Due Diligence Related to Financial Projection Bias in Pricing M&A Transactions

Michael A. Harter

For many participants in a transactional setting or a merger and acquisition setting, judgments about the merits of a deal may contain bias. Bias among transaction participants can create subtle risks by potentially producing biased valuations of the target or acquiring company. The income approach—discounted cash flow method—is a widely used valuation approach in transaction settings. Central to the application of the discounted cash flow method are management-prepared projections. When applying the discounted cash flow method in a transaction setting, the valuation analyst needs to be aware of potential bias that can permeate management-prepared projections. This discussion highlights several types of bias the valuation analyst may find in management-prepared projections. This discussion then presents the steps the valuation analyst can take to analyze and correct management-prepared projections from bias when applying the income approach—discounted cash flow method—in a transaction setting

Introduction

A corporate merger or acquisition (M&A) involves a multitude of complex transaction participant decisions that are likely made under conditions of uncertainty. In the prelude to a merger and acquisition (M&A) transaction, judgment about the merits of a deal may contain bias.

The acquiror company management may have grand visions of managing a more diversified company, investment banks may be incentivized to close a transaction, and compensation at the acquiring company and target company may incentivize an outcome that is different from the originally defined transaction objectives. Similarly, a lack of independence between management and the board of directors can lead to important considerations being overlooked in an M&A transaction.

Bias among such transaction participants, and specifically senior management, can create additional transaction risks by potentially producing biased target company valuations. The cash flow projections used to estimate the value of a target company may:

1. reflect stronger performance than is warranted by industry trends,
2. include identified post-acquisition synergies that may not be realized, and
3. incorporate costs to achieve synergies that may be understated.

Similarly, the projected cash flow may be discounted using discount rates that do not fully account for market and industry risks.

The valuation analyst's role in M&A transactions is generally related to providing the acquiror company (and/or the target company) business valuations for purposes of (1) a transaction fairness opinion and (2) senior management strategic planning.

While the valuation analyst should consider all generally accepted business valuation approaches and methods, the income approach—discounted cash flow (DCF) method—is widely used to value businesses in an M&A transaction setting.

In an M&A transaction, the valuation analyst can provide significant value by locating bias in the management-prepared financial projections that are used in the income approach—discounted cash flow analysis.

This discussion focuses on applying the income approach—DCF method—when performing a business valuation in an M&A setting, specifically as it relates to the treatment of company management-prepared financial projections. In an M&A transaction, the valuation analyst often relies on information provided by management, and that information may contain one or more types of bias.

This discussion considers the following topics:

1. The types of bias that may occur in a proposed M&A setting
2. The ways that financial projection bias can enter the valuation process
3. How the valuation analyst can protect against bias when applying the income approach—DCF method

Valuation in Proposed M&A Transactions

The role of the valuation analyst in a proposed M&A transaction is generally to:

1. provide a business valuation to assist in the preparation of a formal fairness opinion of the proposed transaction or
2. provide a business valuation for purposes of management strategic planning.

A business valuation is generally useful in a proposed M&A transaction to assist the acquiring company to develop an acquisition price for the target company. Similarly, the acquiror company generally retains a valuation analyst to determine whether the acquiror's transaction offer price is reasonable.

These business valuations are conducted during the due diligence phase of the M&A transaction. After the due diligence phase, the valuation analyst, working with the acquiror company, can assist in making changes to the transaction offer price. Such offer price changes are the result of new information that changes the future outlook of the target company.

Likewise, the valuation analyst working with the target company can assist the target's management to evaluate and understand any changes in the acquiror's transaction offer price.

In a proposed M&A transaction setting, there are many different methods available to value a target company.[1] In an M&A transaction, the three generally accepted business valuation approaches are (1) the income approach, (2) the market approach, and (3) the asset-based approach. Within each generally accepted valuation approach, there are a number of generally accepted business valuation methods. The valuation analyst will typically consider each approach and method when valuing a business for an M&A transaction.

This discussion focuses on the income approach as it is generally the preferred method when valuing a business in a proposed M&A transaction setting.

According to Shannon Pratt, "In the simplest sense, the theory surrounding the value of an interest in a business depends on the future benefits that will accrue to its owner. The value of the business interest, then, depends upon an estimate of the future benefits and required rate of return at which those future benefits are discounted back to present value as of the valuation date."[2]

This statement especially holds true in a proposed M&A transaction.

The DCF Method and Company Management-Prepared Financial Projections

Within the income approach there are several generally accepted valuation methods. Each of these methods is based on the economic principle that the value of an investment is a function of the economic income that will be generated by that investment over its expected life.

As presented above, the DCF method is widely used to value acquisition target companies. This is because it incorporates the trade-off between risk and expected return, which is an important component to estimate value.

As documented in past opinions, the Delaware Court of Chancery (the "Court"), which is an important forum for shareholder and other commercial litigation, has indicated that a preferred method in valuing shareholder stock is the DCF method. As opined in *Crescent/Mach I Partnership, L.P. v. Turner*:

> [T]he Court tends to favor the discounted cash flow method ("DCF"). As a practical matter, appraisal cases frequently center around the credibility and weight to be accorded the various projections for the DCF analysis.[3]

The judicial decisions of the Delaware Court of Chancery are often relevant to M&A pricing and structuring activity. This is because such judicial decisions deal with dissenting shareholder appraisal rights and shareholder oppression litigation matters. Such tort claims can occur as a result of an M&A transaction.

The DCF method provides an indication of value by:

1. estimating the future economic earnings of a business and
2. estimating an appropriate risk-adjusted required rate of return used to discount the estimated future economic earnings to present value.

This discussion focuses on estimating the future economic earnings of a business, and specifically on identifying and correcting for potential bias in any management-prepared projections.

When using the income approach, the analyst will align the earnings measure to the subject of the valuation. If the valuation subject is the value of the target equity, then the appropriate earnings measure is "net cash flow to equity." If the valuation subject is the target business enterprise value, the appropriate earnings measure is "net cash flow to invested capital."

After the valuation analyst determines the measure of economic earnings to analyze in the DCF method, the next procedure is to project the earnings over a future time period. A common procedure to estimate the future economic earnings of a company is to obtain management-prepared financial projections.

Importance of Management Projections

In applying the DCF method, the valuation analyst generally obtains management-prepared financial projections. This is partly due to the fact that the Court seems to prefer management-prepared projections over any alternative (and, particularly, post-litigation filing date) projections. In fact, the Court has rejected alternative financial projections that were created solely for the purpose of litigation.

As explained in the *Agranoff v. Miller* decision:

> [C]ontemporary pre-merger management projections are particularly useful in the appraisal context because management projections, by definition, are not tainted by post-merger hindsight and are usually created by an impartial body. In stark contrast, post hoc, litigation-driven forecasts have an "untenably high" probability of containing "hindsight bias and other cognitive distortions."[4]

The Court's opinion suggests that bias can exist in management-prepared financial projections when such projections are not prepared in the ordinary course of business. For many target companies, a proposed M&A transaction setting is not an ordinary course of business. Therefore, management-prepared financial projections developed for a transaction may be placed under additional scrutiny by the valuation analyst until the reasonableness of such projections can be confirmed.

In some transaction settings, and often unknown to management, management-prepared financial projections may contain one or more types of bias. When valuing a proposed target company for M&A transaction purposes, it may be the responsibility of the valuation analyst to identify potential biases and, if needed, to use more realistic financial projections when performing a valuation.

Types of Financial Projection Bias

To identify potential financial projection bias when valuing a target company, the valuation analyst first analyzes historical financial statements. Historical financial statements serve as the foundation by which all future valuation assumptions and financial projections should be compared.

In reviewing historical financial statements, the analyst is provided a better understanding of the target company and its future prospects. A thorough understanding of the target company may also be needed to question management about future operating prospects.

When using the DCF method, the analyst may rely on management to develop financial projections regarding the company's post-transaction operations. The valuation analyst may need to be aware of different types of financial projection bias that may be present. The five types of management-prepared financial projection bias the valuation analyst should be aware are discussed below.

Overconfidence

Many mergers are justified based on expected post-merger synergies and cost savings. For revenue synergies to be realized, there should be an integration plan that involves new investments or growth initiatives. A common problem with these plans is overconfidence in the management estimates of what economic benefits can be achieved.

Overconfidence bias may occur when someone overemphasizes his or her own judgment or ascribes an unduly high probability of success to the forecast.[5]

Aside from the roll that overconfidence plays in overly optimistic financial projections, synergies, and costs savings, overconfidence may also be one of the reasons the proposed M&A transaction is initiated. If senior management is overconfident in its ability to assess the worthiness of a proposed M&A transaction, then management may be more likely to initiate an offer.[6]

Overconfidence can easily cascade through many decisions that should require independent and objective analysis. Overconfidence can affect management-prepared financial projections by assuming (1) high post-transaction growth rates, (2) synergies being realized too quickly, and (3) achievement of operating margins through post-merger synergies that are higher than warranted.

In addition to overconfidence affecting management-prepared financial projections, depending on the competitive structure of the subject industry, an overconfident management team may project that the post-transaction company could be in a more advantageous competitive position than is warranted.

Confirmation Bias

Confirmation bias occurs when individuals seek out information that confirms their initial hypothesis.[7]

Similarly, individuals can attach too much importance to information that supports currently held views relative to information that runs counter to their views. Confirmation bias can lead to the persistence of false beliefs, as individuals filter out potentially useful information and opinions that don't coincide with their preconceived notions.

Confirmation bias can be present especially during the due diligence phase of a proposed M&A transaction when the acquiring firm is developing a price for the target company that is attractive enough to move the transaction forward. The need to offer an acceptable bid may bias the analysis going forward. This is because some individuals may feel a need to continue supporting the initial bid even as new information is received.

Confirmation bias can affect management-prepared financial projections by being overly optimistic in regard to revenue opportunities and the ability to cut costs and/or achieve greater scale. This is because contrary information is not given adequate consideration.

Planning Fallacy Bias

Planning fallacy bias refers to the tendency for individuals to underestimate the time, money, and other resources needed to complete major projects.[8] For companies with a longer history of performing mergers and acquisitions, the planning fallacy bias is not as important. This is because the acquiror company can review how and why initial schedules to integrate transactions were not realized.

For smaller companies where acquisitions occur less frequently and management has less experience in the M&A process, the planning fallacy can be a significant bias resulting in more time and resources being devoted to the M&A transaction.

The planning fallacy can affect management-prepared financial projections by assuming revenue growth and/or synergies are realized sooner than is warranted. Therefore, revenue growth may be overstated and improvements in margins through post-merger synergies may be too high. Ultimately, the acquiror company's realization of lower revenue and higher expenses will reduce the value of the post-transaction company.

Commitment Bias

Commitment bias occurs when the individuals justify increasing investment in a previously made decision despite new evidence that suggests continuing the investment is more costly than the expected economic benefit.[9]

Managers can become emotionally attached to a transaction before fully considering alternatives, which can lead to commitment bias.

As noted above, the first stage of an M&A transaction is the due diligence phase, which has the potential to create momentum for the transaction. This is because participants may not want to waste the time and resources already spent. Once momentum develops, it can be difficult for management teams to turn back without setting up a proper process to evaluate when the M&A transaction should be abandoned.

Commitment bias can become more severe if there are multiple potential buyers for a target company; this is because the competition to win the transaction increases.[10]

In a competitive bidding scenario, the ultimate winner will have the most optimistic valuation of the subject company. In these settings, it is important for managers to counter the escalation of commitment bias by establishing clear criteria under which a transaction should be further investigated after new information is received.

It is important for the managerial decision-making process to be structured in a way that enables managers to be intentional about when and why they are challenging or changing the initial transaction criteria.

Incentive Bias

A fifth form of bias is incentive bias. This type of bias occurs when management has a financial incentive to complete a transaction. Financial incentives (salary or stock options) can push a transaction forward even if new information reduces support for the transaction's benefit to the company.[11]

With financial incentives not always aligned properly, it should not be a surprise that empirical evidence suggests that many acquisitions are value-destroying.[12]

Incentive bias may push senior management to prefer a high or low price depending on the M&A context. And, the analyst may be pressured to accommodate the valuation according to his/her superior's expectations. This is because the potential payoff to the superior can be high.

For example, an M&A analyst working for the investment banker to the acquiror company in a hostile takeover may arrive at a lower value than the M&A analyst working for the investment banker to the target company in a friendly takeover. Depending on the situation, the analyst should keep in mind how financial incentives may bias the valuation in regard to using aggressive assumptions versus reasonable assumptions.

Incentive bias will be difficult to identify in management-prepared financial projections. Instead, of examining management-prepared financial projections, incentive bias can best be identified by reviewing senior management compensation agreements.

The valuation analyst should keep in mind that, for larger companies, high levels of senior management compensation in the post-transaction company may affect the operating performance of the company less when compared to misplaced assumptions regarding revenue growth and improvements in operating margins such as earnings before interest, tax, depreciation, and amortization (EBITDA) or earnings before interest and tax (EBIT).

Protecting against Bias in M&A Valuations

After the valuation analyst is aware of the different types of bias that may exist in management-prepared financial projections, the next procedure is for the analyst to understand how to protect the valuation from bias when using the income approach—DCF method.

The Court has opined that, when applying the DCF method to a subject company, the valuation analyst due diligence process should include an

analysis of the assumptions on which management's projections are based.

As explained by the Court in *In re John Q. Hammons Hotels Inc. Shareholder Litigation* decision:

> Generally, management projections made in the ordinary course of business are considered to be reliable. In this case, however, testimony at trial established that management's projections were not created in the ordinary course of business. [Plaintiff's expert], nonetheless, performed no independent analysis of the assumptions underlying management's projections and did nothing to determine whether those projections were prepared by management in the ordinary course of business.[13]

As discussed in the text, *Understanding Business Valuation*, there are three general questions that the valuation analyst may consider when analyzing management projections.[14] First, are the management-prepared financial projections taking into account current economic conditions? Second, are the financial projections in accordance with industry trends? Third, do the financial projections appear reasonable after analyzing company-specific factors?

Understanding these three areas will help the valuation analyst to identify and protect management-prepared financial projections from bias. Each of these three areas is discussed below.

Economic Conditions

It is important for the valuation analyst to understand the effects of economic conditions on the target company. By researching current economic conditions, the analyst identifies the macroeconomic factors over which the target company has no control. Identifying trends that may be favorable or unfavorable to the target company helps the valuation analyst better understand what growth rate is achievable.

As discussed in *Financial Valuation*, the issues that valuation analysts commonly consider when analyzing a local economy include the following:

1. Whether the local economy is largely dependent on a single employer or industry
2. The extent and condition of the area's infrastructure
3. Announcements of major plant openings or closings
4. Income levels and poverty rates
5. Attitudes of local officials toward attracting new employers
6. Population growth[15]

By understanding these economic factors, the valuation analyst is in a better position to understand the target company's economic challenges and opportunities within the region(s) where it operates.

Industry Trends

An industry analysis allows the valuation analyst to identify industry trends. When examining the target company industry trends, *Financial Valuation* suggests that the valuation analyst consider the following questions:

1. What are the industry's prospects for growth?
2. What are the industry's dominant economic traits?
3. What competitive forces are at work in the industry and how strong are they?
4. What have traditionally been the drivers of change in the industry and what effect will they have in the future?
5. Which companies are in the strongest/weakest competitive positions?
6. What factors will determine competitive success or failure?
7. How attractive is the industry in regard to its prospects for above-average profitability?
8. Are barriers to entry low or high?[16]

To identify potential sources of bias, the analyst may determine whether management-prepared financial projections align with the subject industry's historical, current, and projected economic performance. Unless the analyst's specific area of focus is the subject industry, the analyst will often rely on the target company management to develop an understanding of how the industry operates.

The consideration of the industry and of industry trends is a common due diligence procedure for the analyst to corroborate whether management financial projections are reasonable. There are many sources of industry data and information for the analyst to consider including trade associations, fee-based sources, and free data information resources.

While it is not practical to list all available sources of industry data in this discussion, some of the useful sources of industry information and data include the following:

1. Standard & Poor's Industry Surveys
2. IBISWorld Industry Reports
3. First Research Industry Profiles
4. MarketResearch.com
5. National Trade and Professional Associations of the United States

Analyzing industry metrics from these sources should provide the valuation analyst with an understanding of the current state of the target company industry, the trends that have been affecting the industry in the past, and the key drivers shaping the industry in the near future.

Company-Specific Factors

When looking at company-specific factors, *PPC's Guide to Business Valuations* suggest that the valuation analyst examine the following company-specific assumptions related to management-prepared financial projections:

1. Assumptions about revenue and receivables
2. Assumptions about cost of sales and inventory
3. Assumptions about other costs including selling, general, and administrative costs
4. Assumptions about property, equipment, and related depreciation
5. Assumptions about debt and equity levels
6. Assumptions about income taxes[17]

Comparing the target company's historical financial statements (in addition to the areas discussed above) may provide the analyst with sufficient information to identify whether the management-prepared financial projections are reasonable.

Therefore, to insulate management-prepared financial projections from bias, the valuation analyst may research three areas.

First, the valuation analyst will understand the economic conditions under which the target company operates. Second, the valuation analyst will develop an understanding of the target company industry. Third, knowledge of company-specific factors may allow the analyst to identify where management-prepared financial projections are reasonably close to the past historical operating performance of the target company and within industry norms.

Examining economic conditions, industry trends, and company-specific factors may provide the analyst with a better ability to identify where management-prepared financial projections may contain bias.

Applying the Three Factors

After the analyst has reviewed the three factors listed above, the valuation analyst may test the management-prepared financial projections for bias.

Confirmation Bias

The analyst can test for confirmation bias by questioning management's assumptions and determining whether multiple scenarios have been included when developing the management-prepared financial projections. For example, has management sought out contrary evidence and opinions about the merits of the acquisition and likely synergies? Has management explicitly identified the assumptions used and have these assumptions been sufficiently challenged?

The analyst may verify whether outside experts have been consulted about the challenges of integrating the proposed acquisition.

Overconfidence

The analyst can identify overconfidence bias if management-prepared financial projections are too optimistic in regard to integrating the transaction, developing synergies, cutting costs, or growing revenue. One way for the analyst to determine whether this level of optimism is present is by comparing the management-prepared financial projections with the historical operating performance of the target company.

The valuation analyst may compare company-specific metrics mentioned above to see whether the post-transaction company deviates far from its past. If the acquiror company has performed M&A transactions in the past, older transaction projections may be compared to subsequent financial results. In any M&A transaction, the analyst may discuss the financial projections with the senior management and determine whether the assumptions used are reasonable. Again, the analyst may use knowledge of the industry and company-specific factors when questioning management assumptions.

Planning Fallacy

The planning fallacy may show up in management-prepared financial projections through an unrealistically fast integration of the transaction. Expenses associated with the transaction may be understated, resulting in improved operating margins earlier than is warranted. The analyst may review the acquiror company's previous transactions and the accuracy of previous management-prepared financial projections when integrating a new company.

The valuation analyst may ask senior management about their experience of integrating transactions in the past and how the current transaction is similar or different.

Commitment Bias

It may be difficult for the analyst to determine whether commitment bias exists by examining management-prepared financial projections alone. The analyst may uncover commitment bias through more qualitative factors, such as identifying the level of commitment that management offers.

The analyst may also identify whether management opinions change as new target company information is received. If the acquiror increases the target price without sufficient information for doing so, or refuses to lower the offer price after receiving negative information, then senior management may be overly committed to completing the proposed transaction.

Incentive Bias

As mentioned, incentive bias can be identified by reviewing senior management compensation agreements. The analyst may determine what metrics are being used to evaluate senior management performance. Is compensation based on improvement in operating metrics or company size? The valuation analyst may also compare the acquiror company senior management compensation with senior management compensation in the industry.

Conclusion

In a proposed M&A transaction, the valuation analyst may be retained to help the acquiror company estimate an acquisition price for the target company. The valuation analyst may also be retained by the target company to evaluate the merits of the proposed offer price.

The valuation analyst provides expertise early in the due diligence phase of the M&A transaction. And, the analyst helps senior management review new information as it becomes available and helps evaluate any changes to the offering price.

In the proposed M&A transaction setting, the valuation analyst may consider multiple valuation methods. However, since the value of an investment is based on the economic income that will be generated over the life of the investment, the income approach—DCF method—is often used in a transaction setting.

Management-prepared financial projections are an important component of the income approach—DCF method. Management-prepared financial projections show how the target company will likely operate post-transaction.

For the valuation analyst, the management-prepared projections are a component of the income approach—DCF method. However, management-prepared financial projections may contain bias.

It is the valuation analyst's responsibility to identify and protect the valuation from bias. By identifying different types of financial bias that may be present during a proposed M&A transaction, and by understanding where bias may exist in the management-prepared financial projections, the analyst is in a better position to correctly apply the income approach—DCF method.

Specifically, the valuation analyst will first understand how economic conditions affect the target company. The valuation analyst may consider the target company's industry to determine whether management-prepared financial projections are consistent with the industry's operating performance and trends.

The valuation analyst may verify whether management-prepared financial projections are consistent with the target company-specific metrics. After reviewing these three areas, the valuation analyst can:

1. better identify where bias may exist in management-prepared financial projections and
2. correctly apply the income approach—DCF method—in the analysis of the proposed M&A transaction.

Notes:

1. Robert F. Bruner, *Applied Mergers & Acquisition* (New York: John Wiley & Sons, 2004), 254.
2. Shannon P. Pratt *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 5th ed. (New York: McGraw-Hill, 2008), 56.
3. Crescent/Mach I P'ship, L.P. v. Turner, 2007 WL 1342263, at *9 (Del. Ch. May 2, 2007).
4. Agranoff v. Miller, 791 A.2d 880, 892 (Del. Ch. 2011).
5. Daniel Kahneman and Amos N. Tversky, "On the Psychology of Prediction," *Psychological Review* Vol. 80, No. 2 (1973): 237–251.
6. Ulrike Malmendier and Geoffrey Tate, "Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction," *Journal of Financial Economics* Working Paper 10813 (September 2004).
7. Raymond S. Nickerson, "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises," *Review of General Psychology*, Vol. 2, No. 2, (1998): 175–220. See also Dan Lovallo and Daniel Kahneman, "Delusions of Success. How Optimism Undermines Executives' Decisions." *Harvard Business Review*, Vol. 81, No. 7 (2003).
8. Daniel Kahneman and Amos N. Tversky, "Intuitive Prediction: Biases and Corrective Procedures," *TIMS Studies in Management Science*, Vol. 12 (1979): 313–327.
9. Barry M. Staw, "Knee-Deep in the Big Muddy: A Study of Escalating Commitment to a Chosen Course of Action," *Organizational Behavior and Human Performance*, Vol. 16, No. 1 (1976): 27–44.
10. Richard H. Thaler, "Anomalies: The Winner's Curse," *Journal of Economic Perspectives*, Vol. 2, No. 1 (1988): 191–202.
11. This type of bias can be dealt with by aligning management compensation with the long-term performance of the combined companies. However, if the financial incentives are awarded over a relatively short period of time (one or two years), management and shareholder interests may not be sufficiently aligned. Executive compensation closely related to size of the company over efficiency also creates problems as managers may prefer non-value-enhancing growth.
12. Gregor Andrade, Mark Mitchell, and Erik Stafford, "New Evidence and Perspectives on Mergers," *Journal of Economic Perspectives*, Vol. 15, No. 2 (2001): 103–120.
13. In re John Q. Hammons Hotels Inc. Shareholder Litigation, No. 758-CC, 2011 WL 227634 (Del. Ch. Jan. 14, 2011).
14. Gary Trugman, *Understanding Business Valuation*, 4th ed. (New York: American Institute of Certified Public Accountants, 2012), 428.
15. James R. Hitchner, *Financial Valuation: Applications and Models*, 3rd ed. (New York: John Wiley & Sons, 2011), 63.
16. Ibid., 64–65
17. Jay Fishman, Shannon Pratt, J. Clifford Griffith, and James Hitchner, *PPC's Guide to Business Valuations*, 22nd ed. (Fort Worth, TX: Thomson Reuters 2012), 5–9.

Michael Harter is a senior associate in our Portland, Oregon, practice office. Mike can be reached at (503) 243-7501 or at maharter@willamette.com.