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Portfolio Valuation

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I. INTRODUCTION

Intellectual property rights have become increasingly important to business success in recent decades. For most of the twentieth century, tangible assets were regarded as the primary source of business value. Although the market was aware of intangible assets such as intellectual property, its value appeared seemingly unquantifiable. Intangible assets, however, began receiving increased recognition as market values of publicly traded companies, such as those represented by the S&P 500 Index, rose from about 1.1x book value in the late 1970s to nearly 2.5x book values today.[1] While tangible assets might account for some of a company's stock market appreciation, for example, the effects of inflation on equipment values and appreciation on real estate, the total appreciation for most companies has far exceeded any tangible asset explanation. Accordingly, the growing divergence between market and book values must be due to intangible assets. This awareness has highlighted the need for proper valuation of these assets that, in the past, appeared unquantifiable. An understanding of the mechanisms by which intangible assets, and the important sub-category of intellectual property, contribute to value can lead to more effective management of those assets.

Understanding the value contribution of an asset requires an understanding of how it contributes to current and future profitability, cash flows, and risk reduction. Intellectual property has had an expanding ability over the past few decades to enable its owners to command premium prices, lower costs, increase market shares, and even generate supplemental royalty income. To quote Christopher Arena and Eduardo Carreras, "knowledge is the means

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[1] *See* NED DAVIS RESEARCH, INC., http://www.comstockfunds.com/files/NLPP00000%5C030o.pdf (last visited Dec. 2, 2013); *see also* Ted Hagelin, *Valuation of Intellectual Property Assets: An Overview*, 52 SYRACUSE L. REV. 1133, 1133 (2002).

for creating value . . . intellectual property is the means for extracting that value."[2]

This article begins by highlighting the differences between tangible and intangible assets, as well as the major types of intangible assets. Part III provides market evidence of the substantial effects that intangible assets (specifically, intellectual property) can have on the value of a business. Part IV outlines standard approaches for valuing intellectual property. Part V discusses common situations when intellectual property valuations are performed and management considerations regarding when and how those actions are performed. This article concludes by re-affirming the need to understand value to effectively manage intellectual property portfolios.

II. TANGIBLE ASSETS, INTANGIBLE ASSETS, AND INTELLECTUAL PROPERTY

Assets of a business can be generally categorized as either tangible or intangible. Tangible assets are comprised of physical and financial assets. Physical assets include, for example, manufacturing equipment, buildings, land, and inventory. Examples of financial assets include cash, marketable securities, and accounts receivable. Intangible assets are, of course, all assets that are not tangible.

Some intangible assets are considered "identifiable" because the benefits from such assets can be isolated and separately valued. Most identifiable intangible assets, such as patents, are considered to have a finite life, but some, such as a trademark, may be expected to have value indefinitely—if properly maintained.

An important class of identifiable intangible assets relates to relationships, including: contractual rights and non-contractual

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[2] CHRISTOPHER M. ARENA & EDUARDO M. CARRERAS, THE BUSINESS OF INTELLECTUAL PROPERTY 23 (Oxford University Press 2008).

relationships with customers, suppliers, employees,[3] government entities, and others.

Another general category of identifiable intangible assets is, of course, intellectual property: patents, trade secrets (know-how, recipes, etc.), trade names, trademarks and copyrighted materials (software, movies, drawings, etc.). The value of intellectual property assets derive from, and are enhanced by, their statutory recognition and legal protection.

A final general category of intangible assets, commonly known as goodwill, relates to the synergies from the assemblage of tangible and identifiable intangible assets.[4] Goodwill may allow the company to realize enhanced profits relative to what a competitor could realize from the same asset.[5] For example, a new product design launched using a well-known trade name and backed by a

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[3] CODIFICATION OF ACCOUNTING STANDARDS AND PROCEDURES, Business Combinations No. 805, § 805-22-55 (Fin. Accounting Standards Bd. 2013). For financial reporting purposes under U.S. Generally Accepted Accounting Standards (GAAP), relationships with employees of an acquired entity are commonly valued as an identifiable intangible asset known as "workforce-in-place" and then included with the total reported goodwill. Non-compete agreements with employees might also be separately valued and amortized over their expected remaining life.

[4] Note that the term "goodwill" may have different meanings in different contexts. While GAAP accounting considers the value of a trademark to be distinct from a business entity's goodwill, trademark law often refers to the goodwill of a mark. *See* Robert G. Bone, *Hunting Goodwill: A History of the Concept of Goodwill in Trademark Law*, 86 B.U. L. REV. 547, 548–49 (2006). The goodwill of an entity is most often valued using a residual method; the difference between the value of the whole and the sum of the values of the specifically identified assets is considered to be goodwill. *See id.* at 570–72.

[5] The concept of the identity of the alternative buyer varies based upon the standard of value that is used in a valuation. For example, the Internal Revenue Service recognizes a "hypothetical buyer" under the fair market value standard. The U.S. GAAP recognizes a "market participant" under the fair value standard used for financial reporting purposes. Other standards, such as the value to a specific buyer (known as "investment value"), might be appropriate in other circumstances.

strong patent portfolio might enable the owner to achieve faster market penetration and maintain a longer run of market dominance than an alternative owner with a strong trade name but without patent protection.

Likewise, the strength of the assemblage of assets impacts the owner's ability to create future identifiable intangible assets to replace existing assets that become obsolete or lost. Ongoing research and development efforts can lead to new invention disclosures and become a part of tomorrow's patent portfolio. An entity's sales force could add new customers to replace the attrition of existing customers. Future brand launches may add a new group of loyal customers. Thus, goodwill—often referred to as "going concern value"—captures expectations related to the company's ability to create new identifiable intangible assets in the future.

An important distinction between intellectual property and other intangible assets relates to their abilities to be leveraged. The financial benefits of intangible assets that are not intellectual property are usually limited to use in the owner's business or by selling the business as a whole to a third party.[6] By contrast, the legal rights attached to intellectual property enable it to be commercialized outside the scope of the business enterprise that owns it, as well as used in the owner's business.[7] Thus, intellectual property has a greater ability to be leveraged.

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[6] L.M. BROWNLEE, ASSETS & FINANCE: AUDITS AND VALUATION OF INTELLECTUAL PROPERTY § 6:7 (2013) (explaining that intangible assets like goodwill, a trained or assembled workforce, or a customer contract, typically cannot be commercialized outside of the business that owns or operates them because owners and third party operators cannot share the same assembled workforce or the same customer contract at the same time).

[7] *Id.*

III. MARKET EVIDENCE OF THE IMPORTANCE OF INTELLECTUAL PROPERTY

Market evidence suggests that intangible assets, particularly intellectual property, account for a significant portion of most publicly traded companies' value. An indication of intangible asset value is the ratio of market value of invested capital to tangible book value of invested capital (M-TBV). While this ratio is similar to the stock market price-to-book ratio, the M-TBV ratio is less prone to the influence of other factors.[8]

To understand the M-TBV ratio, first consider the value of a 20-year U.S. Government T-Bond (Bond A). If Bond A has a face value of $1000, issues at par and has a coupon rate of 3%, the buyer is investing $1000 today in exchange for the promise to receive two $15 checks from the U.S. Treasury each year for the next twenty years and a check of $1000 at the end of the twenty years. Fast-forward five years into the future. If the market's required rate of return on that date for a 15-year T-Bond investment also happens to be 3%, then the investor could sell the remaining rights to those U.S. Treasury checks to a third party for $1000. Therefore, on that date, the historical investment in Bond A would be $1000 and the market value would be $1000, and the M-TBV would be 1.0x.

Now consider, five years in the future, 15-year $1000 T-Bonds are issuing at par with a coupon rate of 2%. Bond A would be worth more than $1000 on that date because Bond A would still be getting two $15 checks per year for fifteen more years, whereas, a new 15-year T-Bond would only have rights to two $10 checks per year. In fact, Bond A would have appreciated by about 13% to $1133. The decline in interest rates caused Bond A to appreciate in value. In the

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[8] Such factors, as will be discussed later, include differences in financial leverage and differences in organic versus acquisition-related growth. Note also that the M-TBV is similar but not identical to Tobin's q. *See* William C. Brainard & James Tobin, *Pitfalls in Financial Model Building*, 58 AM. ECON. R. 99, 101 (1968) (introducing "Tobin's q," which is the ratio of the market value of an asset to its replacement value).

1990s and earlier, the M-TBV ratio would have been 1.133x. More recently, GAAP rules have changed so that the book value of Bond A would periodically be "marked-to-market." The $133 appreciation would instead be recorded as income and the T-Bond book value would be reset to match its new market value at $1133. Thus, new GAAP "mark-to-market" rules force the M-TBV ratio to remain at 1.0x for this type of asset.

Next, consider the case of investing in a CNC laser cutting machine that costs $10,000. The buyer would expect to get future economic benefits equivalent to $10,000 plus some rate of return on the investment—perhaps at an after-tax rate of 8% per year. If the buyer expects to get steady use of the equipment for five years and then scrap it for no value—and if the equipment is depreciated at a straight-line rate that matches its usefulness, and if there is no unexpected obsolescence or change in interest rates—then its book value in two years (net of depreciation) of $6000 should approximate its resale (i.e., market) value. Its M-TBV would equal 1.0x. In other words, the owner could transfer (i.e., sell) the remaining benefits from the machine to another buyer at book value. Note that, under GAAP, book value would remain at its historical acquisition cost net of depreciation because these types of assets are generally not marked-to-market unless the value declines substantially. While it is possible that changes in interest rates or unexpected obsolescence could cause the resale value of the machine in two years to be greater or less than its $6000 book value, so that its M-TBV is greater than or less than 1.0x, it is unlikely that it would be worth two or more times that amount.

Now take a construction company that only does competitive bid work for the government; the government has to take the lowest qualified bid and relationships do not matter. The company draws union workers as needed from the local union hall, has no significant employee relationships, has no unique processes or management skills, and distributes earnings to owners when made. The book value of such a company would primarily consist of working capital, equipment, and possibly a headquarters building. Because this is a

company with few relationships or other sources of intangible value, its market value would be approximately equal to its book value, except to the extent inflation or other factors had impacted the resale value of its tangible assets. In other words, there may be little or no goodwill (also referred to as "blue sky") or identifiable intangible asset value for such a company, and the M-TBV ratio would be approximately 1.0x. Companies such as this do exist and evidence of their market value is apparent when they are acquired for 1.0x their net book value. These companies are usually privately held.

Compare the competitive bidding construction company to a construction company operating in a niche where relationships and know-how matter, for example, when building complex projects such as dams, nuclear plants, and skyscrapers. Being successful in that niche requires a talented team of designers, engineers, project managers, and business developers. Relationships with customers, suppliers, employees, governmental entities, and bankers are key assets. Software tools, drawings, databases, and production processes are also likely to be key proprietary assets. Trade names may help sway stakeholders, as well. Such a company would likely be worth substantially more than the value of its tangible assets (i.e., have an M-TBV well over 1.0x). The difference between market value and tangible book value might be a fair proxy for the value of the company's intangible assets. Figure 1 demonstrates these concepts, as well as several complexities, with just such a company: Jacobs Engineering.[9]

[9] CUPITOR CONSULTING, ANALYSIS OF CAPITAL IQ DATA (2013).

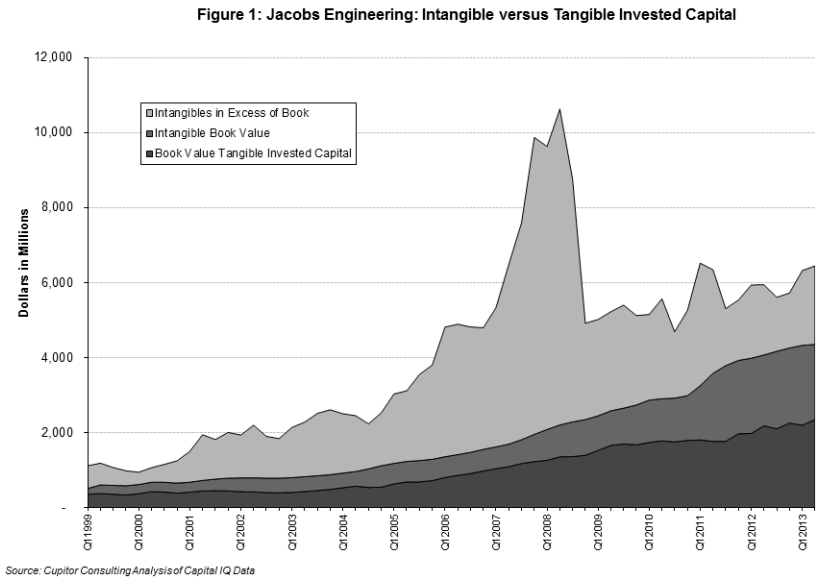

Figure 1

The lower layer of Figure 1 is the net book value of Jacobs Engineering's tangible assets, which averaged approximately $2.3 billion during the quarter ending June 30, 2013. The market value of Jacobs Engineering's total invested capital (the net assets on which debt and equity capital providers jointly had claims) was about $6.4 billion. About $2 billion of this is the net book value of intangible assets that Jacobs Engineering has acquired during the past decade (the middle layer). The remaining $2.1 billion difference (the top layer) is the difference between the market value of invested capital and the total book value of invested capital.

While this top layer may reflect some appreciation in the values of its tangible assets, the majority of this layer likely reflects intangible assets that have been created organically (as opposed to those purchased from others). In that case, total intangible value is approximately $4.1 billion of the $6.4 billion total value. Jacobs

Engineering's M-TBV ratio is 2.7x ($6.4 billion divided by $2.3 billion), as shown in Figure 2.[10]

The M-TBV ratio avoids two types of common distortions introduced by the price-to-book value of equity. Namely, comparisons using equity instead of total invested capital would require that debt be subtracted from both the numerator and denominator. All else being the same, the higher the leverage, the higher the multiple. Since we are focusing on intangible assets, and not the effects of financial leverage, the M-TBV avoids being distorted by differences in financial leverage between companies and across time. Another distortion avoided by the M-TBV is that it excludes the book value of purchased intangibles from the denominator, so that companies that grow by acquisitions will be comparable to those that primarily focus on organic growth.[11]

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[10] CUPITOR CONSULTING, ANALYSIS OF CAPITAL IQ DATA (2013).

[11] *See generally* CODIFICATION OF ACCOUNTING STANDARDS AND PROCEDURES, Business Combinations No. 730, § 730-10-05(2) (Fin. Accounting Standards Bd. 2013) (GAAP requires that most investments in organic growth of intangible assets be expensed as incurred, rather than recorded as an asset). These investments will tend to depress book value (converting cash-equivalent assets to assets with no book value), while the fruits of these investments (such as higher future profits and/or lower risk) will tend to increase market values. *See also* CODIFICATION OF ACCOUNTING STANDARDS AND PROCEDURES, Business Combinations No. 350, § 350-10-05 (Fin. Accounting Standards Bd. 2013) (there are a few exceptions such as software and movies, where investments can be capitalized and later amortized; intangibles that are acquired from others through, for example, purchase of a patent portfolio or purchase as a part of a business acquisition, will be recorded as an asset when acquired and will thus be part of book value).

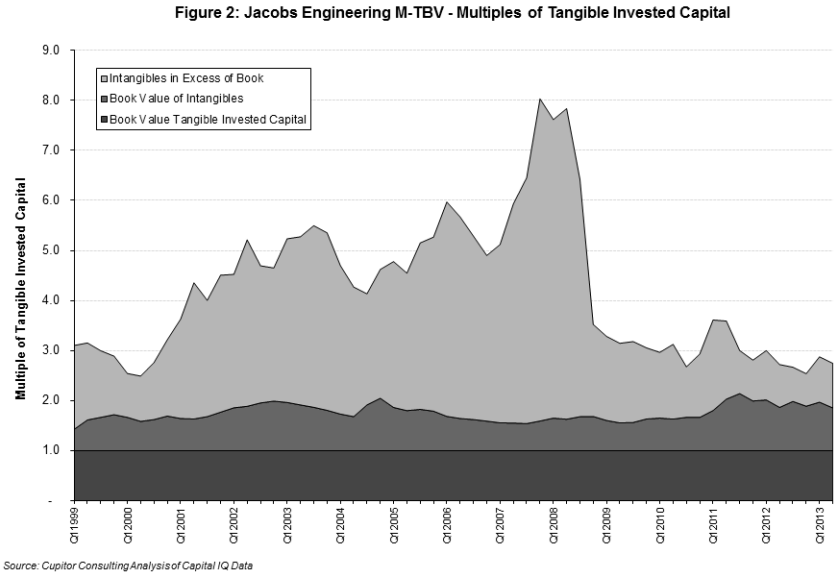

Figure 2

Thus, a construction company able to handle large, complex infrastructure projects such as Jacobs Engineering is worth nearly 3x its tangible book value. The presence of significant intangible assets in this enterprise is also confirmed by the intangible assets it has acquired from others.

A final comment relates to the possibly irrational exuberance during 2007 that nearly evaporated as the Great Recession took hold in 2008, and Jacobs Engineering began experiencing cancellations in planned projects and diminished prospects. Jacobs Engineering's M-TBV reached as high as 8x at its peak. Similar explosions and collapses occurred between 1998 and 2001 and impacted companies such as Cisco, Oracle, and others involved in the Dot-Com run-up. Cisco and Oracle's M-TBV multiples reached as high 25x and 60x at their peaks versus 2.5x and 6.2x today, respectively. An underlying principal of business valuation is that valuation

incorporates expectations regarding the future. However, those expectations might not always be considered to be rational.[12]

A. Evidence of Branded Products' Intangible Leverage

Below, Figure 3 demonstrates the impact branded products can have on valuation within the food industry.[13] As shown in the graph, companies that are more focused on commodity meat and grain products dominate the left side with lower multiples within the industry, whereas companies that are more focused on branded product portfolios have M-TBV multiples of 20x or more. For instance, ADM—which primarily sells commodity food products—is worth just over 1x its tangible book value; companies with dominant global brands such as Nestlé, Hershey, Coca-Cola, Pepsi, Campbell's Soup and Smucker's are in the 5x to 8x range. The 10x plus M-TBV multiples belong to companies that manage portfolios of a wide range of brands—General Mills and Kraft stand out with M-TBV multiples of 25x or more.

These relationships suggest that brands can add considerable value to a company. While one immediately thinks of brands in relation to trade names and trademarks, the value of a brand can also draw from assets such as recipes (e.g., Coca-Cola), process patents, supply chain relationships (e.g., Wal-Mart), return policies (e.g., Sears' Craftsman Tools), creative workforce (e.g., Pixar), long-term customer contracts, distribution channels, and even tangible assets such as manufacturing facilities with substantial scale economies (e.g., Intel).

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[12] There is a considerable amount of research in progress in the area of "behavioral finance." This research is directed at understanding consumer attitudes and risk preferences in making economic decisions, as well as group economic behavior resulting from seemingly irrational viral transmission of ideas and fears.

[13] CUPITOR CONSULTING, ANALYSIS OF CAPITAL IQ DATA (2013).

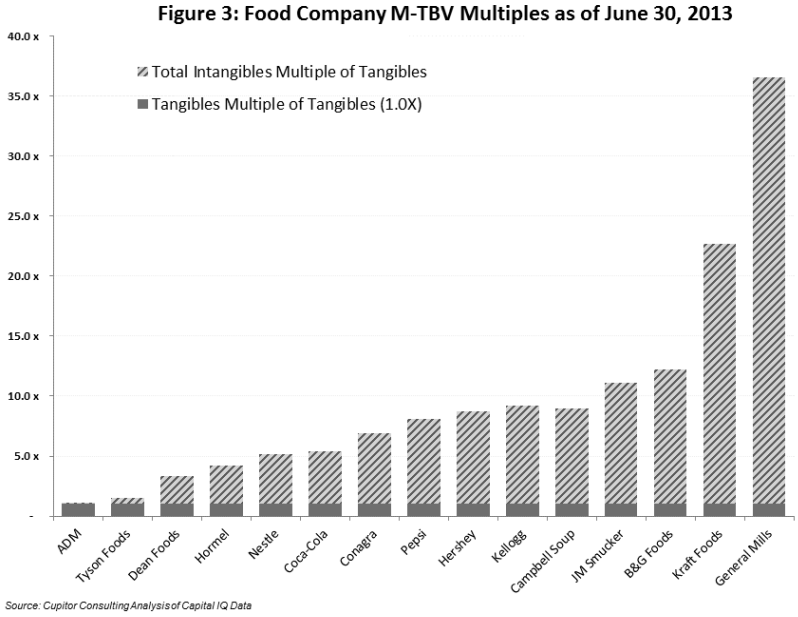

Figure 3

Below, Figure 4 shows additional detail regarding General Mills' historical performance.[14] In 1999, General Mills had a M-TBV of around 8x, which has risen to the range of 25–35x in recent years. Around 2001, General Mills nearly doubled in size with its acquisition of Pillsbury. At first, the total market value increased by approximately the purchase price and little synergistic value was achieved. Since 2010, however, continued growth in the top layer of Figure 4 shows organic growth in intangible value in excess of its purchased intangibles. During the past decade, total value has grown while the book value of tangible assets has declined. This has led to higher M-TBV multiples, demonstrating greater intangible leverage.

Such leverage could come from several sources, such as a decision to outsource more production to other companies that, for

[14] CUPITOR CONSULTING, ANALYSIS OF CAPITAL IQ DATA (2013).

example, are foreign or private-equity backed. It could come from increased licensing revenues that do not require additional tangible assets. Another source could be relative increases in profit per unit from price increases enabled by, for example, better tasting recipes or increased customer loyalty to a brand. Increases in profit per unit could also come from cost savings such as efficiencies realized from process know-how or patents. Each of these possible sources point to different intangible assets. Identifying the identity and value contribution from each of the sources can help management determine future strategies and direct future investments in creating intellectual property and other intangible assets.

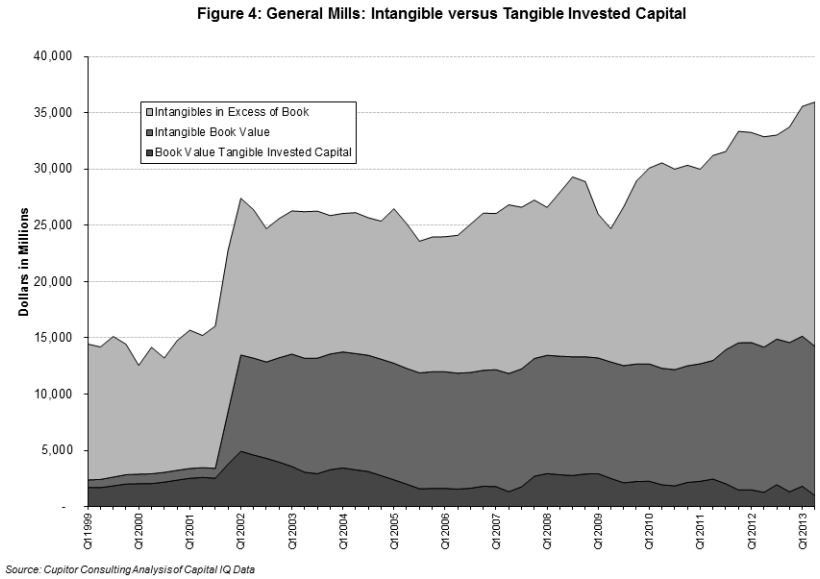

Figure 4

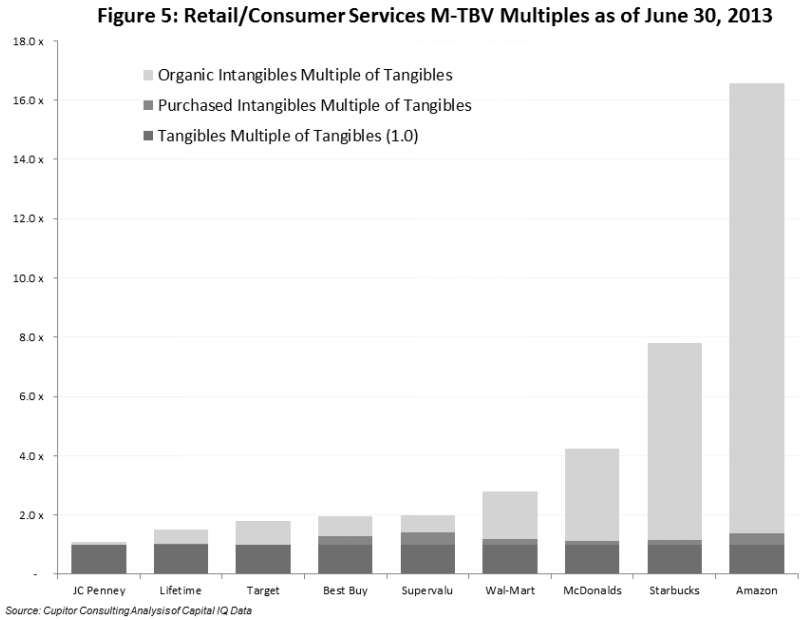

Figure 5

Above, Figure 5 shows the M-TBV multiples of various companies within retail and consumer services industries.[15] JC Penney is valued at nearly 1x tangible assets as it struggles, less than successfully, to redefine the future of department stores. Wal-Mart's total value is just under 3x its tangible book value, just ahead of its closest competitor, Target. Both companies have substantial investments in tangible assets. In contrast, Amazon, at 17x, has achieved the success that many companies sought during the tech-bubble of the late 1990s without retail bricks and mortar stores. McDonalds has trailed Starbucks for years except for a brief period when it introduced espresso drinks and caught Starbucks off-guard. Note that the majority of the intangible assets in the retail/consumer services group were developed organically.

[15] CUPITOR CONSULTING, ANALYSIS OF CAPITAL IQ DATA (2013).

Below, Figure 6 contains a group of high-tech companies, spanning several industries.[16] These M-TBV multiples are surprisingly low considering the strong patent and trademark portfolios of these companies. Software companies such as Apple, Microsoft, and Oracle are in the 4–7x range, which is similar to the dominant branded food companies. Medical device companies such as Medtronic and St. Jude are between 3.5x and 4.0x, but have fallen steadily over the last eight years or so, from 8x or more. While they both have nearly doubled their tangible assets during that time, their intangible values have remained flat or declined. Pentair and Ecolab have recently completed acquisitions that caused both to near double in size, which included substantial acquired intangible assets.

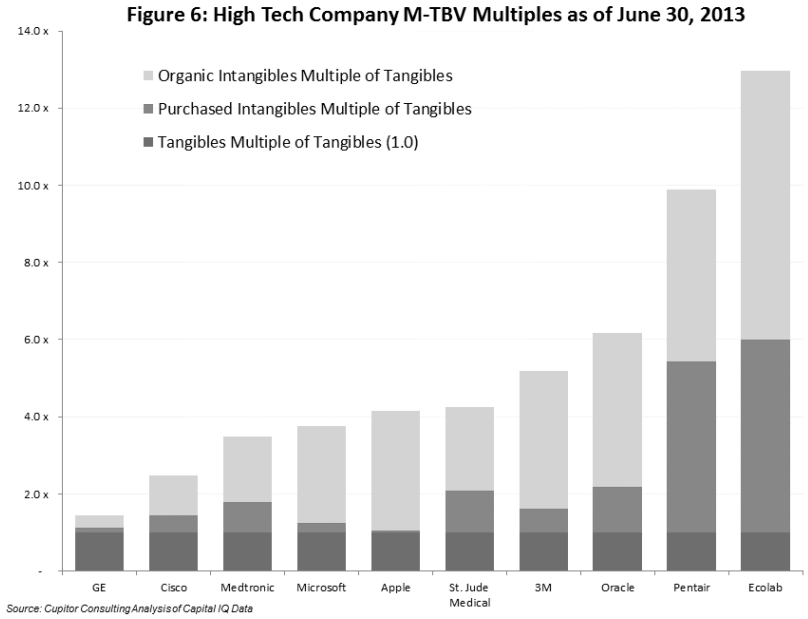

Figure 6

General Electric has a surprisingly low multiple given its widely known name and perceived strong technology base. While it had an

[16] CUPITOR CONSULTING, ANALYSIS OF CAPITAL IQ DATA (2013).

M-TBV multiple of just over 3x in 2000, it has since declined to less than 1.5x and has a total invested capital value today of only about two-thirds of its 2007 peak.

Apple is noteworthy in this group as having grown almost entirely organically. Apple is considered by some experts to be the strongest brand in the world[17]—with a strong patent portfolio to boot. Yet its M-TBV is only around 4x (down from a range of 6–10x while Steve Jobs was at its helm). Its intangible assets represent 75% of its total value, or around $380 billion of half a trillion dollars as of mid-year 2013. While the value of its intangible assets has doubled in the last three years, it has experienced a tripling of tangible assets in the same time period, causing its M-TBV to decline.[18] Recent developments, such as new competition in product categories that Apple had defined, the much-publicized Samsung-Apple patent battles and market concerns regarding the company's ability to innovate after Steve Jobs' passing, make management of its intellectual property a job like no other.

IV. COMMON APPROACHES TO INTELLECTUAL PROPERTY VALUATION

A. Valuation of Intellectual Property Compared to Other Assets

Valuing intellectual property can be more challenging than valuing tangible assets because of intellectual property's inherent uniqueness. That is, intellectual property is granted legal protection only where it is sufficiently distinct from other types of property before it. Most intellectual property is sold either in a private exchange or as a part of an assemblage of assets. Terms and conditions of these transactions vary widely and details of

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[17] For example, Interbrand ranks Apple as the number 1 global brand in 2013. *See Best Global Brands 2013*, INTERBRAND, http://www.interbrand.com/en/Best-Global-Brands/2013 (last visited Jan. 2, 2014).

[18] While some of the tangible asset growth occurred in accounts receivable and equipment, most occurred in marketable securities from cash flows not reinvested or distributed to shareholders.

transactions involving intellectual property are rarely available to the public. None of this, however, should minimize the importance of properly valuing intellectual property.

B. Common Approaches to Value Intellectual Property

Three general approaches are ordinarily considered in valuing any asset, including intellectual property assets. These are: the market approach, the income approach, and the cost approach. Within each approach, there may be several applicable methods. Some methods are considered to be a hybrid of two approaches—for instance, the relief from royalty method combines elements of the income and market approaches. Each approach attempts to arrive at a reasonable indication of value for the intellectual property.

As mentioned previously, value is ultimately forward looking as seen through the eyes of a purchaser and/or owner. At the same time, most valuation approaches use information from the past as a departure point in gauging the future. A valuation analyst may choose to use one or several approaches depending upon their relevance to the subject asset under the premise[19] and standard of value,[20] as well as the information available for application of each approach. Contrasting and reconciling multiple approaches can be helpful in drawing a conclusion as to the intellectual property's value.

1. Market Approach

The market approach seeks to determine the amount others would pay for the subject asset by using information regarding past transactions in the same or similar assets. The market approach is most applicable where an active market exists with sufficiently

[19] The premise of value for the assignment might assume that the asset is used as a part of a going concern. An alternative premise of value might be a distressed sale as part of a forced liquidation proceeding.

[20] *See* L.M. BROWNLEE, *supra* note 5 (the standard of value might be fair market value, fair value for financial reporting purposes, fair value under minority shareholder statutes, investment value to a specific owner, or others).

recent transactions, coupled with adequate information on the terms and conditions of those transactions.[21]

Consider the market for a house. While each is a unique combination of location, features, condition and timing, the existence of large databases of transactions with listings of features, as well as informed brokers, allow a buyer to consider lists of comparable transactions in preparing a bid. Further, if there is an auction process, such information assists the seller and prospective buyers in their efforts to seek an appropriate price. In the case of intellectual property, there are typically few or no disclosures of sufficiently relevant transactions to consider.

Higher valued patents are usually sold through brokers in undisclosed transactions and sometimes as part of a larger portfolio where their value may be blurred with other lower valued assets. There have been successful online auctions of some lower valued properties in the past.[22] The recent recession was the first in which purchases of intellectual property out of bankruptcy have generated significant value, specifically from strong trademark portfolios.[23] Material license and sale transactions involving intellectual property are disclosed in SEC filings or in litigation proceedings, and these disclosures are coded for search through services such as Royalty Source and ktMine.

Overall, the market for intellectual properties has expanded in recent years and is expected to grow further in the future. The latest development is the launch of the IPXI exchange. "The mission of IPXI is to meet the price discovery, transaction efficiency and data distribution needs of intellectual property owners, investors and

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[21] *See* 3 JOHN G. MILLS ET AL., PATENT LAW FUNDAMENTALS § 19:6.50 (2d ed. 2010).

[22] *See generally* INTELL. PROP. EXCHANGE INT'L, http://www.ipxi.com/inside-ipxi/the-exchange.html (last visited Dec. 13, 2013).

[23] RENÉE MARINO & JOHN SHAEFFER, FOCUS ON FORENSICS: LIFTING THE CONFUSION ABOUT TRADEMARK LAW 8 (Grant Thornton 2011).

traders by creating the central marketplace for tradable IP assets."[24] IPXI performs due diligence of intellectual property portfolios, helps communicate the benefits through offering memoranda and presentations and then allows Unit License Rights in the portfolios to be determined via the exchange.[25]

Prior transactions involving the subject asset are another source of market information. These may include sale of the stand-alone asset or sale as a part of a "going concern."[26] There will usually be a purchase price allocation valuation analysis following any significant transaction in which management or an outside appraiser has developed an opinion as to the value of the identifiable intangible asset. This type of information can be useful in isolating cash flow forecasts related to groups of assets which contain the subject intangible asset. Specifically, management may have made assertions as to the financial benefits of the asset, projected revenues, profits, royalty rates and other elements that may be relevant, with appropriate adjustments, to the current valuation task.

Although it can often be difficult to apply the market approach to the valuation of an intellectual property asset, relevant information for a specific asset may exist today or in the future as secondary markets for these assets mature.

2. Income Approach

The income approach values the intellectual property based upon the present value of the net economic benefit expected to be received over the life of the asset. The expected net economic benefit might be, for example, royalty payments, incremental

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[24] *Fact Sheet*, INTELL. PROP. EXCHANGE INT'L, http://www.ipxi.com/public-files//IPXI-fact-sheet.pdf (last visited Dec. 13, 2013).

[25] INTELL. PROP. EXCHANGE INT'L, http://www.ipxi.com/inside-ipxi/faq.html (last visited Dec. 13, 2013).

[26] A "going concern" is an accounting term of art. It is the assumption that the company will stay in business and that the value of its assets will endure.

profits,[27] or cash flow savings from reductions in future capital expenditures.[28] Intellectual property might also reduce risks (and, accordingly, the appropriate discount rate) by reducing the sensitivity of sales volumes within business cycle. Patents that read on competitors' products can also reduce risks of suits being brought against the patent owner. In developing an income approach for valuing intellectual property, it is sometimes appropriate to consider scenarios and make a decision tree to address discrete risks. For example, one may consider whether FDA approval is granted for a pharmaceutical or medical device product under development. It also might make sense to use an option methodology[29] within the general category of the income approach to capture the nature of the benefits of the intellectual property.

i. Relief from Royalty Method

The relief from royalty method is used to estimate hypothetical licensing terms and royalty payments to which the potential user would likely agree, in exchange for rights to make, sell and/or use the intellectual property.[30] This method can be used in related-party cross-border transfers of intellectual property, as well as in infringement litigation matters. This method combines the income approach, since it projects future revenue, and the market approach

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[27] For example, use of a trademark might support a price premium, higher volumes, lower attrition or lower expenses related to future sales efforts.

[28] For example, reductions in capital expenditures if the subject patent or know-how being valued has the effect of lengthening the life of equipment.

[29] Options approaches consider alternative outcomes similar to the discrete outcomes modeled in a decision tree. Options, however, consider a greater number of possible outcomes through the use a statistical distribution with known properties (such as the log-normal distribution used in the Black-Scholes option pricing model). A Monte-Carlo simulation can also be used to predict sometimes thousands of outcomes, especially when there are complex interdependencies between factors affecting each outcome.

[30] Teg Hagelin, *A New Method to Value Intellectual Property*, 30 AIPLA Q.J. 353, 366 (2002).

by using comparable license agreements to determine an appropriate hypothetical agreement.

3. Cost Approach

The cost approach to intellectual property valuation is based on the economic principle of substitution. This principle indicates that a willing buyer will pay no more for an asset than the cost to obtain an alternative asset of equivalent utility.[31] This replacement cost represents a cap for what a buyer is willing to spend for an asset.

There are numerous cost approach valuation methods. Each valuation method uses a particular definition of cost. Two common cost definitions are: reproduction cost and replacement cost. Reproduction cost is the total cost, at current pricing, to develop an exact duplicate of the intellectual property. An approach using this definition seeks to develop a duplicate intellectual asset using the same materials, standards, design, layout, and quality of workmanship used to create the original intellectual asset. Replacement cost, on the other hand, is the total cost to develop, at current prices, an asset having equal functionality or utility of the original intellectual asset. [32] An approach using either definition must also adjust for losses in value due to: physical deterioration, functional obsolescence, and economic obsolescence.[33]

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[31] *Id.* at 359.

[32] BROWNLEE, *supra* note 7, § 6:20 (defining "functionality" as an "engineering concept" meaning "the ability of the intellectual to perform the task for which it was designed," and "utility" as "an economics concept that means the ability of the intellectual property to provide an equivalent amount of satisfaction.").

[33] *Id.* "Physical deterioration" can be defined as the reduction in the intellectual property value due to physical wear and tear resulting from continued use, "functional obsolescence" as the reduction in the intellectual asset value due to its inability to perform the function for which it was originally designed, and "economic obsolescence" as the reduction in the intellectual asset value due to the effects, events, or conditions that are external to the asset's current use or condition.

A challenge in applying a cost approach to intangible assets is to consider the investments that would have to be made in unsuccessful attempts in order to obtain one successful outcome. For example, if one-in-five attempts to create a similar asset are successful, then the costs to replace the successful outcome would include the cost of at least four other unsuccessful attempts.

V. WHEN TO VALUE INTELLECTUAL PROPERTY AND OTHER CONSIDERATIONS

An intellectual asset manager should understand when and how intellectual property should be valued. First, understanding the business's overall goals and the role that intellectual property can serve in achieving those goals should drive the overall approach to intellectual asset management. Participating in the strategic decision-making process should be a part of that process, particularly if the business and industry lends itself to higher M-TBV multiples, where intellectual property can be a key value contributor. Keep in mind that a commodity business need not be resigned to an absence of intellectual property in the future. If the industry quickly adopts innovations, there should be a benefit of establishing proprietary rights to those innovations and thus change the nature of the company and industry.

Determining gaps in intellectual property coverage can guide decisions to "make-versus-buy" (which should prompt a valuation), or to jointly develop with a third party, assets to fill apparent weak spots. Contributions to joint ventures should be considered in light of both financial and in-kind investments of each party. This monetizes intellectual property by converting current intellectual property into capital contributions.

Intellectual property is increasingly being considered as collateral in bank financing. Knowing the value of that collateral can be helpful to both the bank and owner. Harvesting intellectual property by selling what is no longer needed or abandoning intellectual property for which the cost of maintenance outweighs the benefits are two other valuation decision points.

Valuation of acquired intellectual property for financial reporting purposes is commonly performed following an acquisition. While intellectual property counsel will often be involved in due diligence and post-merger integration, financial reporting is often handled by the finance department and outside of counsel's purview. However, if the intellectual property is later challenged in court, it is likely that contemporaneously prepared valuations, as well as management's assertions regarding key assumptions used in the valuations will be considered to be admissible evidence.[34] Accordingly, it is advisable that such valuations be competent and accurately reflect management's thoughts regarding the benefits of the intellectual property.

Transfer pricing analyses for international and inter-state tax purposes are primarily involved in determining appropriate royalty rates for related-party transactions. Such royalty rates can be relevant for other valuation assignments, as well as admissible as evidence in litigation in other matters and with tax authorities. In addition, valuations are needed when transferring ownership of the intellectual property between related entities.

Litigation involving intellectual property may utilize other valuation evidence, including past transactions, as well as require reconciliation between a relief from royalty analysis and the value of the entity as a whole. Considerations for management include the degree to which important intellectual property is highlighted in contemporaneously prepared valuations, so as to provide clear evidence of its perceived value as of the time it was acquired. Other management might prefer to include key intellectual property with

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[34] *See, e.g.*, Spectralytics, Inc. v. Cordis Corp., 649 F.3d 1336, 1347 (Fed. Cir. 2011) (agreeing with Minnesota Federal District Court that weight to be given to price of previous sale of assets that included subject patent was a task for the jury); b*ut see* Mformation Techs., Inc. v. Research in Motion, Ltd., No. C 08–04990, 2012 WL 2339762, at **3–4 (N.D. Cal. June 7, 2012) (excluding evidence of third party valuations on ground that such valuations were not relevant because they did not attempt to assess the value of the patent at the time infringement began and did not assume that the patent was valid and infringed).

a broader group of assets and, in so doing, attempt to remain uncommitted as to its specific value until challenged in court.

Another issue management should consider is whether to share intellectual property due diligence with the valuation analyst. Doing so may result in a stronger analysis, but may result in the attorney-client privilege related to that work being waived and possibly no attorney work product protection. Likewise, such a decision might be needed when valuation issues are being addressed during litigation. No one answer or policy regarding these issues is likely to be preferred in all situations. However, a deliberate consideration and decision is required.

VI. CONCLUSION

The global economy has been shifting from the manufacturing-based economy of the twentieth century to the knowledge-based economy of the twenty-first century. Where access to tangible materials defined a business' success in the twentieth century, access to ideas and the ability to leverage tangible asset investments will define success in the future. An understanding of the value creation process can assist in determining the amount and priorities of investment in both creating and protecting intellectual property.