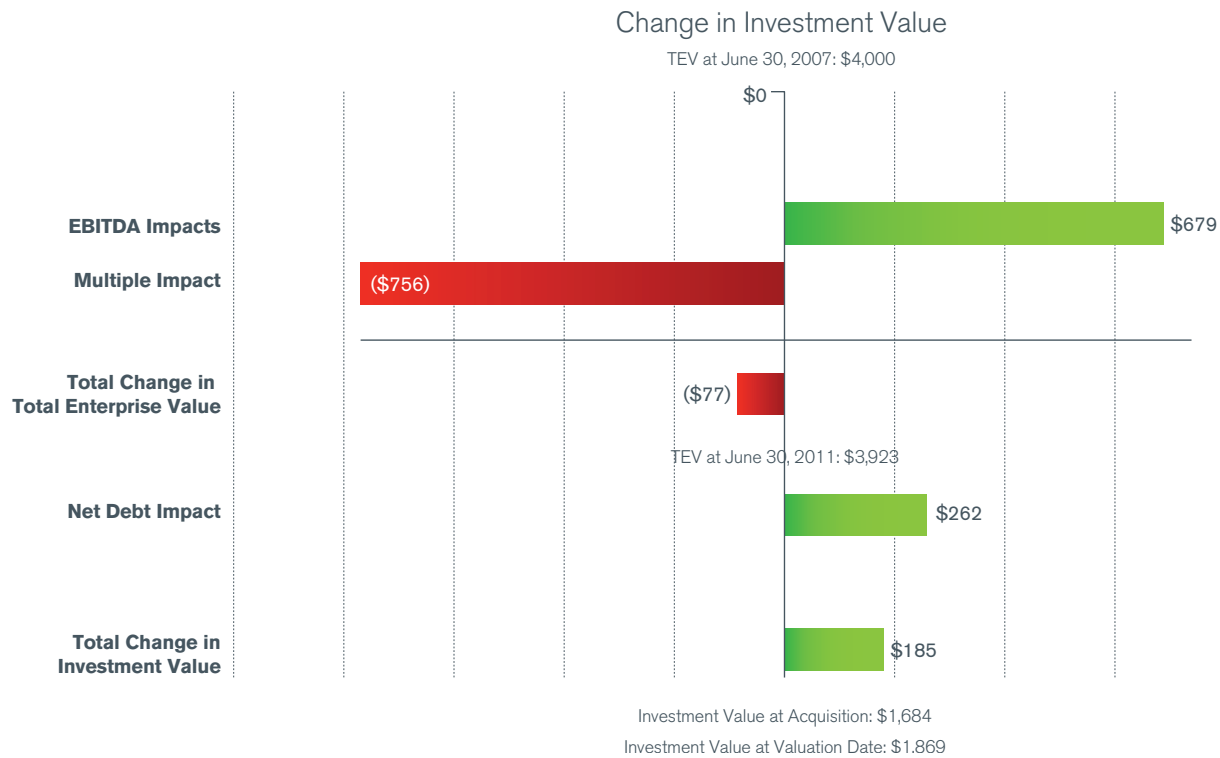
This approach quantifies the impact of the change in each of these variables while holding each of the other two factors constant. While we have identified a few firms that perform more sophisticated analyses, based on our discussion with a number of GPs and limited partners (LPs) we believe that the significant majority of firms in the industry utilize this convention.

Figure 2: Illustrative Example of Conventional Attribution Analysis



In order to focus in on the changes in value and not to have the changes obscured by the starting and ending values, the changes in value can also be presented using a tornado diagram, as shown below.

**Figure 3: Same Example of Conventional Attribution Analysis Using a Tornado Diagram**



Analyzing these factors can be useful in assessing what is apparently<sup>1</sup> driving changes in value from one time period to another. In fact this conventional analysis should be an essential tool in assessing how and why a fair value estimate has changed from the prior period and thus serves as a reasonableness check for fair value estimates for unrealized investments. While such analysis of the above three drivers of value change is useful in identifying, from a mathematical perspective, components of value change, these value drivers alone do not provide much insight as to how value is being created.

In the example above, the change in EBITDA provides a positive contribution to value change, while significant negative impact from the change in multiple more than offset it, resulting in a slight decline in enterprise value. Further, the decline in net debt provides a positive contribution to value change, resulting in an overall increase in the reported fair value. But each of these factors may or may not actually reflect value creation, as explained below.

1. We use the word "apparently" as this conventional analysis suggests areas of value creation and destruction but may obscure actual value creation and destruction as explained in the following paragraphs.

Increases in EBITDA, for example, would suggest a positive result, as this increase is typically viewed as representing an improvement in the operations of a business. However, if EBITDA increases solely as a result of an acquisition, the increase in value was not created, but rather purchased. In fact there could be, at least in theory, situations where increases in EBITDA are a detriment to value as a result of the buyer paying too much (e.g., for overstated expectations and synergies). Changes in EBITDA may point to where and how value change takes place, but do not necessarily directly provide any insight into how value was created.

With respect to multiple expansion, increases in value that are manifest through an increase in the multiple are typically viewed as value creation driven by market, industry or other macro factors and thus may be viewed with at least some level of skepticism by investors with respect to assertions of GP value-add. Ascertaining any insight into the value creation process based on movement of the valuation multiple is difficult as multiples increase and decrease for reasons that may be positive, negative, or neither. Additionally, changes in multiples may be related or unrelated to the subject company. Multiple expansion in the context of a broad bull market, for example, is often not seen as justifying the 2% and 20% fee structure and illiquidity associated with private equity investment. Multiples can change due to movement in the numerator (level of risk and/or expected growth) and/or the denominator (cash flow or earnings), and therefore can reflect both changes in expectations and past performance.

An increase in the multiple can reflect higher market and/or company expectations, or reduced trailing performance.<sup>2</sup> Similarly, a lower multiple can reflect good or bad news, for instance, as market expectations decline or as trailing performance improves. In addition to macro factors beyond the control or influence of the GP or the portfolio company management team, a decline in the multiple could result from declining growth prospects or from a successful execution of a growth strategy implemented at acquisition, in addition to other potential causes. Without detail and context, changes in the multiple provide very little, if any, insight into how value is created and whether the factors are industry or sector driven, company specific, related to changing capital market rates of return, or some combination thereof.

Similarly, changes in net debt can reflect positive and negative cash flows from operations, but historical cash flows can also be obscured by financial engineering or the financing of acquisitions.

We concluded that the current industry convention of looking simply at changes in EBITDA, the multiple and net debt to assess and attribute value creation is inadequate to effectively identify evidence of operational or strategic value-add that results from GP competencies and leadership.

### The Duff & Phelps Created Value Attribution Framework

Responding to the need to better assess how value is created, Duff & Phelps has developed a more robust attribution framework, based on discussions with clients and others in the GP and LP communities as well as our own experience and core competencies in the valuation of private equity portfolio companies. While we concluded that the conventional approach to value attribution was inadequate, we also determined that it was a logical and practical starting point, given the familiarity that GPs and LPs have with it and as well its alignment with the multiple-based approach to valuation that has been a staple of the private equity industry.

The Duff & Phelps Framework builds on the conventional approach and is comprised of three essential components:

1. Primary deconstruction (of the components of the conventional analysis);
2. Integration of portfolio-company-level performance benchmarking; and
3. Isolation and segregation of acquisition-related transaction impacts.

After drilling down to fundamental market, industry, and company specific factors, including both organic and acquired growth, we then map the ensuing value change drivers to four fundamental sources: Industry/Sector, Capital Markets (“Beta”), Deleveraging, and Unique (“Alpha”).

2. Company specific reasons leading to an increase in the multiple could stem from many factors, such as an increase in expected growth stemming from new market initiatives or poor recent performance (but with the expectation of recovery).

## Primary Deconstruction

Primary deconstruction involves disaggregating the value change impact of each of the factors of the conventional approach (EBITDA, multiples, and net debt) into their primary constituents.

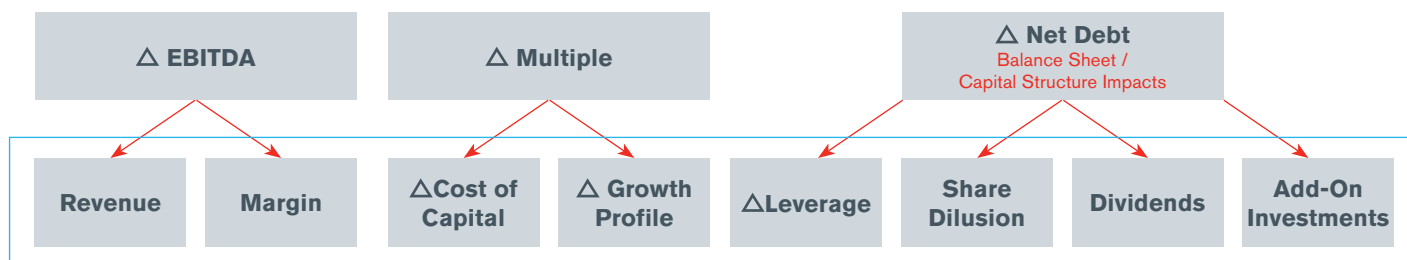
### EBITDA:

The impact of the change in EBITDA is deconstructed into the component attributable to the change in revenue and the component attributable to the change in margin. This first level of deconstruction of the change in EBITDA can add some clearly meaningful information. Specifically identified is value creation attributable to top line revenue growth versus that attributable to improved profitability. Likewise, decreases in value may be quantified and attributed to revenue and/or profitability declines, and changes in value can also represent a mix of positive and negative changes in revenue and margin.

### Multiples:

Similarly, the value change impact resulting from a change in the multiple can be deconstructed into the impact from the change in the cost of capital (i.e., required market rates of return at the enterprise level) and the changes in market expectations relative to past performance, or what we refer to as “growth profile.” The term “growth profile” refers to the overall expectations of growth, in terms of the rate, extent, and timing of expected cash flows that is reflected in the valuation multiple.<sup>3</sup>

Figure 4: Primary Deconstruction



After applying Primary Deconstruction to our previously introduced illustrative example (see below), more detail emerges. In this example, the most significant positive contributing factor to value change is the impact attributable to the change in margin, followed

### Net Debt:

In addition to the pay down of debt and/or a build-up of cash, the change in “net debt” may also reflect changes in a number of balance sheet and capital structure items that are often not separately identified. These include dilution resulting from management equity plan related stock and option issuance as well as other transactions. Other potential items in the category include the capital structure effects of platform acquisitions and divestitures, dividends, and capital infusions.

Primary deconstruction results in identifying and measuring the impacts of at least five separate value creation drivers:

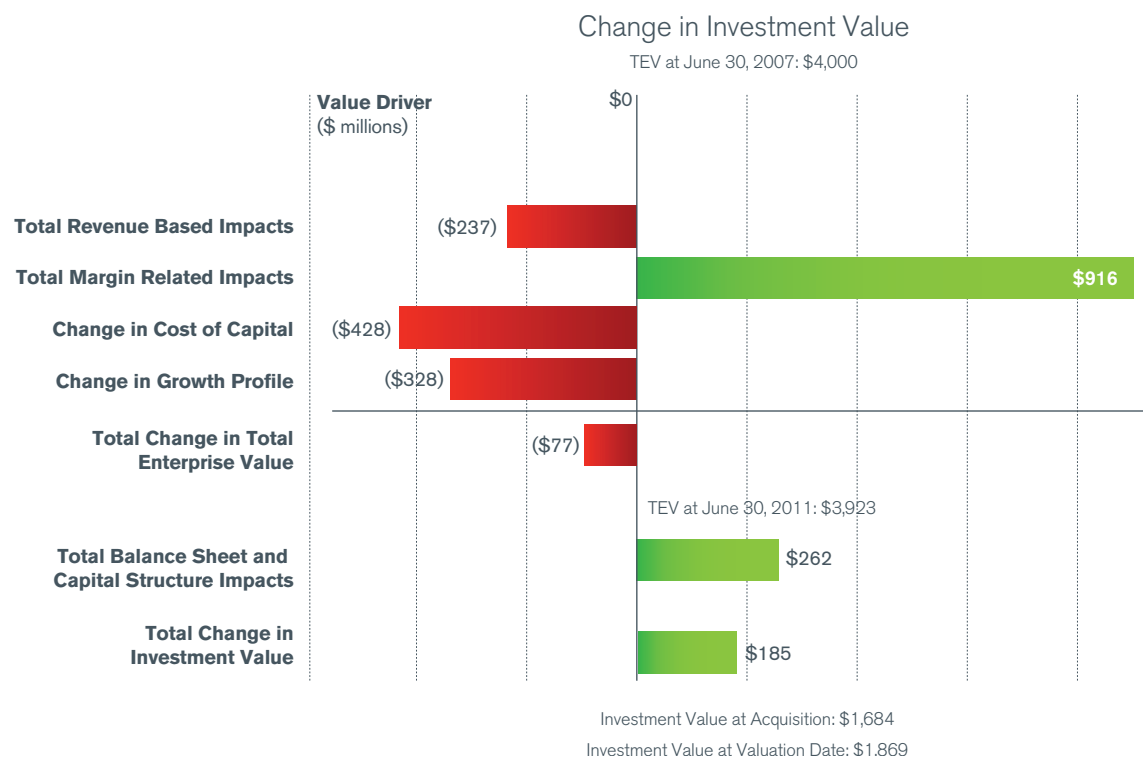
1. Change in Revenue;
2. Change in Margin;
3. Change in Cost of Capital;
4. Change in Growth Profile; and
5. Change in Capital Structure and Balance Sheet Items.

The breakout into these factors is diagrammed below:

by a relatively modest contribution from capital structure/balance sheet impacts (of which the change in net debt is one factor – a more detailed discussion follows below). All other value change drivers contribute negatively to value change.

3. The change in multiples can be calculated either on an industry or company specific basis. We believe that it is important to calculate and understand the change in multiples both ways, as explained in the next section which discusses the integration industry benchmarking. As a result, we also ultimately calculate growth profile on both an industry and company specific basis.

Figure 5: Illustrative Example: Attribution Analysis Based on Primary Deconstruction



In assessing the potential contributions, if any, to value creation (or destruction) attributable to GP actions and decisions, it is then logical to examine the portion of the specific impacts above driven by industry/sector factors versus the portion that is company specific. In the case of our illustrative example, one of the primary questions to ask and answer is “How much of the margin improvement can be explained by industry/sector trends and how much is specific to the portfolio company?” The next step or component of the Duff & Phelps CVA analysis below therefore provides a standardized framework with which to answer this question.

### Integration of Portfolio-Company-Level Performance Benchmarking Analysis

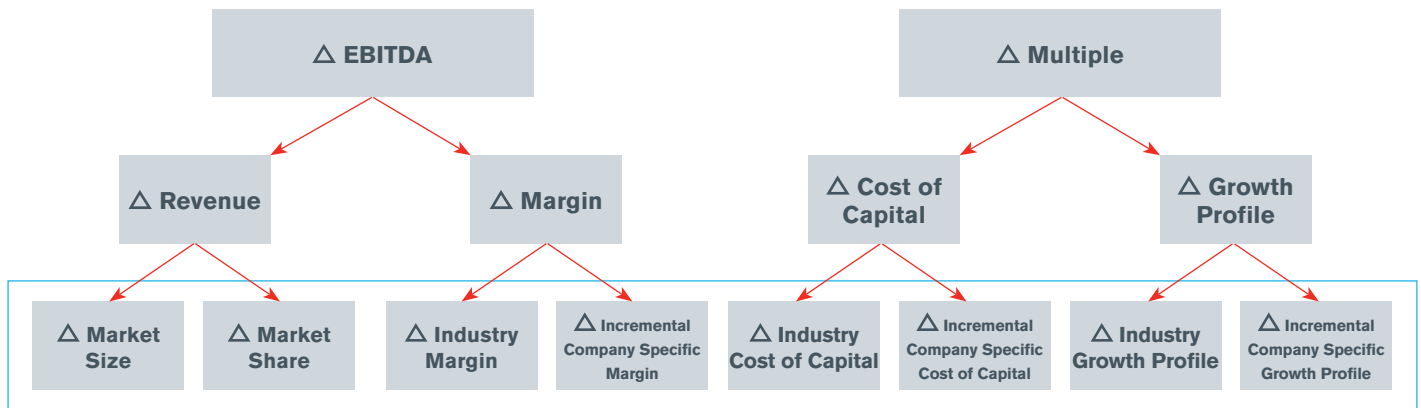
While attribution based on primary deconstruction provides significantly more detail than the conventional framework, it may still be insufficient to provide insight as to whether there is significant value-add, operational and/or strategic, that may have stemmed from GP actions. As in our illustrative example, suppose that a significant level of value creation is attributed to increased margins. Is the increase in margin being driven primarily at the industry level (e.g., is it resulting from an industry or secular trend or from an industry cycle) or at the enterprise level relative to the industry as a whole? Value creation driven by enhanced profitability at the enterprise level in excess of that achieved from the overall industry level indicates, all else being equal, outperformance that could provide evidence of GP value-add (i.e., resulting from GP-driven

initiatives). This value creation attributable to GP actions would not be available through making a benchmark or industry-based investment comprised of a basket of public securities representative of the industry (e.g., an industry ETF).

The integration of performance benchmarking into the analysis of value created, results in further deconstruction and in a finer level of detail, providing visibility into a number of industry, sector and company specific value change drivers. Specifically:

1. The change in revenue is deconstructed into (a) the change in market size and (b) the change in market share;
2. The change in margin is deconstructed into (c) the change in industry margin and (d) the change in the company specific margin, incremental to the change in the industry margin (indicative of outperformance/underperformance relative to the industry benchmark);
3. Change in growth profile is deconstructed in (e) the industry growth profile change and (f) the change in the incremental (i.e., relative to the industry benchmark) company specific growth profile; and
4. The change in the cost of capital can be deconstructed in (g) the industry cost of capital change and (h) the change in the incremental company specific cost of capital.

Figure 6: Primary Deconstruction and Integration of Performance Benchmarking



### Revenue Impacts

We first examine the revenue growth rate exhibited by the portfolio company relative to that of an industry benchmark.<sup>4</sup> This analysis separates the created value due to the change in market size from the created value due to the change in market share. In most cases one would consider the change in market size to be the result of macro factors, as opposed to enterprise-level factors. In contrast, the change in market share speaks to performance of the enterprise.

### Margin Impacts

Similarly, the change in margin can be separated into the change in industry margin and the change in the portfolio company's margin relative to that of the industry (i.e., the incremental company-specific change in margin).

### Growth Profile Impacts

Just as the change in the portfolio company's growth profile can be derived from the change in the company's implied valuation multiple, the change in the industry's growth profile can be ascertained from the change in the industry benchmark multiple (e.g., weighted average multiple of comparable companies). This analysis allows the impact from the change in growth profile to be deconstructed into the change in industry growth profile and the change in the incremental company-specific growth profile.

### Cost of Capital Impacts

Cost of capital impacts can also be separated into industry and company specific components. GPs often maintain that as a portfolio company grows and/or becomes more diversified in its product and customers, the portfolio company's cost of capital decreases relative to what it otherwise would have been. In cases like these it may be appropriate to give credit to the GP for value created as a result of lowering the riskiness of the business, resulting in a lower cost of capital. The Duff & Phelps Framework addresses this by deconstructing the change in the cost of capital to arrive at an industry change in the cost of capital and the change attributable to the portfolio company on an incremental basis.

The change in the cost of capital can be deconstructed in (g) the industry cost of capital change and (h) the change in the incremental company specific cost of capital.

4. Note that the industry benchmark (explained further below) is a portfolio company benchmark of firms operating in the same industry. It is not a benchmark of private equity performance or returns.



## Determining Industry Benchmarks

A critical component of the integration of performance benchmarking is the determination of the industry benchmark, and there is no simple one-size-fits-all method to benchmark industry performance. Sometimes a single proxy or group of publicly traded competitors is used for benchmarking but this approach often suffers from “pure-play” and size issues, and may therefore present a very limited or distorted view of the industry. Additionally, a single proxy is not necessarily representative of the industry as a whole. It is generally preferable to create a comparable company group, as is used to determine fair value using a market approach. In the valuation process, the comparable company group is utilized to benchmark value based on historical and expected performance while normalizing exposure to comparable risk and opportunity. Within the Framework, a comparable company group can be used as a proxy for the industry or that part of the industry in which the portfolio company operates in order to assess relative performance. In order to reflect the contribution of all of the comparables to industry performance, a weighted average of the performance of the comparable companies is utilized rather than relying on a median or mean figure.

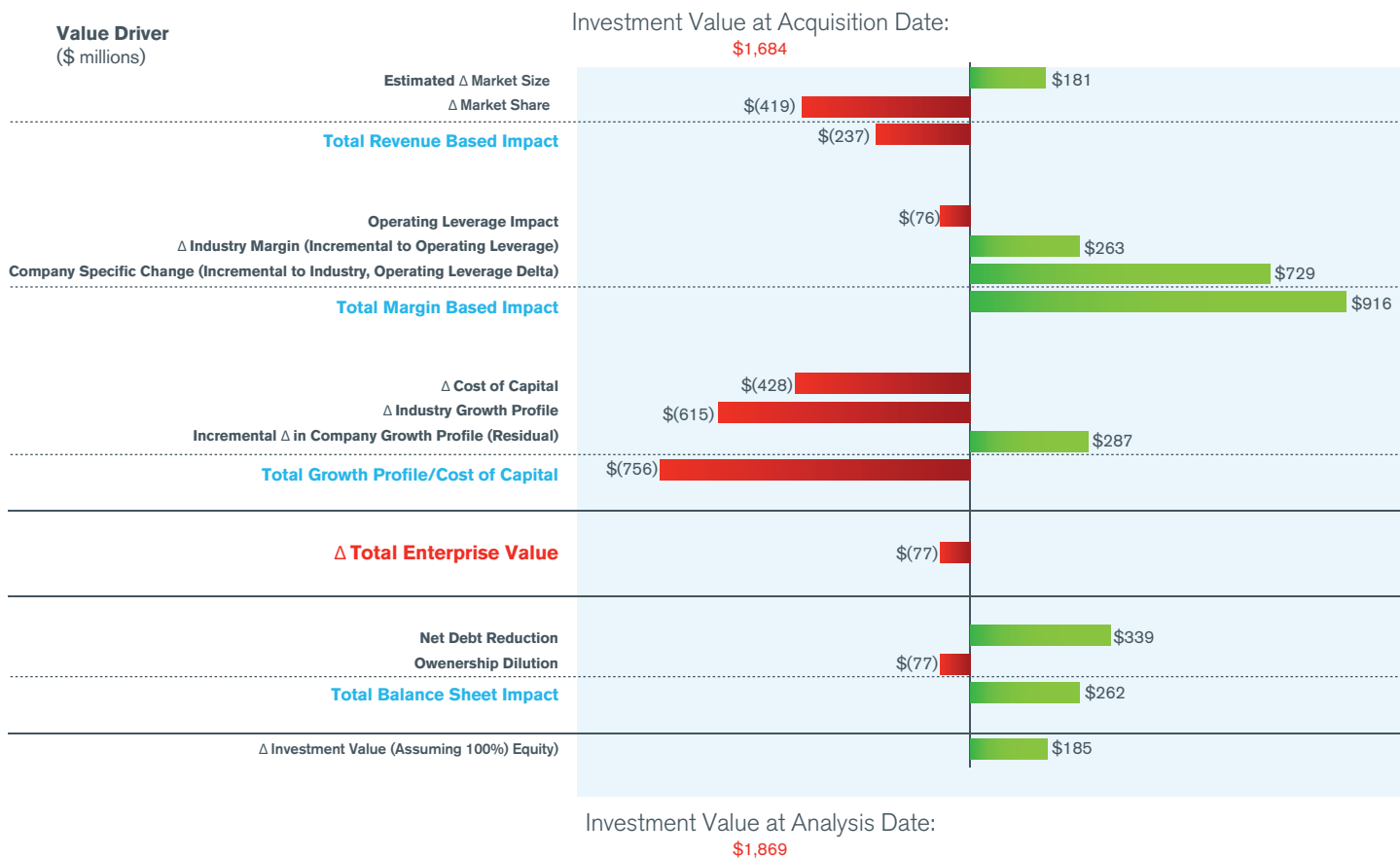
A weighted comparable company group can also be thought of as a readily investible alternative to the portfolio company and thus represents an investable measure of industry performance. The comparable group therefore provides a real view of the opportunity

cost of investing in the portfolio company rather than an “industry index” of public comparable companies. While it can be outright challenging to identify a group of public comparable companies, particularly for niche portfolio companies, a market comparable group represents, in theory, a readily investible alternative to the specific portfolio company, reflecting industry risk and return profiles, and thus serves as a logical benchmark of performance.

We have also developed and utilized proprietary industry composites (“Duff & Phelps Industry Composites”), which expand on the comparable company groups, in order to provide a more complete view of industry performance for benchmarking. This approach takes comparable public company benchmarks and combines them with private company performance data. Adjustment factors, to reflect degree of product/service relevancy as well as geographic relevancy, are applied to each individual company within the benchmark. The adjusted results are then weighted based on relative contribution. While this approach may be less transparent in terms of the companies included in the composite (necessary in order to keep the private company data confidential), it can provide a more complete and refined view of industry performance.

Returning to our illustrative example, the integration of performance benchmarking reveals significant additional detail into the value creation process.

**Figure 7: Illustrative Example: Attribution Analysis Based on Primary Deconstruction and Integration of Performance Benchmarking**



In this example, the negative contribution to value stemming from the loss of revenue was essentially driven by the loss of market share, partially offset by an increase in market size. The company had fewer customers as of the analysis date than it did as of the date the investment was made. While the change in the industry margin provided a positive contribution to value, incremental company-specific margin improvement drove the majority of overall value creation and more than offset the value eroded from the loss of market share.

Based on a real life case study, the margin improvement outperformance in this illustrative example was the result of a number of GP-led initiatives, including those relating to cost savings and changes in customer and product mix. In fact, the company terminated relationships with unprofitable customers, which reduced market share but which was more than made up for by the value created through improved profitability.

### Purchased Vs. Created Value

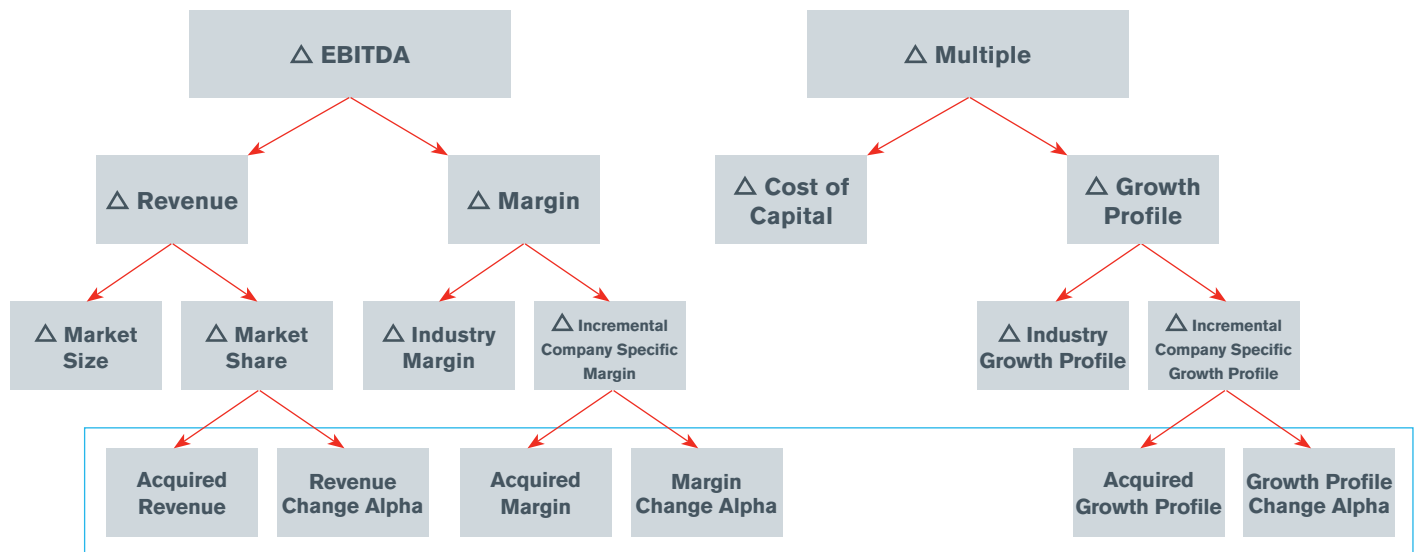
As mentioned above, generally EBITDA increases are seen as a positive. But a question arises as to how much of the increase is organic in nature (i.e., created) and how much was obtained through acquisitions. If a follow-on acquisition is purchased at fair value, there is no real value created at the time of acquisition. But as the

follow-on acquisition is integrated onto the platform and revenue, margin, and other synergies are obtained, there is potential for significant value creation to occur. In order to measure this value creation, it is necessary to pull out what was actually acquired at the time of the follow-on acquisition, as well as how much additional capital was required to complete the transaction.

Segregating the impact of acquisitions can be difficult, but the Framework addresses this “bought” vs. “built” EBITDA question through a similar approach to the attribution methodology described above. It utilizes an algorithm that identifies, for each material acquisition, how much revenue, margin and growth were acquired. Utilizing the portfolio company’s valuation metrics as of the date of the add-on acquisition as benchmarks, the initial value impacts for each acquisition can be identified and segregated. Any subsequent or post-acquisition growth of the combined entity is then represented in the Framework as true organic value creation. We label this total organic company-specific value creation as:

- Revenue Change Alpha
- Margin Change Alpha
- Growth Profile Change Alpha

Figure 8: Full Framework with Primary Deconstruction, Benchmarking, and Isolation and Segregation of Acquisition Related Impacts



Note: Cost of capital impacts can also be segregated into industry, acquisition, and alpha impacts

As an example, consider value created under “arbitrage” strategies. A GP may seek to acquire targets with a lower margin than the platform company and then, through any number of initiatives, seek to bring the margins of the acquired businesses more in line with that of the platform company. Value may not be created at the time of each follow-on acquisition, but it is created if the margins move toward that of the platform company.

For the acquisition of a business with a margin less than that of the platform, though the revenue would be reflected as positive value

purchased, the margin impact would reflect an offset to purchased value within the Framework. While this may not necessarily appear intuitive, without representing lower margin of the acquired business as an offset, the lower margin would obscure, at least in part, any actual organic change in margin and would therefore serve to understate or even hide any real improvement in margin. Without separating the acquisition impacts it might appear that there is weak or even negative margin growth, but if we fully reflect the lower margins of the added business the true value creation can be revealed.

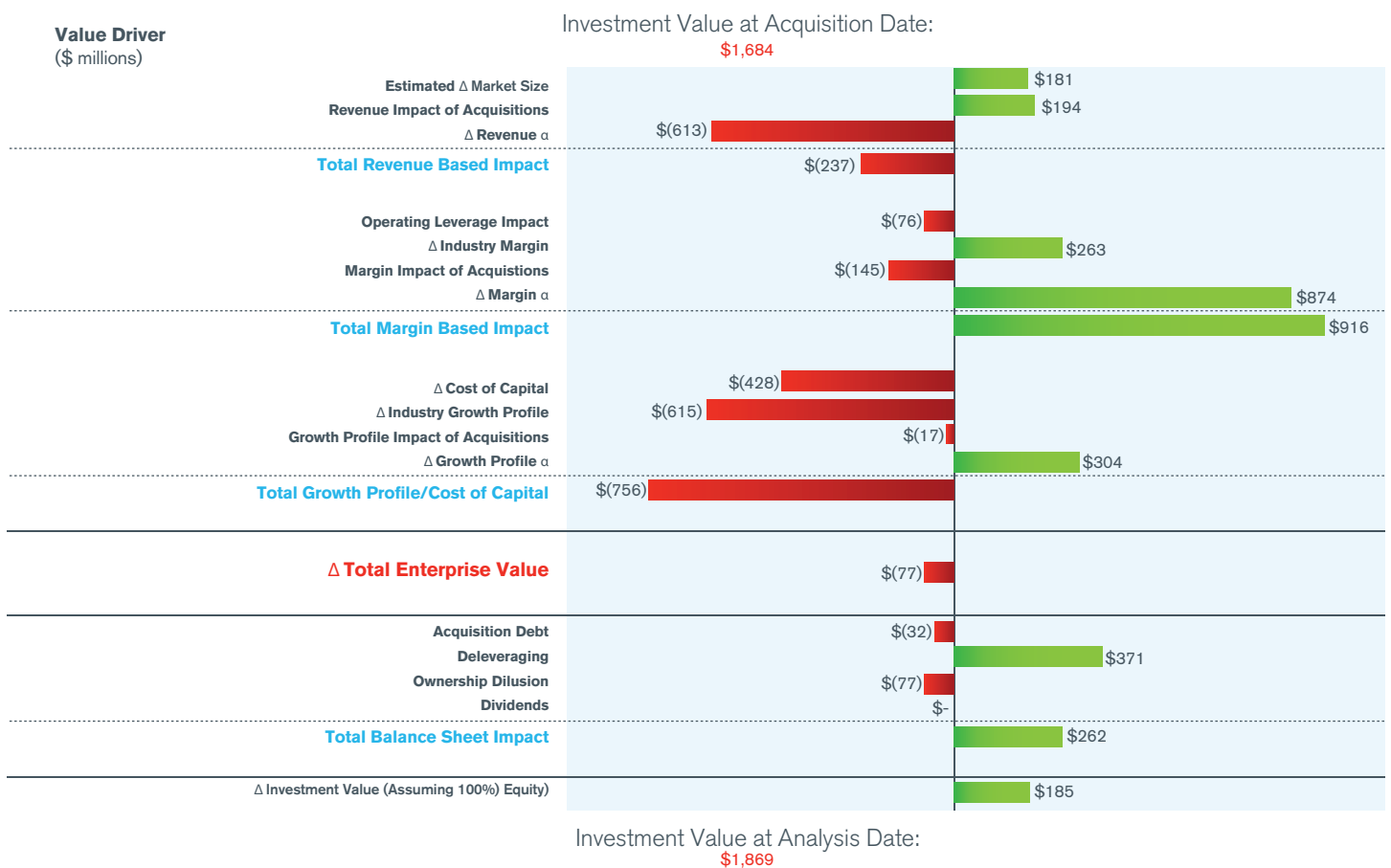
Once the value change impacts attributable to acquisitions are quantified, then the true amounts of organic value change or created value can be determined.

It is also important to re-emphasize that within the Framework, value created through successful acquisitions (e.g., post-acquisition growth, realization of synergies, or other increases in the value of the combined entity after acquisition) is considered organic value change (i.e., created value).

Returning to our illustrative example, the full Framework with acquisition impacts reveals additional detail into the value creation process.

As seen in Figure 9, the separation of acquisition impacts reveals an even more granular level of detail. The value created from margin improvement outperformance, for example, is more pronounced because the acquisition of a lower margin business had obscured some of the margin improvement. Similar refinement of the other estimates of company specific value creation can be observed, including a lower revenue change alpha, relative to the previous company specific revenue value change, and a higher growth profile change alpha relative to the company specific growth profile change.

**Figure 9: Illustrative Example: Attribution Analysis Based on Primary Deconstruction, Integration of Performance Benchmarking, and Isolation and Segregation of Acquisition Related Impacts**



## Balance Sheet and Capital Structure Impacts (including Deleveraging)

At this point we have addressed the value change drivers at the enterprise (i.e., operations) level. To fully and appropriately attribute value creation at the investment/security level, changes in what is referred to as “change in net debt” in the conventional attribution framework need to be taken into account. Going from the conventional framework to the Duff & Phelps Framework, “change in net debt” is deconstructed into a number of changes in capital structure and balance sheet impacts.

In line with what may be expected, the most significant capital structure/balance sheet impact is that of deleveraging. The Framework quantifies actual deleveraging in contrast to just changes in net debt. Deleveraging is a function of cash flow generated by the enterprise in the period between measurement dates. Other factors in addition to deleveraging that determine the amount of net debt include newly issued and/or assumed debt related to add-on acquisitions, borrowings related to new capital investments, as well as new debt related to dividend/recapitalization transactions. For example, in a dividend/recapitalization transaction, the newly issued debt increases the net debt and therefore, re-leveraging may obscure actual deleveraging.

Similarly, the amount of newly added debt used to finance add-on acquisitions is identified and separately considered in the Framework so that actual deleveraging can be identified. Likewise, additional equity investments may result in a decrease in net debt but not in deleveraging and thus also should be considered separately.

Is it possible to have deleveraging even when there is no debt? The answer is yes. Our Framework defines deleveraging as “organic” net debt reduction resulting from cash flow generated between the acquisition date and the exit or analysis date. When cash is generated and there is no debt, there is either a cash build up, representing a decrease in net debt (which was negative to begin with and then becomes more negative) or a distribution as a dividend to investors and separately accounted for as discussed above.

If additional equity investments are made by new investors, ownership dilution could result and must be reflected in the analysis. Assuming the investment is made at a price equivalent to fair value, we normally assume there is no value change for the original investors at the onset as dilution would be offset by the decrease in net debt (e.g. increase

in cash).<sup>5</sup> After a period of time during which the value of the enterprise is expected to increase, the original investors would get a smaller piece of a larger pie, the difference represented by the quantified amount of dilution stemming from the equity infusion.

Ownership dilution also frequently results from equity provided to portfolio company management in order to align the interests of management and investors. The cost of incentivizing management with stock and/or options represents an offset to created value, as the equity-based compensation plan reflects a cost of “building a better business” or value creation.

## Fundamental Sources of Value Creation

Figure 9 above illustrates the impact of fifteen value change drivers. This detail provides a useful communications and discussion tool to potentially illustrate and validate GP influences, particularly where those impacts can be tied to specific initiatives and core competencies of the GP.

Some of these value change drivers are distinct (i.e., capital markets and deleveraging) while others can be grouped based on their nature (i.e., those that are industry/sector based and the value change “alphas”, which we label as “unique”). In order to better understand and appreciate the results of our detailed attribution Framework at a higher level but still meaningful way, the various value change drivers are mapped into four categories:

1. Industry/Sector;
2. Capital Markets or “Beta”;
3. Deleveraging; and
4. Unique or “Alpha”

These four categories of value change drivers are what we refer to as the fundamental sources of value creation.

It can also be helpful to present up front the results of this aggregation into fundamental sources, and then to back up this summary analysis with the full detail. We have presented here the full detail first so that the reader can follow the aggregation, but the actual analysis has typically presented first the attribution by fundamental sources, and then followed by the detailed results.

5. It is possible, especially in the venture capital arena, for a new investor to provide stability and recognition to the portfolio company that is more than the sum of the pre-money value and the new investment. Where appropriate, this can be reflected in the analysis.

### Industry/Sector

“Industry/Sector” value creation is comprised of those value change drivers attributable to the performance of the portfolio company industry benchmark. In total, the industry/sector category reflects the change in value that would have been achieved through investment in the industry benchmark utilized (i.e., in the underlying companies comprising the benchmark on a weighted-average basis).

Should the GP take credit for Industry/Sector value creation? It may be appropriate to give credit to the GP for some or all of the industry or sector value creation if the GP has a generalist focus and seeks to identify promising sectors or industries. The Industry/Sector category represents value created by asset/sector allocation decisions, and if the GP has discretion in making these decisions, they can be credited with value creation. The importance of Industry/Sector value creation is particularly relevant for generalist funds and managers as industry selection and ensuing opportunity sourcing and identification are key components of the GP’s value-add process. GP value-add for industry-focused funds may be less meaningful, depending on the GP’s ability to define the industry and also how the industry benchmark is defined.

### Capital Markets

Capital Markets, or “Beta,” denotes the change in value stemming from the change in the required market rate of return at the enterprise level. Beta here represents asset inflation or deflation as the market-based cost of capital for the industry increases or decreases. While the GP has at least some control of the timing of investments, the value created or destroyed related to capital markets is driven by market conditions independent of any impact by the GP once the investment is made.

### Deleveraging

Deleveraging is a very important source of returns. As noted above, deleveraging is a function of cash flow generation during the interim period. Deleveraging is manifest through a reduction in debt, an increase in cash balances, or some combination thereof.

The performance of the portfolio company in the interim period is unequivocally the ultimate determining factor in deleveraging and can take different paths between the date that created value is being measured and analyzed. In addition to cash flow from operations, excess working capital reductions and other asset utilization efficiency improvements, as well as the sale of assets (including liquidations), would be expected to contribute to interim cash flows.

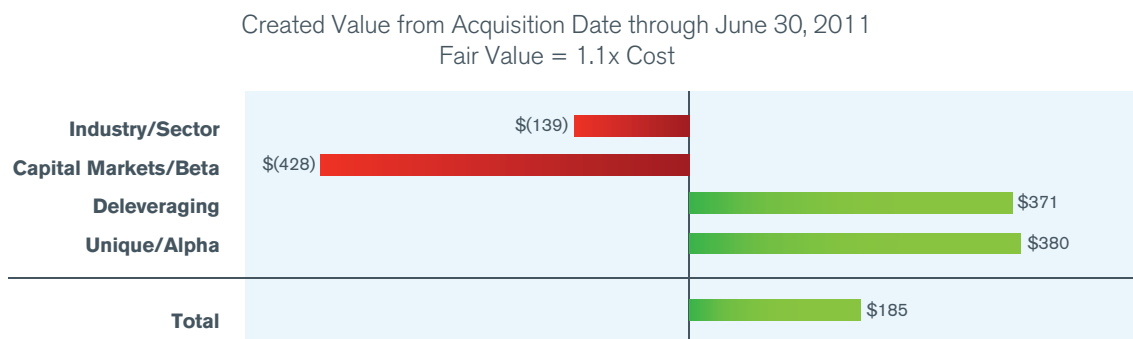
Deleveraging is not inherently financial engineering and often simply represents the build-up of cash or reduction of debt due to cash from operations. But to the extent financial engineering does create value (e.g., by reducing the company-specific cost of capital), it may be reflected both in past and future results, and could therefore be captured both in Deleveraging and in the Unique category below.

### Unique

Unique, or “Alpha,” value creation represents the aggregate of the several value change alphas discussed above. Alpha here is thus value creation unique to the three other value creation sources above. We believe that a key aspect of this source of value creation is that it is NOT derived from interim cash flows (i.e., deleveraging) and is a function of the beginning and ending enterprise values, and thus addresses the question as to whether a better business is being built. Alpha here represents value created organically through company-specific factors on an outperformance basis and may very well be indicative of the fundamental GP value-add which is operational and/or strategic in nature. The unique or alpha value creation may also (depending on how broadly or narrowly the benchmark industry is defined) reflect the ability of the company and/or GP to identify and target specific industry segments within a given industry that represent exceptional opportunities.

Returning to our illustrative example, we observe large negative impacts from industry and capital market factors and positive impacts from deleveraging and unique/alpha factors.

Figure 10: Illustrative Example: Created Value Attributed to Fundamental Sources



Industry/sector and capital market trends had a clear negative effect on value over this period, reducing value by \$139 million and \$428 million respectively. Other than selecting the initial timing of the investment and the industry of the portfolio company, the GP had no impact on the change in value related to these components. Yet significant value was created through both deleveraging (\$371 million) and unique company specific factors (\$380 million), which managed to turn the overall investment slightly positive over a rather challenging timeframe.

Thus when we aggregate the value creation for our example, we see a simple but compelling picture of value creation, as well as preservation, during a difficult market period. Unlike the conventional framework, which showed value creation from EBITDA growth and value destruction from lower multiples but provided no way to provide insight as to how much if any was related to outperformance or underperformance, the Duff & Phelps Framework does provide a clear indication that value creation was far ahead of industry performance and primarily attributable about equally to deleveraging and initiatives under GP leadership.

### Interplay Between Industry/Sector and Unique Value Creation

Depending on how the industry is defined, there is clearly interplay between industry and unique value creation. After segregating any transaction-related impacts, the sum of the portfolio company industry and unique value creation is fixed. If the selected benchmark suggests higher industry value creation than another benchmark, the unique value creation will be correspondingly lower. For example, if the industry is very narrowly defined based on the absolute closest comparable companies, we are likely to see less unique value creation as the portfolio company makes up more of the industry.

And where the portfolio company is expanding and taking market share from companies in the same and closely related industries, a broader or more complete measure of the industry should properly identify more of the subject company growth as unique.

There is no “magic bullet” in regards to benchmarking at the portfolio company level. Often, as in selecting a market comparable group, developing meaningful benchmarks can be challenging, particularly when it comes to small “niche” businesses. It is imperative that the benchmark be clearly defined in terms of industry definition.

Additionally, use of more than one benchmark (e.g., narrow vs. broad definition of the relevant industry), may provide additional insight into value creation.

### Flexibility in Segmentation of the Analysis

Our analytical Framework is also flexible to the use of other measures or components of value creation. For example, if the subject company had initiatives to change its customer and product mix and has data to track revenue and/or margins by customer, we can identify the value impacts of each initiative individually, and then identify any residual value creation from other factors. Our Framework has been used to identify value from many unique value drivers, including post acquisition synergies, new product introductions, changes in customer mix, and marketing programs and initiatives. Given the limited granularity of most public data, however, it is often not possible to separate these customized factors into industry and company specific pieces.

This flexibility in segmentation can also be used to break out the value creation due to specific ESG initiatives where the data is available. The impact of energy initiatives on costs and margins, for example, could be separated from other value creation efforts or results.



## Timeframe of the Analysis

It would be expected that, at the very least, a created value attribution analysis would encompass the time period spanning the date from the initial investment to that of either the exit (for realized investments) or a current analysis date (for unrealized investments utilizing a contemporaneous estimate of fair value). For unrealized investment this may also be performed on a periodic (e.g., annual, semi-annual, etc.) basis. Since attributed created value is cumulative in nature, the incremental value changes reflected in the updated attribution analysis (if again performed since inception) must reflect the interim period. Alternatively, the update could encompass the period from the prior analysis date to the current analysis date, and adding the results can provide an attribution analysis from inception to the current analysis date. Lastly the analysis can be performed over a “discrete” time period, i.e., on a before-and-after basis. Utilizing this

type of time frame lends itself to situation where certain significant events, such as restructuring, changes in strategy, changes in management team, etc., represents clear lines of demarcation for which how value was created before vs. how it was created after, and may provide important insights and additional transparency.

## Aggregating Across the Fund or GP

The CVA results for individual portfolio companies can also be easily aggregated across a fund, GP, or in other ways. The sample fund presentation below shows that patterns of GP influence emerge. Just as we saw at the portfolio company level, the summary of fundamental sources separates the impact of industry and capital markets, which are often beyond the GP’s control, from the deleveraging and unique impacts that the GP is quite likely to influence and potentially enhance.

Figure 11: Aggregating CVA Results By Fund

	Created Value from Acquisition Date as Reported				
	Portfolio Co. A	Portfolio Co. B	Portfolio Co. C	Portfolio Co. D	Total Fund
Industry/Sector	\$ (100)	\$ 88	\$ 106	\$ (253)	\$ 198
Capital Market/Beta	\$ (428)	\$ (38)	\$ (54)	\$ (121)	\$ (636)
Deleveraging	\$ 371	\$ 52	\$ (10)	\$ (3)	\$ 410
Unique Alpha	\$ 380	\$ 188	\$ 96	\$ 58	\$ 722
<b>Total Value Creation</b>	<b>\$ 185</b>	<b>\$ 295</b>	<b>\$ 138</b>	<b>\$ (319)</b>	<b>\$ 299</b>

As we see above, the aggregate view can show a respective GP’s relative strength across a portfolio of companies (but in other cases may show that value creation is not consistent).

## CVA vs. Other Performance Analytics

Created value attribution analysis is complementary to other performance analytics. Returns are generally foremost to investors, and our value attribution provides insight into how the returns are obtained. This can be helpful for both successful and less-than-successful investments. In the former case, our Framework can help distinguish between a home run driven mostly by macro factors and one driven more by company specific performance and GP initiatives. Similarly, a weak return or loss can be the product of negative industry and capital market factors, and company or GP initiative may preserve or further destroy value on top of that. Measures such as an IRR or MOIC may be unrelated to the amounts of unique value created over the investment period, and this is an example of why it is useful to examine multiple metrics.

Unlike an IRR, the CVA results are not time dependent. They show absolute levels of value creation over the analysis period. And while the CVA results do show whether operational performance was above or below industry performance, they do not reveal relative investment performance. In order to see the latter investment performance, we would suggest a PME (public market equivalent) analysis, or an analysis of the investment alpha created on a leverage adjusted basis.

Like other metrics and analytical tools, the CVA results require careful interpretation and should not be viewed in isolation. Together with other metrics and an examination of the efforts and initiatives of the GP, we believe the CVA results help to further quantify the investment and fund performance of the portfolio company and the GP.

## Conclusion

Created Value Attribution sits in the nexus between GP and LP interests. GPs need to demonstrate how their proven capabilities differentiate them in the market. On the other hand, LPs need a transparent framework and methodology to evaluate how returns are generated. While aggregate returns are, and undoubtedly will continue to be first and foremost for investors, how a GP creates value is increasingly important. Generation of returns through leverage is, for all practical purposes, expected by investors and is not viewed as a differentiating factor. In contrast, the creation of value through building better businesses is a widely recognized and expected differentiating factor in making capital allocation decisions.

Attributing value creation with sufficient granularity to support the existence of GP value-add (operational and/or strategic) is not a simple exercise and needs to go beyond the industry convention of merely looking at changes in EBITDA, multiples, and net debt.

Created value attribution compliments more traditional private equity fund and investment analytics. It extends the quantitative aspect of fund manager evaluation by enhancing transparency to address key issues including:

- Sources of Value Creation: Macro vs. Investment Specific;
- Impact on Value Creation from Initiatives Driven by GP Leadership; and
- GP Strengths and Weaknesses on the Basis of Industry; Geography; Deal Team; regardless of vintage.

Properly utilized, Created Value Attribution analysis can be a fundamental GP communications tool as well as a fundamental LP due diligence, selection and monitoring tool.

### About Duff & Phelps

Duff & Phelps is the premier global valuation and corporate finance advisor with expertise in complex valuation, dispute consulting, M&A and restructuring. The firm's more than 1,000 employees serve a diverse range of clients from offices in North America, Europe and Asia. For more information, visit [www.duffandphelps.com](http://www.duffandphelps.com).

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