Company Valuation in Mergers and Acquisitions: How is Discounted Cash Flow Applied by Leading Practitioners?

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Based on interviews with major investment banks, we report how these leading practitioners apply discounted cash flow (DCF) techniques to value business enterprises. We find considerable alignment among the advisors and between practice and academic advice on major themes, including assessments of risk informed by data from financial markets and on the use of comparable company data. Our conversations reveal a complex set of judgments on valuation. While leading practitioners routinely use DCF methods in mergers and acquisitions (M&A) valuations, the application is often far from “routine”; it requires art and judgment in the face of inherently uncertain business forecasts such as those surrounding merger synergies. Our results serve as yet another reminder that analytic techniques such as DCF do not make decisions but only inform them.

Each year firms spend billions of dollars on mergers and acquisitions. Over the last decade alone, US merger and acquisition (M&A) volume exceeded $12 trillion. In each transaction, both buyer and seller had to value a business and conclude that the terms of the deal were favorable to their interests. Given the complexity of business valuation, it is no surprise that practicing managers encounter a myriad of challenges when estimating a firm’s value in an M&A transaction. The primary academic recommendation is to value a firm using discounted cash flow (DCF), the same method used for evaluating projects and informing capital budgeting. The DCF framework applies a flexible tool to model key business assumptions about profitability, asset requirements, growth and risk. In practice, an array of valuation approaches is used including DCF, multiples of public companies and multiples of recent transactions.

This paper reports on if, and how, leading practitioners from major investment banks use DCF techniques to value businesses. We focus on these practitioners because they are continually involved as financial advisors in acquisitions, they represent both sellers and buyers, and they cover a large proportion of M&A activity. Based on interviews with these top investment banks, we find that there is considerable alignment among financial advisors and between practice and academic advice on several key topics. Across our sample we found the following:

- All used DCF as a method to estimate the enterprise value of a company.
- All based their discount rates on assessments of risk

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2 To illustrate a “multiples” valuation, if a target company has earnings of $100 million and comparable public companies sell at a multiple of around 14 times earnings, a possible value of the target’s equity is $1.4 billion (14x$100 million). Rosenbaum and Pearl (2013) and Bruner (2004) provide detailed discussions of valuation in the context of M&A.

3 Thomson Reuters, SDC Merger League tables show that 87% of the dollar value of US M&A transactions in 2011 involved financial advisors.
informed by data from financial markets, and all typically used information about comparable companies.

- All estimated terminal values using both multiples and perpetual growth models.
- While all banks typically focused on the entire company, when they assessed multi-business enterprises they all used sum of the parts valuation when size, risk or other factors merited the extra step.
- All but one of the banks cited situations where they valued synergies and/or strategic opportunities differently than the base cash flows.

Beyond these headlines, our conversations revealed a complex set of judgments in valuation. Respondents’ comments show how they test elements of their DCF valuations with different approaches. Their treatments of terminal value and synergies, for example, contributed to a range of approaches as practitioners grapple with these difficult elements of DCF application.

Overall, the interviews reveal that leading practitioners routinely use DCF methods in M&A valuations. However the application of DCF is often far from “routine”; it requires art and judgment in the face of inherently uncertain business forecasts. Thus, our interviews serve as yet another reminder that analytic techniques such as DCF do not make decisions but only inform them.

Section I describes our approach and sample. Section II discusses key findings, and Section III concludes.

I. Approach and Sample Selection

Firms routinely use discounted cash flow methods to benchmark investments in projects against the required returns of investors who supply capital. For instance, Brotherson, Eades, Harris, and Higgins (2013) find that the overwhelming majority of best practice companies use a DCF approach to evaluate an investment’s forecasted free cash flows against the weighted-average cost of capital (WACC). Since WACC is based on the individual sources of capital employed, it represents the required returns of investors based on their opportunity costs to invest elsewhere in financial markets.

A natural extension of this framework is in the context of (M&A), where the target company is treated as one large capital expenditure opportunity. In such an application, the estimated enterprise value is the value of all capital (e.g., debt plus equity), and the free cash flow is the amount of cash available to be paid out to all investors in the company after necessary investments for the business plan being valued (i.e., after all needed capital expenditures and investments in working capital). While concepts are the same, the move from project to company valuation raises key additional challenges. Our work highlights three particular challenges: estimating terminal values, valuing multi-business enterprises, and assessing synergies.

The terminal value challenge arises, because unlike projects that customarily have finite horizons, companies are normally going concerns with no set limit on their economic lives. To cope with this problem, analysts typically replace all cash flows after a chosen date, with a single quantity, known as the terminal value or horizon value. This terminal value represents the value at the terminal date of all subsequent cash flows, and often represents a substantial fraction of total firm value. For fast growing, younger companies the terminal value may account for essentially all of a firm’s value.

A second complexity is that a single company can have a range of businesses and divisions, each subject to different economic forces and risks. Analysts can focus on the overall company or do a sum of the parts valuation, building up a firm’s value by valuing distinct business units separately. While a sum of parts analysis has appeal, it adds additional practical challenges. For instance, financial statements used as a basis for valuation forecasts may reflect corporate overhead allocations and intercompany transactions (e.g., “profit” preserving inter-division transfer pricing) that do not fit the actual economics of the divisions. In addition, the company’s overall financing mix often will not fit each business unit.

The third challenge inherent in valuing a company is that many acquisitions may be motivated by anticipated business changes (e.g., synergies) that may be subject to substantial uncertainty and, as research suggests, often difficult to realize (Ismail, 2011; King, Dalton, Daily, and Covin, 2004). Such synergies may be therefore difficult to estimate and involve risks quite different from those of the existing businesses, especially when they require substantial changes in the way a business is operated.

This paper describes the results of conversations with leading practitioners regarding if, and how, they apply DCF to enterprise valuation in M&A. Though our interviews were guided by a series of questions, the conversations were sufficiently open-ended to reveal many subtle differences in practice. Using a “league table” of merger and acquisition advisors from Thomson’s Securities Data Commission

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4 Standard textbooks routinely suggest this framework for project and company valuation. See for instance, Brealey, Myers, and Allen (2011), Ross, Westerfield, and Jaffe (2013), Brigham and Ehrhardt (2013), and Higgins (2012), which Brotherson et al. (2013) identify as the top-selling MBA level textbooks in corporate finance. Rosenbaum and Pearl (2013) and Bruner (2004) provide detailed discussions of valuation in the context of mergers and acquisitions.
(SDC) Mergers and Acquisitions database, we drew a sample of the most active advisors based on aggregate M&A deal volume in the US for 2011. Of the resulting preliminary sample of the top twelve investment banks, one chose not to participate, giving us a final sample of eleven as shown in Table I. The eleven advisors in our sample covered the substantial majority of the dollar volume of all transactions in 2011.\(^1\)

We approached the advisors first with an email explaining our research and asking to interview someone in the bank’s mergers and acquisitions group. We then arranged phone conversations. We promised our interviewees that, in preparing a report on our findings, we would not identify the practices of any particular advisor by name—we have respected this promise in the presentation that follows.

II. Findings

A company’s estimated value depends on assessments of the underlying business(es) and assets. These assessments involve a host of assumptions and forecasts, which vary company to company and from analyst to analyst. Given whatever business forecasts are made in a particular situation, our goal was to see how sophisticated M&A advisors deploy DCF analysis to create a value estimate, particularly with respect to their treatment of terminal value, multi-business valuation and synergies.

Table II summarizes responses to specific questions we used as a basis for discussion.

A. Use of DCF

All of our respondents applied DCF as a standard way to estimate the value of a company (Question 1, Table II). Yet, as might be expected, respondents reported that it did not fit every situation equally. For instance, when asked if DCF was used to value companies, one of our respondents remarked, “commonly used, but not in every situation, like early stage companies.” Such practice comes as no surprise, since many early stage companies are not yet generating cash and still are in exceptionally high growth/high risk phases. When valuing larger companies, there was unanimous use of DCF.

B. Discount Rates for DCF

All the advisors used a form of weighted average cost of capital as a discount rate for free cash flows when estimating a target firm’s enterprise value (Questions 2 and 3, Table II). While estimates of enterprise value using a weighted average cost of capital (WACC) as the discount rate were the norm, some firms also applied the cost of equity as a discount rate for a residual cash flow to equity approach in certain situations. Brotherson et al. (2013) provide detail on the particulars of what methods and models are used by these leading investment banks, as well as best practice corporations, to estimate the cost of equity and WACC. Brotherson et al. (2013) find that the banks, along with the companies, make wide-spread use of the Capital Asset Pricing Model (CAPM) and financial market data to

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\(^1\) These investment banks are the same as in the sample discussed in Brotherson, Eades, Harris, and Higgins (2013); the current paper draws on more detailed information from those participants. Estimating a precise figure for the relative coverage of our sample is complicated due to overlap in reported figures; more than one investment bank may represent a company and there are often separate advisors to both the seller and buyer. As a rough estimate, we summed the dollar value (as reported by SDC for 2011) for each of our 11 firms and divided it by the sum of the figures across the entire sample of 25 banks in the merger league table. The resultant estimate of coverage is 77%.
Table II. General Survey Results

<table>
<thead>
<tr>
<th>Questions</th>
<th>Summary of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you use DCF techniques to value companies?</td>
<td>100% Yes</td>
</tr>
<tr>
<td>2. Do you use any form of a cost of capital as your discount rate in your DCF analysis?</td>
<td>100% Yes</td>
</tr>
<tr>
<td>3. For your cost of capital, do you form any combination of capital cost to determine a WACC?</td>
<td>100% Yes</td>
</tr>
<tr>
<td>4. Do you use data from comparable companies in estimating the cost of capital? If so how (e.g., averages for a subset of firms you feel are comparable)?</td>
<td>82% use comps normally as benchmark 18% use comps only if firm’s WACC looks unreliable</td>
</tr>
<tr>
<td>5. Do you make any further adjustments to the discount rate to reflect the size of the company?</td>
<td>91% Yes/As appropriate 9% No</td>
</tr>
<tr>
<td>6. What methods do you use to estimate terminal value? Do you use the same discount rate for the terminal value as for the interim cash flows?</td>
<td>100% both multiples and perpetual growth DCF model 55% have no preference between models 27% prefer perpetuity model 18% prefer multiples approach 91% Use same WACC for TV, 9% did not specify</td>
</tr>
<tr>
<td>7. In valuing a multidivisional company, do you aggregate the values of the individual divisions, or just value the firm as a whole? If you value each division separately, do you use a different cost of capital for each one?</td>
<td>100% “usually”/“typically” value the enterprise 100% value the parts if size, risk, or other factors merit the consideration 91% use separate WACCs, 9% did not specify</td>
</tr>
<tr>
<td>8. In your valuations do you use any different methods to value synergies or strategic opportunities (e.g., higher or lower discount rates, options valuation)?</td>
<td>82% value cash flows differently when warranted 73% use a different discount rate for the risk 9% use a different growth rate 27% cited NOLs as an example 45% cited synergies or strategic opportunities as examples</td>
</tr>
<tr>
<td>9. How long have you been with the company? What is your job title?</td>
<td>Mean: 11.0 years (current bank) Mean: 13.5 years (banking career) 1 Principal, 1 COO, 8 MD/D/EDs, 1 VP</td>
</tr>
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</table>

estimate the cost of equity. Moreover, estimates of WACC incorporate market costs of debt. Here we highlight the practice of the M&A advisors in how they incorporate comparable company data for estimating capital costs.

Given their continual presence in the M&A market, advisors typically take advantage of data on comparable companies to estimate discount rates (Question 4, Table II). 82% said they normally use comparable companies as benchmarks; the remaining advisors resorted to comparable company data only if they felt the discount rate estimated from the firm’s data alone was unreliable. When the firm was private, comparable firms provided the only source of data available. Even when there was public market data on the target firm, advisors used comparable company data extensively. Adjustment for capital structure differences among firms was often handled by un-levering and re-levering betas. Advisor responses to our questions reflect considerable judgment in the use of comparable company data. A few quotes from advisors illustrate. One advisor noted, “We look at comps as a check, particularly for target capital structure. That gives us an average WACC for a company in that industry.” Another responded with, “Yes, we triangulate on WACC using comparable company data to see if the estimate from the company’s data looks reasonable. We would adjust capital structure to make it closer to the company.” Yet another said, “We use comparable company data only if the company’s own WACC is not reliable, or if beta is not reliable, or if the company hasn’t been around
long enough. We tend to stick with the company, but might check comps if we are worried that the company figures do not look reasonable. Beta tends to be the most frequent source of concern to check.”

Since investment banks evaluate firms over a broad spectrum of market capitalizations, we wondered if they made explicit adjustments for firm size (Question 5, Table II). 91% of the advisors said that they would at times increase the discount rate when evaluating small companies. Of those who did make size adjustments, half cited using Ibbotson data which shows differences in past returns among firms of different size. The adjustment process varied by advisor as some illustrative quotes suggest. “Adjustments are discretionary, but we would tend to adjust for extreme size.” “We have used a small cap premium, but we don’t have a set policy to make adjustments. It is fairly subjective.” “We apply a small cap premium only for micro-cap companies.” “We use a small cap premium for $300M and below dividing firms into three different groups.” The large variety of approaches that practitioners use in valuing small companies displays a lack of consensus on how to incorporate firm size and liquidity issues into M&A valuation.

C. Terminal Value

As already noted, terminal value frequently accounts for a large fraction of total value in DCF valuations. Responses to Question 6 in Table II show how leading practitioners go about estimating terminal values. All eleven firms use both multiples and perpetual growth models, and over half expressed no preference between the two approaches. 27% favored a perpetuity model and 18% favored multiples. By far, the most frequently mentioned form of multiple was the ratio of enterprise value to EBITDA (market value of debt and equity/earnings before interest, taxes, depreciation, and amortization). Whatever methods they used, practitioners tended to discount the estimated terminal value back to the present using the target firm’s WACC, the same hurdle rate used for interim cash flows. Thus, to the extent practitioners examine extra risk associated with the terminal value (relative to interim cash flows) they do so with methods other than risk adjusting the discount rate.

Behind these summary figures, respondents revealed a range of approaches for dealing with the ambiguity inherent in estimating terminal values. As illustrated by the selected comments in Table III, the great majority of practitioners apply several valuation approaches and work to reconcile the differing results observed. Some speak of “triangulating” among differing outcomes; others use one approach as a “sanity check” on another; while others speak of using one result to tease out an implied input value for another method. Yet another approach suggested in Table III is to abandon the goal of estimating a single firm value in favor of estimating a range of plausible values, and to use this range as a guide in subsequent, more qualitative discussions – yet another reminder that analytic techniques such as DCF do not make decisions but only inform them.

D. Multi-business Companies and “Sum of Parts” Valuation

For companies that participate in multiple lines of business, the valuation can be shaped considerably by whether the firm is valued as a single entity or as the sum of its constituent parts. A sum of parts approach would be justified, for example, if the lines of business had different risks that therefore required different discount rates.

We asked advisors whether they aggregate values of individual divisions in their valuations or if they value firms as a whole (Question 7, Table II). For those that perform a sum of the parts valuation, we also asked if they use separate, divisional costs of capital. Responses to these questions show that all of the advisors typically value the entire enterprise. However, they all prepare a sum of parts valuation when risk or other factors merit the consideration, and in doing so routinely use business-specific discount rates if a firm’s business lines differ substantially.

While all the advisors routinely think through the issue of whether to use sum of the parts valuation, their approaches differ. Comments in Table IV illustrate this. Some advisors said that they normally value a firm as a whole unless there is a plan or potential to add value by breaking up the company. A few also noted looking at whether they felt the public market currently was viewing the company with a “sum of the parts” lens on valuation. For instance, one respondent noted, “In certain instances, e.g., if trying to understand if there is a ‘sum of the parts discount’ or potential value enhancement from separating a business division, we may look at the values separately as if they were operated independently and estimate the different divisions’ component costs of capital separately.” Another practitioner responded, “Usually, we will value the firm as a whole unless the market uses a sum of the parts approach to valuation or there is some other reason (e.g., strategic sale or acquisition of a specific business line, or company has focused and non-complimentary business lines).”

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6 Pratt and Grabowski (2010) discuss size adjustments and the use of Ibbotson data on size groupings.

7 If, for example, the estimated terminal value using a comparables approach is $4 billion, the analyst might calculate the growth rate necessary in a perpetual growth model to yield the same value. An implied perpetual growth rate approximating expected growth in the economy would likely be comforting, while once twice as high would indicate more work to be done.

Table III. Terminal Value

We asked, “What methods do you use to estimate terminal value?” Here is some of what we heard.

1. We generally use a variety of methods for terminal value estimation. Typically we either 1) apply a multiple (P/E, P/Tangible Book Value, P/Book, EV/EBITDA) based on peer comparables or a normalized average of peer comparables, or 2) assume a perpetual growth model, typically with a growth rate equal to the inflation rate, plus one to three percent, depending on the industry.

2. We most frequently use the perpetual growth model, with a range of growth rates to determine a range for the terminal value. We generally look at the implied terminal exit multiples as a ‘sanity check’, though not a driver of terminal value.

3. Use a growth model, with the growth rate approximating gross domestic product (GDP) growth. Sometimes we'll look at transactions data, but the standard method is a perpetual growth model.

4. We typically use an EBITDA multiple for the terminal value calculation. As a sanity check we calculate the implied cash flow growth rate from a perpetual growth model.

5. Typically we use a multiple such as EBITDA. We then imply a perpetuity growth rate as a check. Reasonable growth rates vary by sector, but for Healthcare, we wouldn't want to see anything higher than three to five percent.

6. Triangulate with both terminal multiple value (derived using trading comparables) and perpetuity growth rate (usually backed into to synch up with the multiple).

Definitions. P/E = stock price/earnings per share, P/Tangible Book Value = stock price/book value of equity less intangible assets per share, P/B = stock price/book value of equity per share, EV/EBITDA = market value of equity plus debt/earnings before interest, taxes, depreciation and amortization.

Table IV. Multi-business Companies and Sum of the Parts Valuation

We asked, “For valuing a multidivisional company, do you aggregate the values of the individual divisions, or just value the firm as a whole? If you value each division separately, do you use a different cost of capital for each one?” The comments below show how leading banks responded.

1. We do both. If the divisions are similar businesses then we just value the firm as a whole. If the divisions are very different businesses then we will likely do both a sum of the parts valuation along with a valuation by just looking at the firm as a whole. If we value the divisions separately then yes, we would apply different costs of capital based on the respective peer groups of each business.

2. Depends on size of divisions and the magnitude of difference in risk profiles. The larger the difference, the more likely we are to do a sum of the parts valuation and use different discount rates for each business.

3. For multiple divisions we would often do on a divisional basis—for the work I do, it is most commonly different assets around the world—here we would generally use different discount rates that reflect the different risk profiles in each region or the risk profile of a particular asset.

4. In general we value the firm as a whole unless there is significant enough difference between the individual segments to warrant a sum-of-the-parts kind of approach, in which case we would consider whether it is appropriate to use different cost of capital or keep it consistent.

5. Usually, we will value firm as a whole unless the market uses a sum of the parts approach to valuation or there is some other reason (e.g., strategic sale or acquisition of a specific business line, or company has focused and non-complimentary business lines).

6. In most scenarios, we aggregate the values of the divisions and value the firm as a whole using the whole company's predicted beta as the firm specific input to cost of capital, which in essence should reflect a blend of the various divisions. In certain instances, e.g., if trying to understand if there is a 'sum of the parts discount' or potential value enhancement from separating a business division, we may look at the values separately as if they were operated independently and estimate the different divisions' component costs of capital separately.

7. We don't think the public market values a company as the sum of its parts, but rather tends to use a single discount rate, so we do the same. However, if the deal is to break up the parts, we’ll look at it that way, but otherwise we'll use the overall cost of capital to value the entire firm.
We asked, “In your valuations do you use any different methods to value synergies or strategic opportunities (e.g., higher or lower discount rates, options valuation)?” and heard the following.

1. Depends on nature and risk of synergies. If easy to achieve cost synergies, like removing redundant management or removing redundant stores across the street, then we do NOT value differently. If higher risk, then we may use a higher discount rate or probability weight the synergy (75%). If they are talking about revenue synergies, for example, we might “risk” those synergies at 50% ; i.e., give the revenues a 50% haircut rather than adding 2, 3, 4, or 5% to the discount rate. These probability or risk adjustments are based on history and our assessment of the nature of the synergies. We judge revenue synergies as more risky than cost synergies, so usually risk the revenues more than cost savings.

2. When valuing synergies, we typically just look at a DCF of the synergies using the same range of discount rates as applied to the base business. We do sensitize these results for a range of discount rates and usually try to break the synergy value into separate buckets for each type of synergy so we can assess each separately if some are viewed as more “risky.”

3. For the valuation of synergies, we will sometimes use the same valuation methodologies as the whole firm, but more frequently we would value them differently. Different methods can include: 1) a DCF of only the net synergies (synergies net of costs to achieve those synergies), 2) a DCF of the whole firm with and without synergies (the DCF including synergies could have a higher discount rate due to inherent riskiness of achieving synergies), or 3) a simple multiple-based valuation (e.g., run-rate synergies times a multiple minus one-time integration costs). We generally just add synergies into the cash flow projections and discount at the same rate. Taxes, however, are a different issue. Existing NOLs or cross-border law can at times create an additional tax benefit that is directly created by the deal. In that situation we want to value the status quo of the tax payments vis-à-vis the new tax savings. Those tax savings might be valued separately over 5 years, but not in the perpetuity, so we value them separately and tend to use cost of debt to reflect the high likelihood of realizing those tax savings.

4. Synergies are usually valued using a risk-adjusted cost of equity (i.e., higher). On occasion, we will do a probability weighted valuation of particular synergy opportunities, especially for biotech/tech. From time to time will use Black-Scholes options (or more appropriately, binomial expansion methods) for probabilistic valuations – but generally will need a very specific reason: e.g., project represents a significant (more than 15%) source of future value and has definable inputs.

5. We don’t really value synergies differently. We use the cost of capital of the target, but don’t use a different discount rate. No real option values applied.

Other advisors more routinely did both entire firm and sum of parts valuations; “We do both. If the divisions are similar businesses then we just value the firm as a whole. If the divisions are very different businesses then we will likely do both a sum of the parts valuation along with a valuation by just looking at the firm as a whole.” The advisors showed a range of responses in defining what they considered in determining whether lines of business were substantially “different”: 73% mentioned significant differences in component businesses’ size, geographic region, currency, business type or sector, multiples, and general risk profile, while the other 27% provided no specific detail.

**E. Valuing Synergies and Strategic Opportunities**

Many acquisitions are driven by the desire to pursue specific strategic objectives and/or achieve synergies. Both of these present particularly nettlesome valuation challenges and can have an immense impact on the buyer’s view of a firm’s value.\(^9\) We asked (Question 8, Table II) what approaches advisors took to value synergies or strategic objectives. Table V illustrates the range of responses supplied by the M&A advisors.

All but one of the banks take specific steps to deal with these issues rather than simply folding them into cash flows and discounting all flows at the same rate. The steps taken to value synergies, however, are highly varied, particularly with respect to handling higher-risk cash flows. For example, one bank reported assigning each type of synergy into “separate buckets” to assess the higher-risk synergies separately. Several banks reported using a higher discount rate for synergies, with a couple specifically citing the cost of the target’s equity as the discount rate. Since the cost of equity exceeds the WACC, using it as the discount rate adds an extra penalty for risk. Other approaches to risk adjusting synergies included using a probability weight (“haircut”) for the synergy cash flows, or in one case, lowering the perpetuity growth rate. Thus, the M&A advisors recognize the merit of reducing the present value of risky cash flows vis-à-vis base cash flows, but there is no consensus as to how to best achieve the reduction.\(^10\)

There was more consensus regarding valuing low-risk

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\(^9\) Ismail (2011) reviews much of the empirical research attempting to estimate the value of synergies and the relation of these to share prices impacts.

\(^10\) Although we listed “options valuation” in Question 8, it was only cited twice and then within the context of valuing tech/high-risk firms.
cash flows and in particular, valuing net operating losses (NOLs). NOLs were cited several times as a specific form of merger synergy that required special treatment. Under US tax code, a target firm’s NOLs can be carried forward to reduce the tax burden of the post-merger entity. These cash flows have a finite time horizon and are realized as long as the new company has sufficient taxable income over the time period. To reflect the high likelihood/low risk nature of these synergies, several banks reported valuing NOLs using a lower discount rate and more specifically, the cost of debt.12

F. Comparisons to Responses in the 1990s

A unique feature of our interviews is that they replicate (some fifteen years later) questions from an earlier study we conducted with Bob Bruner (Bruner, Eades, Harris, and Higgins, 1998). We can thus make comparisons to see if we detect notable shifts in how leading practitioners apply DCF in M&A valuation and, in particular, how they deal with terminal values, multi-business valuation, and synergies.13

Much has remained the same in terms of application of DCF. Both in the 1990s and now, essentially all the financial advisors used DCF as a valuation method. And, all used sum of the parts valuation when they deemed it appropriate. If anything, the reliance on DCF seems to have strengthened. For instance, in Bruner et al. (1998), 30% of advisors used only multiples to estimate terminal values and the remainder employed a combination of multiples and a DCF perpetuity growth model. We find that all the advisors now routinely use both DCF and multiples for terminal value estimates.

Perhaps the most notable shift is in how advisors approach synergies and strategic issues. In Bruner et al. (1998) half of all the advisors said they made no special adjustments in their cost of capital or other procedures to value synergies/strategic issues differently. In contrast, we find that in 2013, all but one of the advisors reported taking specific steps to deal with synergies rather than just folding them into the company’s cash flows and discounting all at the same rate. Our view is that this enhanced scrutiny of synergies likely reflects practitioners’ and investors’ increased recognition of the difficulties and uncertainties surrounding the realization of planned synergies. As we discussed earlier, the range of approaches taken reflects the complexity of synergies, which can differ tremendously across M&A situations.

III. Conclusions

Our interviews with major investment banks reveal how leading practitioners grapple with applying DCF methods to M&A transactions. Based on our conversations, we offer conclusions about the current state of practice and the implications for promising areas of research.

First, the DCF framework for valuing a business is routinely used by major investment banks involved in M&A deals. This general alignment across banks comports with standard finance theory and academic advice; companies are usefuly viewed as generating streams of future cash flows to be benchmarked against investor return requirements. This study focused on particulars of a model’s application across the M&A context which includes a wide variety of transactions. Future research which differentiates characteristics of a deal (e.g., initial public offerings (IPOs), bidding contests, etc.) could shed light on how valuation approaches and outcomes may differ as company circumstances and incentives differ (see for instance Bangsund, 2013). For instance, such research may reveal patterns in the nature of forecasts or the choices of comparable company data used in implementing DCF.

Second, and again consistent with standard theory, banks estimate discount rates based on investor alternatives in financial markets. The practitioners routinely harness standard finance models to estimate the target firm’s capital costs and use data from financial markets and on comparable firms. An area of considerable variation is in deciding when and how discount rates should be adjusted for a firm’s size. This suggests fruitful opportunities for research on how company size affects practitioners’ valuation policies.

Third, applying DCF in M&A valuations requires art and judgment in the face of inherently uncertain business forecasts. Time and time again our conversations revealed the complexity of dealing with the inevitable gaps between theoretical constructs and actual information that is available and quantifiable. This was especially true in estimation of terminal values. To deal with this uncertainty, some practitioners spoke of “triangulating” among differing valuations; others adopted one approach or input as a “sanity check” on another; while others mentioned using one result to tease out an implied input value for another valuation method.

Fourth, investment banks routinely think through the issue of whether to use sum of parts valuation for multi-business companies. However, practice includes an array of
approaches to when and how to implement such a detailed valuation. Frequently advisors talked of doing a sum of parts valuation only in special circumstances which reflected either merger strategy (e.g., a breakup or sale contemplated) or financial market attributes (e.g., equity analysts using sum of the parts valuation for such companies). This variety in practice suggests a need for research on the circumstances (e.g., sector, financial market conditions, company life cycle) that influence how practitioners estimate the value of multi-business companies.

Fifth, valuing synergies creates special challenges in M&A. Given the nature of uncertainty surrounding synergies, all but one of the banks we interviewed took additional steps rather than simply folding synergies into a company’s cash flows and discounting all flows at the same rate. However, the steps taken varied widely across banks. Research to understand the risk profiles of different types of synergies and to provide benchmarks (e.g., derived from certain types of traded companies and securities) to value those synergies can benefit both academic and practitioner audiences.

Finally, our conversations serve as a clear reminder that analytic techniques such as DCF do not make decisions but only inform them. Their great benefit is to structure thinking about the inherently challenging task of placing monetary values on complex business organizations.

References


