DIFFICULTIES IN BUSINESS VALUATION ISSUE IN THE CONTEXT OF INVESTMENT STRATEGIES

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ABSTRACT: *Value is the defining dimension of measurement in a market economy. People invest in the expectation that when they sell, the value of each investment will have grown by a sufficient amount above its cost to compensate them for the risk they took. This is true for all types of investments, be they bonds, derivatives, bank accounts, or company shares. Indeed, in a market economy, a company's ability to create value for its shareholders and the amount of value it creates are the chief measures by which it is judged. Value is a particularly helpful measure of performance because it takes into account the long-term interests of all the stakeholders in a company, not just the shareholders.*

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JEL CLASSIFICATION: *C52, G11.*

1. CONSEQUENCES OF FORGETTING TO VALUE VALUE

The guiding principle of value creation—the fact that return on invested capital and growth generate value and its corollary, the conservation of value, have stood the test of time. When managers, boards of directors, and investors have forgotten these simple truths, the consequences have been disastrous. The rise and fall of business conglomerates in the 1970s, hostile takeovers in the United States in the 1980s, the collapse of Japan's bubble economy in the 1990s, the Southeast Asian crisis in 1998, the Internet bubble, and the economic crisis starting in 2007 can all, to some extent, be traced to a misunderstanding or misapplication of these principles.

During the Internet **bubble,** managers and investors lost sight of what drove return on invested capital; indeed, many forgot the importance of this ratio entirely.

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When Netscape Communications went public in 1995, the company saw its market capitalization soar to $6 billion on an annual revenue base of just $85 million, an astonishing valuation. This phenomenon convinced the financial world that the Internet could change the way business was done and value created in every sector, setting off a race to create Internet-related companies and take them public. Between 1995 and 2000, more than 4,700 companies went public in the United States and Europe, many with billiondollar-plus market capitalizations.

Many of the companies born in this era, including Amazon.com, eBay, and Yahoo!, have created and are likely to continue creating substantial profits and value. But for every solid, innovative new business idea, there were dozens of companies (including Netscape) that turned out to have nothing like the same ability to generate revenue or value in either the short or the long term. The initial stock market success of these flimsy companies represented a triumph of hype over experience.

Many executives and investors either forgot or threw out fundamental rules of economics in the rarefied air of the Internet revolution. Consider the concept of increasing returns to scale, also known as "network effects" or "demand-side economies of scale."

The basic idea is this: In certain situations, as companies get bigger, they can earn higher margins and return on capital because their product becomes more valuable with each new customer. In most industries, competition forces returns back to reasonable levels. But in increasing-returns industries, competition is kept at bay by the low and decreasing unit costs of the market leader (hence the tag "winner takes all" for this kind of industry).

Behind the more recent **financial and economic crises** beginning in 2007 lies the fact that banks and investors forgot the principle of the conservation of value. Let's see how. First, individuals and speculators bought homes—illiquid assets, meaning they take a while to sell. They took out mortgages on which the interest was set at artificially low teaser rates for the first few years but rose substantially when the teaser rates expired and the required principal payments kicked in. In these transactions, the lender and buyer knew the buyer couldn't afford the mortgage payments after the teaser period ended. But both assumed either that the buyer's income would grow by enough to make the new payments or that the house value would increase enough to induce a new lender to refinance the mortgage at similar, low teaser rates.

As many economic historians have described, aggressive use of leverage is the theme that links most major financial crises. The pattern is always the same: Companies, banks, or investors use short-term debt to buy long-lived, illiquid assets. Typically some event triggers unwillingness among lenders to refinance the short-term debt when it falls due. Since the borrowers don't have enough cash on hand to repay the short-term debt, they must sell some of their assets. The assets are illiquid, and other borrowers are trying to do the same, so the price each borrower can realize is too low to repay the debt. In other words, the borrower's assets and liabilities are mismatched.

In the past 30 years, the world has seen at least six financial crises that arose largely because companies and banks were financing illiquid assets with short-term debt. In the United States in the 1980s, savings and loan institutions funded an aggressive expansion with short-term debt and deposits. When it became clear that these institutions' investments (typically real estate) were worth less than their liabilities, lenders and depositors refused to lend more to them. In 1989, the U.S. government bailed out the industry.

In the mid-1990s, the fast-growing economies in East Asia, including Thailand, South Korea, and Indonesia, fueled their investments in illiquid industrial property, plant, and equipment with short-term debt, often denominated in U.S. dollars. When global interest rates rose and it became clear that the East Asian companies had built too much capacity, those companies were unable to repay or refinance their debt. The ensuing crisis destabilized local economies and damaged foreign investors.

Other financial crises fueled by too much short-term debt have included the Russian government default and the collapse of the U.S. hedge fund LongTerm Capital Management, both in 1998; the U.S. commercial real estate crisis in the early 1990s; and the Japanese financial crisis that began in 1990 and, according to some, continues to this day.

Market bubbles and crashes are painfully disruptive, but we don't need to rewrite the rules of competition and finance to understand and avoid them. Certainly the Internet has changed the way we shop and communicate. But it has not created a "New Economy," as the 1990s catchphrase went. On the contrary, it has made information, especially about prices, transparent in a way that intensifies old-style market competition in many real markets. Similarly, the financial crisis triggered in 2007 will wring out some of the economy's recent excesses, such as people buying houses they can't afford and uncontrolled credit card borrowing by consumers. But the key to avoiding the next crisis is to reassert the fundamental economic rules, not to revise them. If investors and lenders value their investments and loans according to the guiding principle of value creation and its corollary, prices for both kinds of assets will reflect the real risks underlying the transactions.

There has long been vigorous debate on the importance of shareholder value relative to other measures of a company's success, such as its record on employment, social responsibility, and the environment. In their ideology and legal frameworks, the United States and the United Kingdom have given most weight to the idea that the objective function of the corporation is to maximize shareholder value, because shareholders are the owners of the corporation who elect the board of directors to represent their interests in managing the corporation's development. In continental Europe, an explicitly broader view of the objectives of business organizations has long been more influential. In many cases, this is embedded in the governance structures of the corporate form of organization.

In the Netherlands and Germany, for example, the board of a large corporation has a duty to support the continuity of the business and to do that in the interests of all

the corporation's stakeholders, including employees and the local community, not just its shareholders. Similar philosophies underpin corporate governance in other continental European countries.

In much of Asia, company boards are more likely than in the United States and Europe to be controlled by family members, and they are the stakeholders whose interests will set the direction of those companies. Our analysis and experience suggest that for most companies anywhere in the world, pursuing the creation of long-term shareholder value does not cause other stakeholders to suffer. We would go further and argue that companies dedicated to value creation are more robust and build stronger economies, higher living standards, and more opportunities for individuals.

2. QUANTIFYING VALUE: VALUATION APPROACHES AND AVAILABLE VALUATION MODELS

Due to the existence of several valuation approaches available to the appraiser, it is important to determine which approach and, in turn, which model belonging to that approach is the most appropriate in quantifying value. A valuation approach will then be applied, using a specific valuation model, to quantify e.g. the intrinsic value of an entity, the fair market value of an entity (incorporating the synergy available to any market participant), or the value of synergy between the bidder and target entities.

Basic valuation approaches include the replacement-cost approach, market-comparable approach and the income approach (King, 2006). The replacement-cost approach asks what it would cost today to acquire a similar asset. The market-comparable approach asks what a similar asset is actually selling for in the market. Finally, the income approach asks what a buyer is willing to pay for an asset in today's monetary terms, with a given income (or cash flow) stream in the future, adjusted for perceived risks (often utilising a discounted cash flow model). Depending on circumstances and the appraiser's judgement of appropriateness, it is possible to use any of the three approaches above to determine the fair market value of an asset (King, 2006).

McKinsey & Company (2005) described five models of valuation based on a discounted cash flow framework, when performing valuations in practice, focus on only two models: the enterprise discounted cash flow and the economic profit model (2005). These models are preferred as they both discount future cash flow streams at the weighted average cost of capital. They do, however, work best when an entity maintains a fairly stable debt-to-equity ratio (McKinsey & Company, 2005).

The market-comparable approach puts forth the argument that the market sets the price for an item. As a result, within this approach, many models exist that compare the entity to a comparable entity in the market. The main problem here is the lack of directly comparable entities, with the result that a significant amount of adjustment is necessary - thereby compromising the purity of the approach. Many of the models that compare the entity to a comparable entity make use of multiples. McKinsey &

Company (2005) described certain best practices for using multiples in valuation. As expected, they provide a warning on making exclusive use of multiples to perform a valuation, emphasising that it should rather be used in support of valuation models based on discounted cash flow. In this way, multiples can help test the reasonability of cash flow forecasts.

The best practices to apply multiples properly, as identified by McKinsey, are: first, choose comparables with similar prospects for growth and return on invested capital; second, use multiples based on forward-looking estimates; third, use enterprise-value multiples based on earnings before interest, tax and amortisation, this in order to prevent difficulty with capital structure and other short-term gains and losses; fourth, adjust the enterprise-value multiple for non-operating items, such as excess cash.

Due to the nature of synergies and the common lack of directly comparable transactions, the valuation approach used to quantify its value will be based principally on the income approach, using a model based on discounted cash flow.

3.QUANTIFYING THE FAIR MARKET VALUE FROM THE PERSPECTIVE OF MARKET PARTICIPANTS

As described supra, one of the elements of fair market value is that it should be measured from the perspective of market participants and not a specific acquirer. In this context, it is thus important to discern exactly whom a market participant represents.

Best practices followed in M&A transactions revealed that the value to *other prospective bidders* in the market place, not just any market participants, should be considered in the pre-bid value assessment stage. In quantifying the fair market value of a target entity in practice, the focus should thus be on identifying and analysing prospective bidders. Here the recommendations of the accounting bodies could have relevance, namely the requirements of "highest and best use", willing buyer and the criteria of being knowledgeable. This process will require the appraiser to allocate the necessary time resources in order to familiarise himself with the relevant local (and sometimes international) market and role-players. Due to the time pressures sometimes involved in deal making, it could be beneficial for the appraiser to have sufficient prior knowledge of the industry.

As demonstrated, synergies available to market participants (or indeed, prospective bidders), but not those only available to the bidder in question, should be incorporated in the fair market value of the entity.

4. QUANTIFYING SYNERGY VALUE: KEY ELEMENTS

Evans and Bishop, in their book exploring ways to build value in companies through M&As (2001), described three key variables that drive synergy value. With a

more substantial discussion to follow, these variables are: first, the size of the synergy benefit; second, the timing of the benefits; and, third, the likelihood that it will be achieved. Closely related is the value of an option, which is also discussed infra, under the heading "real-options approach".

Evans and Bishop (2001) recommend that the size of the benefits should be quantified using a discounted cash flow framework, employing a conservative attitude by incorporating a rigorous questioning of the benefits. Evans and Bishop (2001) further recommend that a discounted cashflow model should include forecast estimates of income, expenditure, financing and tax cost, as well as cash investments in working capital and non-current assets.

Notice that modern valuation theory based on discounted cash flow, as described by the key scholars (Modigliani & Miller 1958), and (Jensen 1988; Jensen 1986), prescribes that financing cost be excluded from the projected cash flows, as the net resultant cash flows should represent those cash flows that are free for distribution to all providers of capital (whether debt or equity providers), hence the term "free cash flows". In the projection we should include the relevant cash outflow relating to the cost of realisation and integration, if it is directly associated with the specific synergy being quantified. However, if these are not directly associated, the present cost of the total realisation and integration cost should be quantified separately and included in the overall valuation of synergies.

The timing of benefits will be associated with the period in which the various projected cash flows are included. Evans and Bishop (2001) once again advocate the application of a conservative attitude and they further stress the importance of meeting the (ex ante) projected timetable in order to achieve the (ex post) synergy value. Observation by McKinsey & Company (2005) indicates that synergies not realised within the first full budget year, following the merger, are often not realised at all.

The likelihood of success should be incorporated in the projected cash flows or in the discount rate, but not in both, as this will duplicate the effect. Evans and Bishop propose that it be incorporated in the projected cash flows by calculating the probability of different outcomes such as "optimistic", "expected" and "pessimistic", or by performing a Monte Carlo simulation (2001:80-81). Another method that considers the likelihood of success in the context of business decisions is the real-options approach. Next, we discuss a Monte Carlo simulation.

4. MONTE CARLO SIMULATION

Monte Carlo simulation was developed out of the need to solve complex problems incorporating a fair degree of uncertainty. Nuclear physicists, in recognising the limitation of conventional calculus in dealing with multitude sources of uncertainty, were the first to use Monte Carlo methods to provide answers to their intricate research questions. A Monte Carlo simulation normally utilises a computer to generate a large number of scenarios given probabilities for inputs. For each of the

uncertainties (formulated as a variable) a random number is generated that, in turn, is input into a formula to generate an outcome for a single scenario. This is then repeated for a large number of scenarios. Hubbard, an author in applied information economics, provided an introduction to the Monte Carlo simulation (2007) and credits Ulam as the person who denominated the technique. According to Hubbard, Ulam was a mathematician working on the Manhattan Project during the Second World War and, although not the first person to use such a simulation, was the one to name it after this infamous gambling destination in Monaco, in honour of his uncle - a gambler. The playfulness of its name notwithstanding, Monte Carlo simulation has a proven track record, with main benefits in the areas of measuring the impact of risk and the probability of an outcome.

Apart from (Evans & Bishop 2002), other scholars have not made the link between a Monte Carlo simulation and the process of quantifying synergy value. Such simulations have, however, been used successfully in the field of finance, according to (Hertz 1979), who described their use in the making of capital investment decisions. Hertz emphasises that only limited improvements have been made in making capital investment decisions through techniques such as three-level estimates, selected probabilities and game-theory, as these merely incorporate uncertainty to a limited extent.

In his 1964 publication, Hertz further describes a Monte Carlo simulation as a preferred method used to make a capital investment decision that is subject to various uncertainties, as it addresses all variables (or at least the variables chosen for review). There are many similarities between the uncertainties faced in making a capital investment decision and quantifying certain types of synergy value. For instance, the value of cost synergies resulting from economies of scale in production could be subject to the same uncertainties as a capital investment decision, such as market size, share of the market, selling prices, investment required, operating costs and the useful life of facilities. It could further be argued that Monte Carlo simulations have not been used extensively in quantifying synergy value, due to the added complexity.

5. CONCLUSION

Our searches revealed that literature describing the best practices followed by companies in quantifying revenue synergy (obtained through market power) is limited. In contrast, the body of iterature describing methods of measuring market power is vast, especially in the context of merger control. Due to the dynamic interaction of said factors, we also discuss this literature here. Notice that there is no direct measure estimating the expected increase in selling prices from an increase in market power in the literature. (This is probably due to the differences between industries and a number of other variables.). An increase in market power could, however, indicate the possibility of increasing selling prices, which, in turn, could result in revenue synergy. Out of necessity we therefore considered the techniques available for the measurement

of market power. Here we found the multitude of techniques described in merger control literature to be the best source of information. Of these, our emphasis on revenue synergy led to a further evaluation of only the most applicable indicators of market power, which are: the Herfindahl-Hirschman Index, as applied *inter alia* in U.S. merger control*;* and other indirect indicators applied in the European context.

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