

## **The Three Essential Factors in Estimating Business Value or Commercial Damages**

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### **Abstract**

The income approach is a common and accepted manner of estimating the value of both publicly-traded and closely-held businesses, as well as calculating certain types of commercial damages. The most common method within this approach is known as “discounted cash flow” or DCF. Although there are a number of variations within this method, it is common for practitioners to only analyze accounting-based financial statements of the subject company from the most recent few years, and use these as the basis to estimate the future growth rate of revenue and costs.

In this paper, we first demonstrate the widespread use of this method, citing a number of authorities. We next show how the standard DCF method, although it typically involves a hundred or more individual entries in a number of tables, actually relies heavily on just three critical factors: the share of revenue that is distributable profits; the growth path of revenue; and the discount rate. Given this framework, we review commonly-used business valuation references, and show how they often provide little guidance on estimating the growth rate in revenue. We note that an examination of the factors underlying the growth rate assumption are often explicitly required by case law, statute, or regulation. We also note briefly that the basic assumptions of the “build up” CAPM model are violated when applied to privately-held firms.

We next demonstrate how changing any of these critical factors substantially affects the valuation or commercial damages estimates, using two case studies based on actual companies.

*JEL codes: G3, K0, K4, M2*

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### **I. Introduction**

The income approach is a common and accepted manner of estimating the value of both publicly-traded and closely-held businesses, as well as calculating certain types of commercial damages. The most common method within this approach is known as “discounted cash flow,” which involves projecting some measure of income for the objective company for future years. Although there are a number of variations within this method, it is common for practitioners to analyze accounting-based financial statements, and use these as the basis to estimate the future growth rate of revenue and costs. It is also common to use information on publicly-traded companies to estimate the discount rate using a “build up” method based largely on the classic CAPM. Then, the “cash flows” are discounted to a present value, which becomes the estimate of the firm’s value, before any other adjustments.

However, many texts that describe this method rely almost exclusively on the company’s past financial statements for source data. While accounting information is clearly important, if not essential, it is fundamentally unsuited for valuation purposes because it is collected using the “historical cost” principle. This principle, while both venerable and proper for accounting and management, is quite different from the forward-looking principle of valuation.

In this paper, we show how the income method can be both streamlined and improved, by distilling the accounting and other information required for a valuation estimate to just three key critical factors: the share of revenue that is distributable profit, the growth path of revenue, and the discount rate. We next demonstrate how changing any of these critical factors substantially affects the valuation estimates. Finally, we provide case studies that illustrate how changing these factors results in changes in the implied valuation or commercial damages amount.

### **II. Approaches to Estimating the Market Value of Privately-Held Firms**

#### ***“Market Value” Defined***

The value of any asset is defined as the price a willing buyer would pay to a willing seller, in an arms-length transaction, where both parties have adequate information. This definition of “market value” is used

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widely in business, finance, and law, and is the basis of all the methods of estimating value used in this report.

One recent court decision included this summary of the standard:

Fair market value is determined by application of the ubiquitous “willing buyer-willing seller” test, defined as “the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts.” When applying the willing buyer-willing seller test, “the potential transaction is to be analyzed from the viewpoint of a hypothetical buyer whose only goal is to maximize his advantage. Courts may not permit the positing of transactions which are unlikely and plainly contrary to the economic interest of a hypothetical buyer.”<sup>1</sup>

### ***Application to Privately-Held Firms***

Most companies are privately-held, meaning that the ownership shares or interests are not traded in any market available to a broad group of investors. There are many reasons why the owners of these firms do not take the steps necessary to allow public trading. These include:

1. The time and expense necessary to establish the corporate structure that allows for traded equity shares. This form is generally known as the “C corp” form in the United States.
2. The desire to have the enterprise remain a “pass-through” entity to minimize the double taxation of dividend earnings that sometimes occurs with “C” corporations in the United States. Pass-through entities include partnerships, “S” Corps, and limited liability companies. In these entities, the taxable earnings of the company are imputed to the owners, generally in proportion to their ownership interests.
3. The size of the firm is too small to warrant the expense, or to qualify for trading on an exchange.
4. The owners prefer the direct control of a single or small group of managers who are also owners, and therefore prefer a non-C corp structure or a non-publicly-traded C corp.
5. The firm and its owners do not wish to subject themselves to the additional regulatory burden inherent in becoming publicly traded.

We will return to these reasons when we discuss the appropriate discount rates to use for privately-held firms below.

### ***Approaches to Valuation***

In most cases involving privately-held firms, there is no purchase transaction that establishes such a value. Thus, methods of estimating the value of such business assets have been developed and refined. It has been common to state that there are “three generally recognized methods” of business valuation, which are:

1. Sales or Market Approach—The most direct method, if data are available, is to review recent transactions for similar assets.
2. Historical Cost Approach—This method is based on standard accounting practices of taking the historical cost of assets and depreciating them over time. For valuation purposes, historic-cost-based accounting values almost always must be adjusted significantly in order to approximate market value.

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1. *Patricia Adams v. United States*, US Court of Appeals for the 5th Circuit, No. 99-10497; citing *Estate of Bonner v. United States*, 84 F.3d 196, 198 (5th Cir. 1996).

3. Income Approach—The “economic income,” “anticipated benefits,” or “discounted cash flow” methods are the basis for most financial analyses. It converts a future stream of benefits into a present-value amount.

Indeed, these three approaches are recognized by the Internal Revenue Service,<sup>2</sup> accounting and appraisal authorities,<sup>3</sup> and business valuation authorities.<sup>4</sup> However, much recent research in the underlying economics of business valuation, as well as the trend in professional practice, has undermined this easy classification. In particular, there has been severe criticism of the improper use of accounting-based historical cost figures to estimate market value, the reliance on accounting income statements as the fundamental basis for forecasting future revenue, and the naive application of CAPM models to the discount rates for private firms.<sup>5</sup>

There are other methods that do not fit neatly in the categories described above. In particular, contingent claims (or option) value methods are often best suited to those assets with significant uncertainties. In particular, if an investment may produce either zero return, or a substantial return, it often should be evaluated as if it were a “real option.” Newer methods, including dynamic programming, have been developed to explicitly deal with valuation under uncertainty.<sup>6</sup>

### ***Fundamental Equivalence of Methods***

If done correctly with adequate data, the estimated market prices using the market or economic income approaches should be very close to each other. Each should represent a good estimate of the amount a willing buyer would pay to a willing seller.

However, a historical-cost-based approach cannot, in general, provide an accurate estimate of current market value of an operating business asset. That does not mean historical-cost based accounting statements are useless; indeed, they are essential to the management of a business and are often one of the primary data sources for a business valuation. However, historical cost is a completely different principle than mar-

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2. See IRS Publication 561, “Determining the Value of Donated Property,” [Feb. 2000 edition cited], which three methods for valuing real estate: “comparable sales,” “capitalization of income,” and “Replacement cost new or reproduction cost less observed depreciation” methods. The publication states that interests in a business should be valued by considering the fair market value of the assets, plus an amount based on the “demonstrated earnings capacity of the business,” along with other factors.

3. See American Society of Appraisers, *Business Valuation Standards*, which include standards (BVS III, IV, and V) for the Asset-Based Approach, Income Approach, and Market Approach to Business Valuation. These standards can be found at: <http://www.bvappraisers.org/standards/bvstandards.pdf>. See also the *International Glossary of Business Valuation Terms*, which has been adopted by the American Institute of Certified Public Accountants, the American Society of Appraisers, and other Canadian and United States-based financial societies. The 2001 statement recognizes three approaches to valuation: the income approach, the market approach, and the asset approach. Found at: <http://www.bvappraisers.org/glossary/glossary.pdf>.

4. For example, Pratt, Reilly, and Schweihs, *Valuing a Business*, 3d ed., New York: McGraw-Hill, 1996; chapter 3. Pratt, *et al.*, identify three methods of valuation as the income approach, the market approach, and a modified cost approach called the “asset-based approach.”

See also Anderson, “New Developments in Business Valuation,” in *Litigation Economics*, Elsevier, 2005, which discusses the limitations of this categorization and presents newer methods.

5. These criticisms are summarized in Anderson (2005).

6. Newer methods are discussed in Anderson, Patrick L., “New Developments in Business Valuation,” in *Litigation Economics*, Elsevier, 2005, which contains additional references to original sources. The dynamic programming and investment under uncertainty sources include Dixit & Pindyck (1994), Stokey & Lucas (1989), and Bellman (1957). A compendium of articles on the real options approach is Schwartz & Trigeorgis (2001).

ket value, and therefore statements based on historical cost should not be expected to provide a basis for market value.<sup>7</sup>

### ***Focus on Income Approach***

The best, though often unobtainable, method of valuing an asset is to examine actual sales of that asset. For privately-held firms, however, information on actual sales transaction prices are usually very difficult to obtain. Anecdotal information and actual prices on occasional transactions are often the basis for the development of certain “rules of thumb” in industries where the businesses are similar enough to allow the creation of such a “rule.”

In this paper, we will examine primarily the challenge of estimating the market value of a privately-held firm in which there are no market transactions that establish such a value, and where historical income statements do not provide the basis for such a value estimate. This is a very common situation for business valuation and commercial damages work by economists and other financial professionals.

### **III. The Income Approach to Valuation**

If a market transaction price is not available, an “economic income” or “capitalized income” method is a reasonable choice for estimating the value of a business.

Financial theory is based on the principle that the value can be estimated by summing the present value of future cash flows derived from the asset and adjusting for risk and other factors. A business enterprise, or a separable line of business within an enterprise, is an asset that can be valued with this approach. One of the methods within the “income” approach to valuation is known as “discounted cash flow,” which is commonly abbreviated as DCF. As the name implies, in this method the future cash flows to the firm are forecasted. These cash flows must include both revenue and expenses, including cash used for capital and operating purposes.

These cash flows (which may be negative in some periods) are then discounted using an appropriate discount rate. If the cash flows being discounted are “to the firm,” then the appropriate discount rate is the weighted average cost of capital to the entire firm.<sup>8</sup> If the cash flows are “to the equity,” then the appropriate discount rate is the equity discount rate.

### ***Essential Information for Business Valuation***

Valuation authorities recognize certain categories of information as essential to properly estimate the market value of a company. As the market value of a company is based on its ability to generate profits, the

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7. In addition to the criticisms from economists mentioned above, the ASA business valuation standard itself includes the following disclaimer:

The asset-based approach should not be the sole appraisal approach used in assignments relating to operating companies appraised as going concerns unless this approach is customarily used by sellers and buyers. In such cases, the appraiser must support the selection of this approach.

8. This typically involves, for a C corp, the after-tax cost of debt and the cost of equity, weighted by the share of the market value of the firm for each. Of course, the market-value-weighted financing costs are used to estimate the market value. An iterative method to estimate the market-value-weighted cost of capital was outlined in Anderson (2004b) and Abrams (2001).

same information is necessary for a damages analysis involving future lost profits. In general, the elements that should be considered in any valuation are listed in Table 1, “Essential Elements of Valuation,” on page 5.<sup>9</sup>

**Table 1. Essential Elements of Valuation**

<b>Accounting Information</b>	<b>Economic Information</b>	<b>Management Policies</b>
Historical sales and revenue	Growth assumptions for company	Management and management policies
Cost and profitability	Economic conditions in the industry	Important business plan assumptions
Capital structure and discount rate	Conditions in geographic trade area	
History and form of business operation	Value of franchises, licenses, and intangible assets	
Any material, peculiar conditions	Market transactions for similar businesses	

This summary categorizes the essential information into management, economic, and accounting information. Other authorities include similar information. A number of these authorities are excerpted in “Appendix: Standards for Business Valuation” on page 16.

#### **IV. Distilling Information: Three Essential Factors**

The fundamental quantitative variables for an income approach valuation estimate can be distilled to just three:

1. The future path of revenue to the firm, normally forecasted using a base-year revenue and a growth rate.
2. The share of that revenue that becomes income to the owner, or to the firm
3. The discount rate to apply to future income.

The economics underlying the income approach boils down to just these three factors. This can be demonstrated by reviewing basic financial theory of present value of a dividend-paying security. If we know the revenue for the company in the future and the share of those revenues it will pay in a dividend, and also apply a discount rate to those revenues, then we have a simple present-value calculation that yields an estimate of the market value of the security in the market today.<sup>10</sup> Adding other assumptions, such as the risk inherent in the company, the interest rates and dividend yields on other securities, and the theory may provide stronger conclusions about what the price must be in the market.<sup>11</sup>

Below, we demonstrate how changing any of these critical factors substantially affects the valuation estimates. We also discuss methods to estimate each factor.

9. This summary is from Anderson (2004b), chapter 10.

10. See, e.g., Leroy’s presentation of “present value” in *The New Palgrave: A Dictionary of Economics*; or Anderson (2004b, chapter 10) based on a similar approach.

### 1. Estimating the Share of Revenue Distributable to Profits

The first step in valuing a business is defining the earnings or “cash flow” to the owner, or to the firm itself. Typically, analysts use the net cash flow to equity or the cash flow left for equity owners. There are a surprising number of variations in the definition of “cash flow.” Table 2, “Comparison of Cash Flow Definitions,” on page 6 shows various definitions of net cash flow to equity, drawn from four well-known textbooks.<sup>12</sup>

All four sources contain the same three main components of cash flow to equity: 1. net income, 2. depreciation, amortization, and other non-cash charges, and 3. changes in net working capital.

However, Damadoran, Hitchner, and Abrams also deduct capital expenditures. Hitchner, Abrams, and Pratt et al. also consider changes in debt. Abrams additionally considers other cash received from equity transactions and capital sales.

**Table 2. Comparison of Cash Flow Definitions**

<b>Abrams (2001)</b>	<b>Damadoran (2002)</b>	<b>Hitchner (2003)</b>	<b>Pratt, Reilly, Schweih's (1998)</b>
+ Net Income	+ Net income after tax	+ Net income after tax	+ Net income
+ Depreciation and other non-cash charges	+ Depreciation	+ Depreciation, amortization, and other non-cash damages	+ Depreciation, amortization, other non-cash charges
- Increases in required working capital	- Investments in non-cash working capital	- Incremental working capital needs	- Changes in net working capital
- Capital expenditures	- Capital expenditures	- Incremental capital expenditure needs	
+ Increases in long term debt		+ New debt principal in	+ Net changes in long-term debt
		- Repayment of debt principal	
+ Additional equity transactions			
+ Selling price of property, plant, and equipment disposed of or retired			
+ Proceeds received from the sale of stock			
- Payments for treasury stock			
Net cash flow to equity	Net cash flow to equity	Net cash flow direct to equity	Net cash flow to equity

11. In particular, the theory underlying risk-neutral valuation often assumes “complete” markets, no transaction costs, and a risk-free security. In such cases, a no-arbitrage condition may force the theoretical market price to exactly equal the net present value of the future (assumed to be known) dividend stream. This is, of course, a theoretical world that is somewhat distant from the world of privately-held firms, but the underlying economic theory is still sound. Rigorous treatments of risk-neutral valuation techniques are in many financial economics texts, including Duffie (2001). Dixit and Pindyck (1994) include a pioneering and systematic treatment of uncertainty.

12. These four texts are *Quantitative Business Valuation*, by Jay B. Abrams (2001), *Investment Valuation*, by Aswath Damadoran (2002), *Financial Valuation: Applications and Models*, edited by James R. Hitchner (2003), and *Valuing a Business, Third Edition*, by Shannon Pratt, Robert F. Reilly, and Robert P. Schweih's (1996).

The variation in definition of “net cash flow” indicates that practitioners should be cautious about relying on the term “cash flow” unless they are certain about its definition. Even if we are certain about the definition, we may still need to look at additional information, or complete additional analysis.

### *Use of Firm-Specific and Industry-Average Information*

To arrive at an earnings figure upon which to base our estimates, we would normally examine the actual books of a firm. Often, a practitioner must make significant adjustments to the “income” figure used for tax reporting or in accounting statements, in order to produce an “earnings” figure that is the actual profits that can be distributed to owners.

However, often we do not have access to these records.<sup>13</sup> Therefore we sometimes use other sources upon which to base our estimates of earnings. Among these are the Risk Management Association (“RMA”) data and those from the *Almanac of Business and Industrial Financial Ratios*, which provide descriptive statistics taken from a number of actual firms in individual industries. These provide a basis for estimating the share of a company’s revenue in specific industries typically spent on operating expenses. Of course, these are averages within certain industry segments and must be considered accordingly.

## **2. Estimating the Growth Rate of Revenue**

Once the base-year revenue and net cash flow has been defined, the next step is to estimate the *path* of future revenue. Assuming that we have already identified a base-year amount, we can often forecast the future path using a growth rate or set of growth rates.<sup>14</sup>

The first step in estimating future growth is calculating the firm’s historical growth. There are two common arithmetic methods for calculating historical growth rates: the arithmetic average and the geometric average, or mean. An arithmetic average is a simple average of past per-period growth rates. This gives an Annual Average Growth Rate (AAGR). Alternatively, a geometric average allows for compounding of the growth rate over time and finds the Compounded Annual Growth Rate (CAGR):

$$CAGR = \left( \frac{Revenue_n}{Revenue_0} \right)^{(1/n)} - 1 \quad (Equation 1)$$

Where  $n$  is the final year and  $0$  is the initial year.

The more volatile the series is, the farther apart these two estimates will be. This is because the growth rate is used to estimate the path of future profits, which may be declining, flat, increasing or any combination of these. If the path of profits has been very volatile (growth is not uniformly increasing or decreasing), then the CAGR ignores the volatility by generating a growth rate that defines a smooth path between the start and end points. The AAGR accounts for this volatility by averaging over the entire path of growth. This difference is particularly pronounced in smaller firms because they tend to have more volatile growth than larger firms.

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13. Reasons why the records may not be available include: the subject company is no longer in business; is no cooperating with the valuation; has contrary interests; or has management that deliberately conceal or confuse the actual data.

14. In many cases, practitioners use a “smooth” path that can be constructed with just a single growth rate and a base year amount. Often, a “two stage” or “three stage” forecast is made, with different growth rates to signify a slowdown or speedup of business. In unusual cases, a large discontinuity occurs in one period’s revenue or profit.

Because of these issues, Damadoran (2002) recommends the CAGR over the AAGR. Abrams (2001) devotes an entire chapter to arithmetic and geometric means, and notes at least one theoretical advantage of the arithmetic mean. Indeed, one advantage to using the AAGR is that it incorporates all the available data. One disadvantage is that the AAGR ignores recent trends in the growth path that may show the company has recovered from a decline or has reached a plateau in sales, for example.

Aside from the algorithm for calculating the historical growth rate, there is the very serious matter of whether historical growth rates should be used to forecast future growth. Simply using the past rates—extrapolating rather than analyzing the causes and predicting—can cause serious errors, because it implicitly assumes that the future will be exactly same as the past.

One of the weaknesses in the common professional texts oriented to accountants is that they offer little insight about determining the growth rate. Hitchner (2003) mentions using GDP growth, industry growth and expected inflation. Damadoran (2002) considers that analysts may project growth based on a number of factors in addition to historic growth such as firm-specific information that has become public, macro-economic information, information from competitors, and other information about the firm. The economics-based texts, such as Gaughan (2003) and Anderson (2004) are much more specific on this matter, as might be expected. We note that, at least as far back as 1959, the IRS has insisted that the causal economic factors be considered when estimating the value of the firm, including the economics of the industry.<sup>15</sup> This is an area where thinking through the business and the economy is essential.

### ***3. Estimating the Discount Rate***

The final step is to appropriately discount the estimated future stream of cash flows back to the present day, accounting for both risk and the time value of money.

Use of a discount rate to quantify systematic and unsystematic risk is part of the Capital Asset Pricing Model (CAPM). CAPM is firmly grounded in economic theory, and many texts contain summaries. However, it is also based on publicly-traded markets, which are not applicable to privately-held firms.

Alternatively, some practitioners may use a “build-up” method. Although the use of this term is not consistent, some “build up” methods do not include a “beta.” This approach is not founded in economic theory and is instead based heavily on professional judgement, according to Hitchner (2003). Damadoran (2002) recommends the CAPM approach, noting the failure of more contemporary models to significantly improve upon CAPM. Because there are no actual price data for a large group of privately-held firms, we cannot observe the actual discount rates of investors.

Different methods for estimating a discount rate exist. Table 3, “Discount Rate Calculation Comparison,” on page 9 compares a sample of the different methods available. Hitchner (2003) uses four factors to make up the discount rate: the risk-free rate, the equity risk premium (multiplied by beta), the size premium, and the specific company risk. Damadoran (2002) defines the discount rate only in terms of the first two factors. Pratt et al (1998) use a method similar to Hitchner (2003).

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15. See “IRS Revenue Ruling 59-60 (1959)” on page 16.

**Table 3. Discount Rate Calculation Comparison**

<b>Damadoran (2002)</b>	<b>Hitchner (2003)</b>	<b>Pratt, Reilly, Schweih's (1998)</b>
+ Risk-free rate	+ Risk-free rate	+ Risk- free rate
+ Beta*(Equity risk premium)	+ Beta*(Equity risk premium)	+ Beta*(Long- horizon expected equity risk premium)
	+ Size Premium	+ Size Premium
	+ Specific company risk	+ Specific risk
Discount Rate	Discount Rate	Discount Rate

The first factor is typically identified as the rate of return on 20-year U.S. Treasury Bonds. For the second factor, the equity risk premium is the difference between the return on investing in the market and the return on investing in the risk-free asset. The industry standard is to estimate the historical equity risk premium. Various organizations publish estimates of equity risk premia and they vary by the time period used, the choice of the risk-free security, and the method of averaging (arithmetic or geometric). According to Damadoran (2002) estimates vary from as low as 4.5% to 12.7%. Hitchner (2003) recommends using sources that calculate the risk using an arithmetic mean.

Betas are calculated by investment sources. Each source adjusts the beta in a proprietary manner to bring it closer to the true risk. For privately-held companies, Pratt et al (1998) recommend using betas from publicly traded companies in the same industry. Publicly available data exists for measuring the size premium. The size premium is usually estimated showing the different returns based on market capitalization.

The specific company risk is determined by the analyst. The analyst may have additional information about the firm that helps determine its risk premium. Hitchner (2003) recommends adjusting the discount rate based on knowledge of factors such as the company's management, revenue volatility, ability to attract customers, or dependence on specific suppliers.

*Anderson Economic Group's Use of the Three Essential Factors*

Our business valuation practice follows the methodologies listed above with some exceptions and differences. Before demonstrating how these three factors affect the valuation estimates substantially, we would like to discuss how AEG differs in estimating these factors.

As stated above, an income approach to valuing a firm requires an assessment of a future stream of benefits. In our discounted cash flow valuation, we use income statements to analyze the revenue and costs associated with the business, and produce an estimate of net cash flow or distributable income as a share of revenue.

We then project revenue for the relevant products or lines of business. This estimate can be based on national trends as well as local trends for the brand, the category of good, and the industry overall. Typically, our growth rate assessment uses factors affecting the demand for the relevant products (or lines of business) mentioned above as well as the expected growth of the relevant population in the market area. In this way, we account for current growth and the potential for future growth.

We often add an adjustment for the rate of inflation to our growth rate to allow for price changes in the industry. However, industry price changes trail some measures of “consumer” inflation such as the CPI. We do not rely only, or even primarily, on the past performance trend of the company. As far back as 1937, James C. Bonbright warned against the danger of using realized earnings to forecast future earnings because realized earnings are “already water under the mill and have no direct bearing on what the property in question is now worth” (Bonbright cited in Pratt et al 1998).

*A systematic estimate of revenue growth*

To ground our future revenue estimate in historical fact, but base an estimate of future revenue on causal economic and business factors, we developed the following growth model:

$$g = \alpha + \beta_1 \text{histg}_{revenue} + \beta_2 g_{market} + \beta_3 g_{industry} + \beta_4 g_{product} + \varepsilon \quad (\text{Equation 2})$$

where:

$\alpha$  is a trend growth rate, independent of causal factors

$g$  = future growth rate of the company’s revenue

$\text{histg}_{revenue}$  = historical growth of the company’s revenue, sales, or cash flow, CAGR or AAGR based on the volatility of the data series

$g_{market}$  = growth rate of the relevant market variable, e.g. population growth rate, growth rate of the number of households with annual household income more than \$150,000 in a specific market

$g_{industry}$  = growth rate of the industry

$g_{product}$  = growth rate of the specific product

$\varepsilon$  is an error term to capture unexplained or random factors

Unfortunately, in practice, we typically do not have enough data to econometrically measure the betas in the equation above. We therefore use our professional judgement to determine the weights applied to the various growth rates. We look carefully at various sources of industry analysis as well as data from the business itself to determine how much weight to attribute to each of these growth rates. For example, when valuing a beer distributor, we would ascribe a higher weight to the growth rate of a Mexican beer ( $g_{product}$ ) if the relevant market area were Texas than if it were Idaho because industry resources show Mexican beers sell better in areas with a high Hispanic population. We believe the use of our professional judgment to determine the weights is better than relying completely on historic growth in revenue to explain future growth.

We follow the methodologies described above by Hitchner (2003) and Pratt et al (1998) to estimate the discount rate. When a valuation practitioner uses a build-up discount rate estimation technique, he or she needs to be cautious about the components of the model, including beta, the size premium, and the company specific premium (e.g., franchisee premium). For valuing a beer or wine wholesaler, a beer and wine industry beta can be used which wrongfully includes large beer and wine suppliers and importers. The better industry in this case would be food wholesalers.

There is no quantitative methodology for estimating a small company risk premium or other company specific risk premia, therefore most of the business valuation practitioners rely on their expertise and judgment on these variables. In the next section we will show how these factors are important in speaking to the valuation experts’ expertise and professional judgment.

## **V. Case Studies**

### ***Case Study I: Valuation of Beer Distribution Rights***

A multinational European-based beer supplier supplies some of the most popular imported beers in the United States. AEG was retained by the supplier to estimate the fair market values of the distribution rights of three wholesalers in one state. The valuation was done using the best available information and well-accepted methods of estimating the economic value of a firm. However, certain unique characteristics of the market affected the value of each distributor, and adjustments were made for discounts and premium factors for marketability, barriers to entry, scale, uniqueness of distribution system in the state, per-capita consumption and other market patterns, and dominance of brands in the certain market areas. We produced a report with sections for each distributor for use by the importer in improving its distribution network and negotiations with its distributors.

We would like to revisit our analysis for this case to demonstrate how important growth rate and discount rate estimates are in determining the fair market value of the distribution rights.

#### ***1. Discount Rate Analysis***

The cost of equity capital for that project was determined using three methods, including a modified CAPM approach. In calculating the cost of equity using a CAPM approach, we took into account the following factors:

- The distribution rights are not a “company” and not publicly traded, so no true “beta” can be estimated.
- We looked at the betas of publicly traded comparable firms in the beer and food wholesaler trade industries. We used stock market data of food wholesalers to estimate a beta for valued wholesalers. Given the average equity beta of 0.88 with a debt to equity ratio of 40%, we computed a beta of 0.7 for beer wholesalers without debt.
- We added a 2% small company and franchisee risk premium on top of the discount rate estimate to reflect the smaller nature of the distribution rights compared to large publicly traded food wholesalers, the additional risk in being a franchisee, and the business risk of being a one-line wholesaler compared to a multi-line food wholesaler.

Our method produced an equity discount rate of 12.2%.

For our valuation estimate, we used the most optimistic result, or the lowest discount rate estimate. We note that this is a quite favorable discount rate from the point of view of a seller of a business asset, and has the effect of increasing the value estimate. Many buyers would use a more conservative equity discount rate of 15% or even 20% for small, privately-held firms such as beer wholesalers.

#### ***Caution - 1: No Publicly-Traded Company Data for Beer Wholesalers***

Costs of capital for large, publicly traded companies in well-established markets can be estimated using data from stock and bond markets. However, the cost of capital for a beer wholesaler cannot be directly estimated in this manner, because:

- Wholesalers are generally much smaller than publicly-traded companies, such as those listed on the New York Stock Exchange;

- Wholesalers are often very closely held, frequently with ownership largely in the hands of one family;
- The beer distribution business is not the same as the production of beer or soft drinks, and the market data on companies that produce such beverages (e.g. Coca-Cola, Anheuser-Busch) is not indicative of that of beer wholesalers.

*Caution -2: No Discount for Marketability*

Since the firms which own the distribution rights are governed by state laws, which require fair market value compensation, we did not assume a discount for marketability. However, we note that franchise agreements (and often state laws) in this industry generally require a qualified person to manage a wholesaler, and this does create a *de facto* discount for marketability.

In the table below we used different discount rates to show how minor changes in the use of the discount rates affect the value estimates substantially.

**Table 4. Effect of Discount Rates on the Estimation of Distribution Rights Value**

Franchisee	Discount Rate Specs	Overall Discount Rate	Value Estimate	Percent Difference
<b>X</b>	Original (AEG): Beta: 0.7; Small company & franchisee risk premium: 2.0%	12.2%	\$555,108	
	Beta: 0.5; Small company & franchisee risk premium: 0.5%	9.3%	\$910,101	+64.0%
	Beta: 0.9; Small company & franchisee risk premium: 3.0%	14.7%	\$419,271	-24.5%
<b>Y</b>	Original (AEG): Beta: 0.7; Small company & franchisee risk premium: 2.0%	12.2%	\$2,067,622	
		9.3%	\$3,543,730	+71.4%
		14.7%	\$2,067,622	-25.6%
<b>Z</b>	Original (AEG): Beta: 0.7; Small company & franchisee risk premium: 2.0%	12.2%	\$5,204,180	
	Beta: 0.5; Small company & franchisee risk premium: 0.5%	9.3%	\$8,628,027	+65.8%
	Beta: 0.9; Small company & franchisee risk premium: 3.0%	14.7%	\$3,922,376	-24.6%

## 2. Growth Rate Analysis

Each wholesaler had a different portfolio of products and a different market area. In analyzing the sales trends we classified the brands into different groups. We analyzed the sales trends of these brands in the U.S. market and in the assigned market areas of the wholesalers for estimating the growth rates. Two major findings of the analysis regarding the growth rates were:

- The sales growth of a brand group varied in different market areas in the State. Sales growth in the wholesaler's market area is more important than the growth of the brand nationally.
- We used the compounded annual growth rate for the available years of specific data.

Our growth calculations included the following variables:

- annual sales growth of the Supplier's products for individual wholesalers (weighted 50%);
- annual population growth rate of the market area of each wholesaler (weighted 25%); and,
- annual national growth rate of the Supplier's brands distributed by each wholesaler in their market areas (weighted 25%).

We also adjusted estimated growth rates for the expected price inflation rate (2%) for beer and ale products.

An improper way of using the growth rate is just looking at a company's historical sales or revenue growth trends and use this growth rate figure to project future sales. Another important failure in assessing growth rates is not using an inflation adjustment. The table below demonstrates how this most common way of using the growth rate affect the valuation estimates.

**Table 5. Effect of Growth Rates on the Estimation of Distribution Rights Value**

Franchisee	Growth Rate Specs	Annual Growth Rate	Value Estimate	Percent Difference
<b>X</b>	Original (AEG Methodology)	2.7%	\$555,108	
	Using company's historical sales growth rate only	2.9%	\$574,244	+3.4%
	Using company's historical sales growth rate and no inflation adjustment	0.9%	\$451,071	-18.7%
<b>Y</b>	Original (AEG Methodology)	3.2%	\$2,067,622	
		3.0%	\$2,004,367	-3.1%
		1.0%	\$1,572,951	-23.9%
<b>Z</b>	Original (AEG Methodology)	2.9%	\$5,204,180	
	Using company's historical sales growth rate only	3.5%	\$5,714,586	+9.8%
	Using company's historical sales growth rate and no inflation adjustment	1.5%	\$4,404,000	-15.4%

## ***Case Study II: An Auto Franchisee Company's Valuation***

In the first case study, we consider a franchisee of one of the leading franchisors in the automobile industry.<sup>16</sup> The franchisee was involved in a breach of contract dispute with its franchisor. The franchisor had purchased a competitor, allowing it to survive bankruptcy and compete against the franchisee. AEG prepared a detailed damages analysis that estimated the proper dollar amount of damages to the franchisee based on three separate loss categories. Damages were estimated to account for loss due to the competitor's cannibalization of the franchisee's sales, loss due to subsidization of the competitor, and loss of expansion opportunities by the franchisee. This involved a detailed market assessment of the area, an analysis of the proper standards under the law and industry practice, a forensic analysis of the franchise agreements, and financial analysis of the business and its value.

In order to look at what effect the three major categories of assumptions would have on an auto franchisee, we systematically made different assumptions or used different methods in order to obtain a different value. All of the numbers shown are based on the actual numbers we used in our report. Overall the most the value changed was a drop of 17% (or \$5 million) when the expenses used were reformulated. A change in the growth rate calculation reduced the value by 2% (or \$700,000).

### ***1. Expenses Analysis***

Taking another look at expenses, we determined it would be possible to make changes in how expenses were categorized. First, "parking", "insurance, other", and "copying" were changed from semi-fixed expenses to variable expenses. There will always be a certain amount of ambiguity looking at a company's income statements. In this case, these items may change quite a bit per car. The next changes were reallocating "manager salaries," "officer salaries," "clerical," and "payroll taxes and benefits" from fixed expenses to semi-fixed expenses. Other employee-related expenses were already included in semi-fixed expenses such as "mechanic's salaries" and "rental personnel". Senior level or corporate staff employment may change less with changes in the number of cars rented, but are still likely to experience the changes that other employees are subject to. The final change was to move "utilities" from semi-fixed to fixed expenses. This was done to include it with "building maintenance" and "rent stations".

With all the changes in place, variable expenses became 25.12% of revenue before depreciation, instead of 23.35%. Semi-fixed expenses increased to 26.88% of revenue from 18.98%. This resulted in three new estimates of lost profits. Each of these estimates were 17% lower than the original estimates, resulting in an overall difference of \$5,182,563.

### ***2. Growth Rate Analysis***

Our growth rate analysis focused on using a different method for calculating growth rates. In our work, we typically use a compounded annual growth rate (CAGR). The drawback to this method is that it uses two data points to determine a trend (the first and last year), ignoring the information found in the intervening years. The advantage to using the CAGR is that it is a type of trend analysis. The important part of valuation is not that every number is correctly estimated, but that the final number is. Using the CAGR allows us to project revenue based on an underlying trend.

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16. The economics of franchising is discussed in Blair & LaFontaine (2005), and Anderson (2004a).

Using the average annual growth rate (AAGR) resulted in small differences. Thus, the AAGR may be a sanity check to the valuation. There were five factors that determined the growth rate we used: company revenue growth from 1991-2002, company revenue growth from 2002-2005, real Gross State Product growth from 2000-2005, state population growth from 1990-2005, and tourism growth in the state from 2002-2004. Each of these rates were calculated as CAGR originally, and were changed to AAGR. For the most part, these differences were minor, less than 0.25 percentage points. One of the larger changes was a 0.66 percentage point drop in revenue growth from 2002 to 2005. This actually changed the rate from a positive to a negative number. Overall, the final damages calculations were 2% smaller than the original, a difference of \$698,003. The key reason for the small difference between estimates using CAGR and AAGR is the low volatility of the franchisee's historical revenue figures.

In this example, quite large differences to the estimates were found in reallocating expenses while much smaller ones were found by changing the growth rate methodology. A summary of the different estimates is shown in Table 6, "Summary of Changes to Auto Franchisee," on page 15. The example shows how important assumptions about expenses can be in DCF analysis.

**Table 6. Summary of Changes to Auto Franchisee**

Damages Analysis	Original (AEG)	Expenses Changed	Difference	Growth Rate Changed	Difference
Lost Profits Due to Cannibalization	\$17,840,527	\$14,815,181	-17%	\$17,421,164	-2%
Lost Profits Due to Subsidization of Competitor	\$9,653,035	\$8,016,101	-17%	\$9,437,752	-2%
Lost Profits Due to Reduction in Growth Options	\$3,068,122	\$2,547,839	-17%	\$3,004,765	-2%

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## **VI. Appendix: Standards for Business Valuation**

### **Exhibit 1-1. Code of Federal Regulations: Fair Market Value**

The fair market value is the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts. The fair market value of a particular item of property includible in the decedent's gross estate is not to be determined by a forced sale price. Nor is the fair market value of an item of property to be determined by the sale price of the item in a market other than that in which such item is most commonly sold to the public, taking into account the location of the item wherever appropriate.

Source: Code of Federal Regulations (for US Code Title 26), Sec. 20.2031-1 Definition of gross estate; valuation of property, subsection (b).

### **Exhibit 1-2. Professional Summary of Fair Market Value Elements (Mercer)**

Section 20.2031-1(b) of the Estate Tax Regulations (section 81.10 of the Estate Tax Regulations 105) and section 25.2512-1 of the Gift Tax Regulations (section 86.19 of Gift Tax Regulations 108) define fair market value, in effect, as [1] the price at which the property would change hands [2] between a willing buyer [3] and a willing seller [4] when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, [5] both parties having reasonable knowledge of the relevant facts. Court decisions frequently state in addition that [6] the hypothetical buyer and seller are assumed to be able, [7] as well as willing, to trade and [8] to be well informed about the property and [9] concerning the market for such property. [parenthetical numbers added]

Mercer (1999); similarly stated in many other references.

### **Exhibit 1-3. IRS Revenue Ruling 59-60 (1959)**

#### SEC. 4. FACTORS TO CONSIDER.

.01 It is advisable to emphasize that in the valuation of the stock of closely held corporations or the stock of corporations where market quotations are either lacking or too scarce to be recognized, all available financial data, as well as all relevant factors affecting the fair market value, should be considered. The following factors, although not all-inclusive are fundamental and require careful analysis in each case:

- (a) The nature of the business and the history of the enterprise from its inception.
- (b) The economic outlook in general and the condition and outlook of the specific industry in particular.
- (c) The book value of the stock and the financial condition of the business.
- (d) The earning capacity of the company.
- (e) The dividend-paying capacity.
- (f) Whether or not the enterprise has goodwill or other intangible value.
- (g) Sales of the stock and the size of the block of stock to be valued.

(h) The market price of stocks of corporations engaged in the same or a similar line of business having their stocks actively traded in a free and open market, either on an exchange or over-the-counter.

Source: Original text provided by TaxLinks; found at: <http://www.taxlinks.com>.

Note: This ruling was later “modified” by RR 65-193, and “amplified” by RR 77-287, RR 80-213, and RR 83-120. However, these modifications and amplifications did not change the listed essential elements of a valuation estimate for US income tax purposes.

#### **Exhibit 1-4. Professional Summary of Business Valuation Factors (Gaughan)**

##### *Factors to Be Considered When Doing a Business Valuation*

Several factors need to be analyzed when conducting a business valuation. These include firm-specific factors as well as external variables such as the state of the economy and the condition of the industry. These external factors define the environment in which the firm operates. Firm-specific factors reflect the unique aspects of the firm as it operates in this economic environment.

Note: Gaughan then describes in separate sub-sections the following factors: firm-specific factors, economic factors, industry factors, and financial analysis. He also lists the elements of IRS RR 59-60 as a reference.

Source: Gaughan (2003), chapter 8.

#### **Exhibit 1-5. Professional Summary of Business Valuation Elements (Trout)**

On a larger scale, other factors shown in the following list must be considered before beginning the pathway shown in [a flow-chart figure in the original text showing the steps in a financial analysis].

1. *Macroeconomic Factors*. The economy,...
2. *Microeconomic Factors*. Industry analysis, industry valuation ratios, intra-industry competition, typical use of debt in the industry, customers, suppliers.
3. *Firm-Specific Factors*. Market share, historic financial characteristics, debt ratio, diversification, customers, suppliers, competitive position in the market.
4. Selection of Comparable Companies...
5. Determination of Market Comparables for Target Company...

All of these factors should at least be considered in preparing a valuation report, even if some of the factors do not play an important part in the analytical process.

Source: Trout, in Gaughan (2003), chapter 8.

#### **Exhibit 1-6. Professional Appraisal Standards for Federal Agencies**

##### Standards Rule 9-4

In developing a business or intangible asset appraisal, an appraiser must collect and analyze all information pertinent to the appraisal problem, given the scope of work identified in accordance with Standards Rule 9 2(e).

- (a) An appraiser must develop value opinion(s) and conclusion(s) by use of one or more approaches that apply to the specific appraisal assignment; and
- (b) include in the analyses, when relevant, data regarding:
  - (i) the nature and history of the business;
  - (ii) financial and economic conditions affecting the business enterprise, its industry, and the general economy;
  - (iii) past results, current operations, and future prospects of the business enterprise;
  - (iv) past sales of capital stock or other ownership interests in the business enterprise being appraised;
  - (v) sales of similar businesses or capital stock of publicly held similar businesses;
  - (vi) prices, terms, and conditions affecting past sales of similar business equity; and
  - (vii) economic benefit of intangible assets.

Comment: This Standards Rule directs the appraiser to study the prospective and retrospective aspects of the business enterprise and to study it in terms of the economic and industry environment within which it operates. Further, sales of securities of the business itself or similar businesses for which sufficient information is available should also be considered.

Source USPAP (2005), Standards Rule 9-4, and comment.

Found at: <http://commerce.appraisalfoundation.org/html/USPAP2005/toc.htm>.

Note: See also Hitchner (2003), chapter 10, describing US Professional Appraisal Practices (USPAP). Hitchner notes that compliance with USPAP is required for transactions under the authority of federal agencies including the Federal Reserve Board, FDIC, Office of Thrift Supervision, and Office of the Comptroller of the Currency. However, the IRS has not adopted USPAP.

#### **Exhibit 1-7. Conduct Rule for Professional Appraisals for Federal Agencies**

##### *Ethics Rule*

An appraiser must perform assignments ethically and competently, in accordance with USPAP and any supplemental standards agreed to by the appraiser in accepting the assignment. An appraiser must not engage in criminal conduct. An appraiser must perform assignments with impartiality, objectivity, and independence, and without accommodation of personal interests.

In appraisal practice, an appraiser must not perform as an advocate for any party or issue.

Source: USPAP (2005), Ethics Rule.

Found at: <http://commerce.appraisalfoundation.org/html/USPAP2005/toc.htm>.

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