

## *An Exploratory Examination of the Relationship between Investment Levels in Intangible Market-Based Assets and Liquidation for Financially Distressed Firms*

Working with a sample of both manufacturing and non-manufacturing firms that filed for bankruptcy protection, the current study examines the relationship between investments in intangibles and the likelihood that the firm will either be reorganized or face liquidation. Results for the manufacturing sub-sample show that investments in intangibles do not increase the likelihood of firm reorganization. Similar results were found for the non-manufacturing sub-sample as well. In fact, the results seem to suggest that financially distressed firms that were ultimately liquidated actually tended to over-invest in intangible assets. Specifically, liquidated manufacturing firms appeared to over-invest in R&D whereas liquidated non-manufacturing firms appeared to over-invest in advertising.

**Key words:**  
Intangibles assets,  
Liquidation,  
Bankruptcy

### **Introduction:**

Although marketing is a vital function for any firm, evidence increasingly suggests that the representation and influence of the marketing function in the boardroom is limited at best. For example, in a study involving 167 firms across a variety of industries, Nath and Mahajan (2008) discovered that only 25% of the firms in their sample had a chief marketing officer

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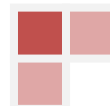
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over the entire five year period studied. This is in sharp contrast to the 96.8% of firms that had a chief financial officer across all the years of observation. Perhaps the biggest weakness of marketing today, and the reason for the underrepresentation of marketing among the top management team, is the perception that marketers lack capabilities in analytics, finance, and related disciplines such as cost accounting (Verhoef and Leeflang 2009). The result is that marketers have been unable to account for the function's contribution to firm performance in a manner that is valued by stockholders and investors (O'Sullivan and Abela 2007). Therefore, there is an urgent need to enhance the marketing-finance interface by examining the financial implications of investments in marketing related activities (Hanssens, Rust, and Srivastava 2009; Srinivasan and Hanssens 2009). Nevertheless, justifying the investments in marketing related knowledge, skills, and capabilities is often challenging given that these unique firm resources are largely intangible. Yet, researchers and investors alike have increasingly begun to recognize that it is the intangible assets and capabilities of a firm that have become the critical drivers of competitive advantage and shareholder value in our new knowledge based global economy (Dahmash, Durand, and Watson 2009; Haanes and Fjeldstad 2000).



One notable theoretical framework focused on the role of intangible assets is Market-Based Asset Theory developed by Srivastava, Shervani, and Fahey (1998). These researchers proposed that the development and possession of intangible market-based assets, derived from either relationships with key stakeholders or specialized knowledge about the environment, were the principal bridge between marketing and shareholder value. Created by marketing activities such as advertising and promotion, customer relationship management, and marketing research, these intangible market-based assets, despite the bias of the financial community toward the more familiar and tangible balance sheet assets, should be recognized as important contributors to firm performance. In fact, Market-Based Asset Theory suggests that if the market value of a firm is greater than the book or replacement value, the difference can largely be attributed to the presence of intangible market-based assets. Extending the research on intangible assets, Kasnikov and Jayachandran (2008), in a meta-analysis of past studies, investigated the impact of organizational skills and knowledge, collectively known as “capabilities”, on firm performance. They concluded that marketing capabilities may be related to success, whereas specialized skills and knowledge in the areas of operations and research-and-development (R&D) tend to be “failure prevention” capabilities by ensuring that firms do not lag behind competitors. While the vast majority of research on intangible assets has focused on financially healthy firms, further investigation of the “failure prevention” proposition may be best approached through the investigation of financially distressed firms. Specifically, do



investments in intangible assets and capabilities provide a “failure prevention” cushion for firms already on the brink of financial disaster?

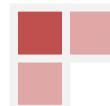
Studies in the field of marketing which concentrate on financially distressed firms are largely nonexistent. In fact, one of the hallmarks of academic research in marketing is the tendency to exclusively focus on the factors that lead to organizational success. In marked contrast, research in the finance discipline has historically given a great deal of emphasis to the analysis and prediction of financial distress, an outcome of particular interest to investors (Altman 1968; Blum 1974; Ohlson 1980; Zmijewski 1984; Zavgren 1985). Whereas early studies on financial distress were designed to predict the occurrence of bankruptcy, it soon became apparent that the explanations were both myriad and context dependent. Consequently, researchers gravitated to the examination of already distressed firms and began to focus on the financial variables that play a role in the post-bankruptcy outcome (LoPucki 1983; Casey, McGee, and Stickney 1986). In particular, what determines whether a bankrupt firm will be resurrected in a financial restructuring, or will be liquidated and abandoned to the mercy of their creditors?

The current study, an exploratory examination of the relationship between investment in intangible market-based assets and post-bankruptcy outcomes for financially distressed firms, represents an important contribution to the growing marketing-finance interface. Unlike previous studies in the field of marketing, we combine the analysis of intangible market-based assets, resources, and expenditures that contribute

to firm capabilities with a focus on post-bankruptcy outcomes. Specifically, the current study investigates the role that intangible market-based assets, as measured through such variables as advertising, R&D, and goodwill, play in determining whether bankrupt firms will ultimately restructure or liquidate. In addition, we compare manufacturing firms to non-manufacturing firms, including service and retail firms, in order to determine if intangible market-based assets have a differential impact on post-bankruptcy outcomes for financially distressed firms across two distinct industry sub-groups.

## Background and Research Hypothesis:

Several theoretical frameworks have been developed to help explain the importance of a firm’s intangible assets, resources, and expenditures. According to Market-Based Asset Theory, firms may employ a variety of methods to establish and perpetuate either relational or intellectual market-based assets. These include marketing expenditures to acquire and retain customers, develop brands, and create channel and other partnerships (Srivastava, Shervani, and Fahey 1998). Similarly, according to the Resource-Based Theory of the Firm, a company’s resources and capabilities are the key to developing and maintaining competitive advantage. These resources and capabilities are driven by both tangible assets and, more importantly in today’s information driven competitive landscape, intangible assets and expenditures (Barney, Wright, and Ketchen 2001). Unfortunately, in many instances,

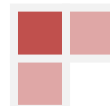


intangible assets cannot be evaluated by conventional methods due to the non-existence of a market price. Nevertheless, when the cost or value of these intangible assets can be clearly identified, they may be included in the balance sheet along with the firm's other assets. In other instances, their presence must be inferred from company expenditures, particularly expenditures on advertising, R&D, and acquired goodwill (Dutta, Narasimhan, and Rajiv 1999; Heiens, Leach, and McGrath 2007; Krasnikov and Jayachandran 2008).

Perhaps the most valuable intangible asset for any firm is the brand. Consequently, brands have received considerable attention in recent years, especially with regard to how the long-term value of a brand can be assessed and subsequently managed (Keller and Lehmann, 2009). Madden, Fehle, and Fournier (2006) demonstrate that strong brands deliver greater returns to stockholders and that they do so with less risk than strategies dependent on physical assets. As such, firms are well advised to develop either their own intangible brand assets, also known as brand equity, or seek to purchase other companies with established brands. It is generally agreed that advertising contributes to the creation of brand equity by enhancing the subjective, intangible, and emotive aspects of the brand (Broyles, Schumann, and Leingpibul 2009; Eng and Keh 2007; Keller 2003). In addition, R&D expenditures have the potential to enhance the objective, utilitarian, and tangible aspects of brand equity (Broyles, Schumann, and Leingpibul 2009; Keller, 2003). According to Broyles, Schumann, and Leingpibul (2009), there are numerous positive consequences to this

resulting brand equity. These include the likelihood that (1) consumers have reduced anticipated risk concerning a brand purchase, (2) consumers have higher confidence in the brand purchase decision, (3) consumers have higher anticipated satisfaction with the product, (4) consumers have reduced difficulty with the purchase decision process, and (5) there is a positive influence on purchase behavior. Considering these advantages, it can be expected that investments in intangible assets and capabilities should, even in the case of financially distressed firms, enhance a firm's ability to survive in the marketplace as a going concern.

When investing in strategically significant assets, however, firms need to accurately determine the most effective allocation of company resources. Perhaps the most obvious mistake that a firm can make is to under-invest in strategically significant assets (Myers and Majluf 1984). The risks of under-investment include the inability to build brand value or to effectively differentiate the firm's products from those of competitors. Given the theoretical and research evidence supporting the relationship between investments in intangible assets and capabilities and firm performance, we examine the impact of advertising expenditures, R&D expenditures, the balance sheet categories known as goodwill, "intangible assets", and "other intangibles", as well as the earnings multiple on post-bankruptcy outcomes. Our expectation is that firms that successfully restructure following bankruptcy should have higher levels of these important intangible variables than those firms that are ultimately liquidated.



## Advertising:

According to Haxthausen (2009) the creation of the advertising industry was essential to the development of the modern consumer brand. This is because advertising allowed for consistent communication of the brand promise to consumer markets. This brand promise is fundamental to a brand's identity and reputation, creating perceptions and expectations in the mind of the consumer which can strengthen the bonds between a firm and its customers (Srivastava, Shervani, and Fahey 1998). The purpose of advertising is to create brand equity and enhance firm value, and advertising can therefore be viewed as a form of investment in the intangible market-based assets of the firm (Keller 2003; Eng and Keh 2007). As such, expenditures on advertising, which are typically included in company income statements, may be used as a proxy for the presence of relational market-based assets such as brand equity.

In the case of advertising, under-investing may lead to an erosion of brand equity and to a reduction in revenue. Thus, during the bankruptcy process, firms that under-invest in advertising may be more likely to be liquidated because potential acquirers may perceive the firms' products to have little or no brand equity. As a result, they may view the reorganization of these firms as unlikely to create a "new" firm that is a legitimate going concern. Considering the possibility that bankrupt firms that were ultimately liquidated failed to invest enough of their company resources in advertising leads to the first set of hypotheses.

*H1a:* The advertising expenditures reported by restructured manufacturing firms

are significantly higher than those of liquidated manufacturing firms.

*H1b:* The advertising expenditures reported by restructured non-manufacturing firms are significantly higher than those of liquidated non-manufacturing firms.

## Research and Development:

For many firms, product innovation is a necessary activity as they pursue economic profits. Firms that develop new and innovative products are better able to increase price and earn higher profits. However, competitors will develop substitutes and imitations that will eventually erode the initial higher profits from an innovative product. Thus, firms continually seek innovative products and product features that will help make their products relatively more desirable to consumers than those of their competitors. One important measure of the internal investment by firms in intangible capabilities related to product innovation is R&D expense. According to Lev and Sougiannis (1996), R&D capability is largely viewed by investors as an asset. Expenditure on R&D is the most frequently used measure of a firm's R&D capability, and evidence suggests that R&D capability has a strong, positive association with firm performance (Krasnikov and Jayachandran 2008). Therefore R&D expenditures may be thought of as an investment in future product innovation, an important intangible market-based asset. In fact, Kasnikov and Jayachandran (2008) suggest that investments in R&D are so important that they may be likely to minimize a firm's chance of failing in the marketplace, making an empirical investigation of the relationship between



R&D expenditures and the outcome of the bankruptcy process an interesting test of this proposition.

As with advertising expenditures, under-investing in R&D may prove to be a major mistake for many firms. Under-investing may result in firms failing to launch their new products promptly, causing the market opportunities to deteriorate or vanish. Therefore, one plausible reason that can explain why firms go bankrupt is that they have under-invested in R&D. Thus, during the bankruptcy process, firms that under-invest may be more likely to be liquidated because potential acquirers may believe that the bankrupt firm's future growth opportunities are limited, making the reorganization of the firm unlikely to create a "new" firm that is a legitimate going concern. This leads to the second set of hypotheses.

*H2a:* The R&D expenditures reported by restructured manufacturing firms are significantly higher than those reported by liquidated manufacturing firms.

*H2b:* The R&D expenditures reported by restructured non-manufacturing firms are significantly higher than those reported by liquidated non-manufacturing firms.

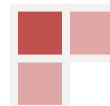
### **Goodwill, "Intangible Assets" and "Other Intangibles"**

Rather than creating value internally by investing in advertising or R&D, firms can choose to create value externally by acquiring other firms which have previously invested in effective advertising or R&D. Perhaps acquiring firms recognize that their internal advertising and R&D efforts are ineffective, and seek other external methods to create value and grow. One of the advantages of

this approach is that whereas the costs to internally generate intangible assets are normally expensed on the income statement as incurred, intangible assets acquired during a business acquisition are recorded on the balance sheet at fair market value. As a distinct type of intangible asset, goodwill typically comes into play only in an acquisition, and represents the amount of money a company has paid or would pay over the fair value of the net assets to acquire another company. Goodwill created during a business acquisition is capitalized on the balance sheet, but internally generated goodwill is not.

Currently, the purchase method is used to account for acquisitions, and under this method the purchase price is allocated to the "identifiable" assets and liabilities of the acquired firm at fair market value. Examples of identifiable assets include patents, trademarks, brand names, franchise rights, and copyrights which may allow for the adoption and assimilation of another firm's technology. These intangibles are allocated to one of two additional categories on the balance sheet, "Intangible Assets" or "Other Intangibles". Any amount during a business acquisition that cannot be allocated to one of these categories is recorded as goodwill on the balance sheet.

If firms offer too little for the external growth opportunities available, they may fail to acquire the necessary market-based assets to be competitive, which would be reflected in low levels of goodwill or intangibles on the balance sheet. On the other hand, over-paying for the external growth opportunities has the potential to produce excessive levels of goodwill or intangible assets on the balance sheet. Bankrupt firms that have



under-invested in external growth opportunities may have failed to purchase valuable market-based assets and, as a consequence, may have little to offer potential acquirers. Furthermore, reorganizing these types of firms may be seen as unlikely to create a “new” firm that is a legitimate going concern. Therefore, it could be the case that bankrupt firms which under-invest in the available external growth opportunities may be more likely to be liquidated during the bankruptcy process. Considering the possibility that bankrupt firms failed to allocate a sufficient level of company resources to external growth opportunities leads to the third set of hypotheses.

*H3a:* The external growth opportunities (as measured by goodwill, “intangibles, or “other intangibles”) pursued by restructured manufacturing firms will be significantly higher than those pursued by liquidated manufacturing firms.

*H3b:* The external growth opportunities (as measured by goodwill, “intangibles, or “other intangibles”) pursued by restructured non-manufacturing firms will be significantly higher than those pursued by liquidated non-manufacturing firms.

## **Sample:**

In order to examine our hypotheses, we collected a sample of publicly traded firms that filed for Chapter 11 bankruptcy protection from January 1980 up to year end December 2009. The 2009 cutoff date was chosen to ensure that sufficient time would be available for the final bankruptcy outcome to be established. Working from a list published by the Office of the General Counsel of the Securities and Exchange

Commission, we started with an initial set of the publicly traded bankrupt firms over the entire 30 year time period. Detailed information concerning relevant dates along the bankruptcy timeline as well as company outcomes were obtained from LEXIS/NEXIS company news reports as well as 10-K and 8-K reports gathered from EDGAR. Financial data were primarily collected from the COMPUSTAT® research database for up to four years prior to the bankruptcy filing date.

Excluded from consideration in our sample were firms that operated in (1) a regulated industry (health-care, utilities, airline or other transportation industries) or the financial services industry (banks, mortgage or real estate concerns, insurance companies); (2) those for which very little or even no company information was available; (3) those filing Chapter 11 more than once; (4) those which filed a straight Chapter 7 with the sole intention of liquidating; (5) those which did not trade on any exchange (NYSE, AMEX, NASDAQ) or pink sheets prior to the bankruptcy filing; (6) those with no COMPUSTAT data prior to the filing; (7) miscellaneous filers (foreign-based companies operating and trading in the U.S., non-profit organizations, those using Chapter 11 as a tool to facilitate an expedient acquisition with a pre-determined suitor, and cases that were officially dismissed by a bankruptcy court); or (8) those still in Chapter 11 proceedings as of the end of the second quarter of 2011. This left us with a final sample of 406 firms.

The final sample was initially divided into two categories. The first category consisted of those firms which successfully negotiated a plan of reorganization that was confirmed by a bankruptcy court. These firms, referred to



as “alive” firms, ultimately exited bankruptcy and continued to operate in the marketplace. The second category consisted of those firms that either voluntarily or involuntarily liquidated. Firms in this category ceased to exist at some point after the Chapter 11 filing. Those firms that did not successfully emerge from the bankruptcy process as

ongoing organizations are referred to as “dead” firms. Table 1 shows the distribution of firms used in our sample by outcome and year, which is consistent with the distribution of firms in other bankruptcy studies (Altman 1993; Datta and Iksandar-Datta 1995; Giammarino 1989; Warren and Westbrook 2009).

**Table 1**  
**Distribution of Bankruptcy Outcome**

Year Bankruptcy Filed	Type of Bankruptcy Outcome					
	Successfully Emerged: “Alive”		Did not Successfully Emerge: “Dead”		Total	
	Number	(%)	Number	(%)	Number	(%)
1980	5	2	3	2	8	2
1981	5	2	2	1	7	2
1982	13	5	1	1	14	3
1983	10	4	1	1	11	3
1984	8	3	5	3	13	3
1985	14	6	3	2	17	4
1986	10	4	9	6	19	5
1987	8	3	7	5	15	4
1988	11	4	4	3	15	4
1989	12	5	12	8	24	6
1990	13	5	9	6	22	5
1991	11	4	8	5	19	5
1992	14	6	8	5	22	5
1993	9	4	4	3	13	3
1994	2	1	5	3	7	2
1995	7	3	4	3	11	3
1996	14	6	5	3	19	5
1997	12	5	5	3	17	4
1998	8	3	4	3	12	3
1999	9	4	5	3	14	3
2000	13	5	10	6	23	6
2001	7	3	9	6	16	4
2002	2	1	2	1	4	1
2003	11	4	8	5	19	5
2004	6	2	3	2	9	2
2005	3	1	4	3	7	2
2006	4	2	0	0	4	1
2007	2	1	3	2	5	1
2008	2	1	8	5	10	2
2009	6	2	4	3	10	2
Total by Outcome	251		155		406	
Percentage by Outcome	62		38		100	

## Analysis and Results:

The methodology we employ makes use of a logistic regression framework in which

the dependent variable is either zero (the bankrupt company liquidated) or one (the bankrupt company restructured). In this framework, the logistic function,  $p = 1/(1+e^{\epsilon})$





$X\beta$ ), defines the probability that the firm will successfully restructure. In this equation,  $X$  can be defined as the vector of explanatory variables used to distinguish between liquidated versus restructured firms, and  $\beta$  is the vector of estimated coefficients. Table 2 shows univariate results from year -2 to year -1, where year -1 is the last fiscal year of financial statement information prior to the bankruptcy filing date. In profiling the firms in our sample, the table includes descriptive statistics comparing the firms in the two post-bankruptcy outcome categories, or “alive” versus “dead” firms. Table 2 compares the two subgroups according to the primary variables in our study; advertising expenses, R&D expenses, goodwill, intangibles, and other intangibles. As additional variables of interest, we also examined the two subgroups in terms of total assets, total sales, earnings per share, stock price and the earnings multiple. The earnings multiple is the inverse of the price-to-earnings (P/E) ratio. Firms with lower earnings multiples are viewed as having relatively strong future growth opportunities, while firms with higher earnings multiples are viewed as having fewer growth prospects. We use the earnings multiple instead of the P/E ratio because bankrupt firms tend to have negative earnings, and the economic interpretation of a negative P/E is problematic. Since stock

prices are non-negative, the earnings multiple overcomes this problem and the economic interpretation is straightforward. We therefore include the earnings multiple to capture possible future growth opportunities that the market values, but are missed by the more specific measures employed.



As can be seen in Table 2, the “alive” firms in our sample are four to six times larger than “dead” firms. The conclusion is that smaller firms are more likely to be associated with liquidation whereas larger firms are more likely to remain “alive” post-bankruptcy. Clearly, being a larger firm increases your chances of avoiding liquidation.

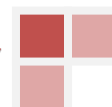


Table 2  
Univariate Results

Table 2 Univariate results									
variable	time	-2		Differen ce	p- value	-1		Differen ce	p-value
		Alive	Dead			Alive	Dead		
total assets (millions)		866.7	222.2	644.4	0.0039	817.9	179.8	638.1	0.0010
total sales (millions)		898.7	233.2	665.5	0.0125	739.0	236.7	502.3	0.0102
research and development expense (millions)		13.506	4.7798	8.7263	0.2817	13.889	4.8493	9.0397	0.2847
advertising expense (millions)		4.8791	4.5799	0.2992	0.8559	5.5539	4.5895	0.9644	0.5808
goodwill (millions)		59.126	6.9915	52.1353	0.0028	57.459	11.822	45.637	0.0086
other intangibles (millions)		61.590	5.2369	56.354	0.1478	56.342	8.4058	47.936	0.1369
intangible (millions)		106.14	12.228	93.8642	0.0203	100.52	20.172	80.312	0.0221
earnings per share (dollars)		-1.0896	-0.6964	-0.3932	0.0924	-2.7667	-1.878	-0.8886	0.0327
stock price (dollars)		7.5305	7.3881	0.1424	0.8821	4.3296	4.0708	0.2587	0.6142
earnings multiple		-0.6221	-0.3399	-0.2822	0.0366	-2.6647	-1.2093	-1.4554	0.0090

As shown in Table 2, even though “alive” firms are three to four times the size of “dead” firms, the investments in advertising between the two groups do not reflect those size differences. Similarly, although “alive” firms invest about three times more on R&D than “dead” firms, the difference is not statistically significant. In addition, the goodwill for “alive” firms is larger than the goodwill for “dead” firms for all years. This suggests that alive firms are implementing an external investment strategy. We also evaluate the firms in the sample using two measures of firm performance, basic earnings per share excluding extraordinary items, and the fiscal year-end stock price per share. Earnings per share, included as a measure of

current firm performance, indicates that both “alive” and “dead” firms are generally poor performers. This is to be expected since our sample exclusively consists of financially distressed firms. Both groups have negative earnings per share. Surprisingly, however, “dead” firms appear to be more profitable than “alive” firms for the last two years. The stock price, a measure of expected future firm performance, shows that all bankrupt firms lose more than half of their market price over the last two years of operation. Overall, these measures of firm performance show that bankrupt firms experience significant declines in profitability and stock price in the two years prior to filing for Chapter 11 bankruptcy protection.



## Normalized Univariate Results-All Firms (panel a)

In order to control for firm size, we normalized the data by constructing a ratio for each variable. Specifically, we divided each variable by total assets. In addition, in order to test our hypotheses, we broke the sample into two additional sub-groups, manufacturing and non-manufacturing. The

manufacturing sample consists of firms with a two-digit standard industrial classification code (SIC) from 20 to 39. The non-manufacturing sample consists of firms with a two-digit SIC from 70 to 88 (service) and 52-59 (retail). Table 3 shows the comparison of all firms (*panel a*), manufacturing firms (*panel b*) and non-manufacturing firms (*panel c*) for year -1, the last fiscal year prior to filing for bankruptcy.

**Table 3**  
Normalized Univariate Results

Table 3 Normalized univariate results				
<i>panel a:</i> <u>All Firms n=412</u>				
	Mean		Mean Difference	
Variable	Alive	Dead	Alive minus Dead	p value
R&D expense/total assets	0.0409	0.0690	-0.0281	0.0768
advertising expense/total assets	0.0187	0.0376	-0.0189	0.0064
goodwill/total assets	0.0483	0.0301	0.0182	0.0626
intangibles/total assets	0.0732	0.0733	-0.0001	0.9906
other intangibles/total assets	0.0277	0.0440	-0.0163	0.1397
earnings multiple	-2.6647	-1.2093	-1.4554	0.0090
<i>panel b:</i> <u>Manufacturing firms only n=168</u>				
	Mean		Mean Difference	
	Alive	Dead	Alive minus Dead	p value
R&D expense/total assets	0.0716	0.1436	-0.0720	0.0286
advertising expense/total assets	0.0183	0.0249	-0.0066	0.4461
goodwill/total assets	0.0628	0.0366	0.0263	0.1460
intangibles/total assets	0.0838	0.0717	0.0121	0.5886
other intangibles/total assets	0.0272	0.0351	-0.0079	0.5848
earnings multiple	-1.6830	-1.1356	-0.5474	0.1672
<i>panel c:</i> <u>Non-manufacturing firms only n=126</u>				
	Mean		Mean Difference	
	Alive	Dead	Alive minus Dead	p value
R&D expense/total assets	0.0400	0.0227	0.0173	0.4219
advertising expense/total assets	0.0288	0.0674	-0.0386	0.0121
goodwill/total assets	0.0568	0.0221	0.0347	0.0653



intangibles/total assets	0.0918	0.0747	0.0171	0.5651
other intangibles/total assets	0.0350	0.0548	-0.0198	0.3896
earnings multiple	-2.2204	-1.1425	-1.0778	0.0879

The first significant outcome that can be observed in *panel a* of Table 3 is that the advertising expenditures of “dead” firms is greater than that of “alive” firms. This result indicates that, when not considering the industry group, firms which over-invest in advertising are more likely to be liquidated. Similarly, although the difference is not statistically significant at the .05 level of confidence, the R&D expenditures of “dead” firms appears to be greater than that of “alive” firms. This result also seems to suggest that bankrupt firms which are ultimately liquidated invest too much in R&D as well. In summary, firms that ultimately failed appeared to have over-invested in their quest to develop intangible market-based assets as compared to firms that were successfully reorganized post-bankruptcy.

Table 3 also indicates that the level of goodwill found on the balance sheets of “alive” firms is greater than that of “dead” firms. Although not statistically significant at the .05 level of confidence, this result seems to suggest that firms which successfully exit Chapter 11 bankruptcy have invested more in external growth opportunities than those which do not. Conversely, the result also supports the idea that firms which are ultimately liquidated during the bankruptcy process either fail to pursue external growth opportunities or offer too little for those opportunities, subsequently failing to acquire them. As a consequence, these firms report little or no goodwill on the balance sheet.

The results for “Intangibles” and “Other Intangibles” are not significant. Finally, the earnings multiple of “alive” firms is lower than that of “dead” firms. This suggests that firms with a stronger earnings multiple look more attractive to potential acquirers, making them better able to avoid liquidation during the bankruptcy process.

### Univariate Results- Manufacturing Firms SIC 20-39 (panel b)

Results for the sub-sample of manufacturing firms show that R&D is the primary determinant between “alive” and “dead” firms. Specifically, manufacturing firms that invest more in R&D are more likely to be liquidated. This is a counterintuitive finding given that, in the case of manufacturing firms, R&D expenditures are positively associated with productivity (Frantzen 2003; Islam and Shazali 2011). One interpretation of these results is that financially distressed firms may have over-invested in R&D, and this over-investment, rather than enhancing their productivity, actually increases their chances of being liquidated. The results for all other variables for the sub-sample of manufacturing firms are not significant. Consequently, the univariate results fail to support H1a, H2a, H3a, or H4a.



## Univariate Results- Non-Manufacturing Firms SIC 52-59 (panel c)

Results for the sub-sample of non-manufacturing firms show that advertising is the primary determinant between “alive” and “dead” firms. Specifically, firms that invest more in advertising are actually more likely to be liquidated. This is also a counterintuitive finding given that advertising enhances brand value and, in turn, is positively related to shareholder value (Conchar, Crask, and Zinkhan 2005; Madden, Fehle, and Fournier 2006). Nevertheless, it appears as if bankrupt firms that over-invest in advertising not only fail to enhance shareholder value, but actually destroy long-term shareholder value. The results for goodwill are not statistically significant. Overall, it appears that for non-manufacturing firms, a relatively higher level of advertising expenditures, when compared to the successfully reorganized bankrupt firms in the sample, increases the likelihood of liquidation. In addition, it may be possible that increased investment in external growth opportunities through acquired goodwill may, under some instances at least, help a firm avoid liquidation during the bankruptcy

process. However, the statistical results for our non-manufacturing firms fail to lend support to H1b, H2b, H3b, or H4b.

## Logistic Regression Results

Table 4 shows the results of three separate logistic regressions, one for all firms, one for manufacturing firms only and one for the non-manufacturing firms in the sample. Each regression models the probability that the firm is “alive” post-bankruptcy. Somewhat consistent with the univariate results discussed previously, logistic regression results for the entire sample show that advertising, R&D, and the earnings multiple are all significant at the .05 level. Once again, the larger the investment in advertising and R&D, the greater the likelihood of being liquidated. The p-value associated with goodwill is not significant, but the positive coefficient on the estimate suggests that firms which invest more in external growth opportunities are perhaps more likely to avoid liquidation. Finally, the earnings multiple result shows that firms with more growth opportunities (lower earnings multiples) are more likely to avoid liquidation.



Table 4  
Logistic Regression Results

Table 4: Logistic Regression Results					
<i>panel a:</i>					
Modeling the probability that the firm is alive (alive=1, dead=0).					
<u>All Firms</u>					
Variable	Estimate	p-value			
Intercept	0.5246	0.0002			
R&D expense/total assets	-1.5536	0.0364			
advertising expense/total assets	-6.4345	0.0015			
goodwill/total assets	1.7584	0.1204			
earnings multiple	-0.0917	0.0425			
<u>regression information</u>			value	p-value	
rescaled R-square			0.0828		
Likelihood ratio			25.504	0.0001	
sample size			406		
number of alive firms			251		
number of dead firms			155		
<i>panel b:</i>					
Modeling the probability that the firm is alive (alive=1, dead=0).					
<u>Manufacturing Firms</u>			<u>Non-manufacturing Firms</u>		
Variable	Estimate	p-value	Variable	Estimate	p-value
Intercept	0.4937	0.0364	intercept	0.3298	0.2387
R&D expense/total assets	-2.1858	0.0273	R&D expense/total assets	0.5771	0.7266
advertising expense/total assets	-4.288	0.1832	advertising expense/total assets	-8.8361	0.0121
goodwill/total assets	1.9306	0.2116	goodwill/total assets	2.8779	0.2260
earnings multiple	-0.1152	0.1294	earnings multiple	-0.1465	0.1533
<u>regression information</u>			value	p-value	
rescaled R-square			0.0879		
Likelihood ratio			11.0704	0.0258	
sample size			165		
number of alive firms			100		
number of dead firms			65		
<u>regression information</u>			value	p-value	
rescaled R-square			0.1506		
Likelihood ratio			14.8867	0.0049	
sample size			125		
number of alive firms			71		
number of dead firms			54		

Similar to our earlier results, logistic regression results for the manufacturing sub-sample show that R&D is the only significant variable associated with liquidation. Increasing investment in R&D appears to increase the likelihood of liquidation, suggesting that these liquidated manufacturing firms frequently make the mistake of over-investing in R&D capabilities. Once again, there is no

statistically significant support for H1a, H3a or H4a.

Results for the non-manufacturing sub-sample, on the other hand, show that advertising expense is the only significant variable associated with liquidation. This is inconsistent with H1b. In addition, H2b, H3b, and H4b are not supported by the findings. Instead, for retailing and service firms, it appears that it is the over-investment in intangible market-based assets through



advertising expenses that appears to increase the likelihood of liquidation.

## Conclusion and Managerial Implications:

Recently, there has been a call for marketers to adopt measurement methods and performance metrics that can better demonstrate the contribution of marketing activities to the investment community (Petersen, McAlister, Reibstein, Winer, Kumar, and Atkinson 2009; Rust, Amber, Carpenter, Kumar, and Srivastava 2004; Srinivasan and Hanssens 2009). This is especially important given the intangible nature of many of the most important marketing related skills, resources, and capabilities. Petersen et al. (2009) propose shareholder value or stock price as the ultimate value metrics for marketers to adopt, yet the present study takes a different approach by looking at the flip side of success, the likelihood of terminal failure in the form of post-bankruptcy firm liquidation. While stockholders and managers alike may be interested in identifying the intangible market-based assets associated with positive performance outcomes in order to justify the value of their investments in marketing, they should be even more cognizant of the factors that could be associated with the worst possible outcome, the complete and irreversible destruction of firm value.

Focusing on an extensive sample of financially distressed firms from two separate industry categories, manufacturing versus non-manufacturing, several hypotheses were investigated. The first issue involved comparing restructured firms (“alive” firms)

to those that were ultimately liquidated (“dead” firms) with regard to the amount spent on advertising, which was normalized as a percentage of total assets. Secondly, we looked at R&D expenditures as a percentage of total assets. In addition to these internal growth options, we also looked at the level of firm investments in external growth opportunities, as measured by the balance sheet categories known as goodwill, “intangible assets”, and “other intangibles”. In order to control for firm size, these variables were also normalized as a percentage of total assets. Summing up the results, it appears that R&D and advertising have the potential to significantly explain the outcome of the bankruptcy process, and that the two sub-samples of industry categories behave differently with regard to the influence of these explanatory variables. Contrary to our hypotheses, for the sub-sample of manufacturing firms, it appears that over-investment in R&D could help explain the outcome of the bankruptcy process. On the other hand, for the sub-sample of non-manufacturing firms, over-investment in advertising could potentially help explain the outcome of the bankruptcy process.

For manufacturing firms, conventional wisdom would suggest that investments in R&D would be most likely to lead to the development of intangible capabilities that could boost firm performance. Similarly, in the case of service and retail firms, it should be expected that investments in advertising would be able to build the intangible market-based assets vital to success. Firms may increase investment in R&D because they want to develop new technical knowledge that may allow them to design superior



products and services (Krasnikov and Jayachandran 2008). Nevertheless, our findings show that manufacturing firms that over-invest in R&D are actually more likely to be liquidated.

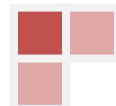
Similarly, service and retailing firms that over-invest in advertising are also more likely to be liquidated. When applied to advertising, over-investment may lead to a situation where the marginal benefit from advertising (increase in revenue) is outweighed by its marginal cost. Financially distressed firms may increase investment in advertising because they do not want current and future levels of market-based assets to deteriorate or vanish. In the end, however, it is plausible that firms declaring bankruptcy may find that their past investments in advertising have been ineffective and represent a poor use of scarce company resources.

It may be that firms in each sub-sample that have ultimately failed and been liquidated have made the mistake of investing too much in the area that should be most likely to actually enhance their performance. Therefore, aggressive allocation of scarce company resources to investments in market-based assets or unique capabilities that would in normal circumstances enhance their performance may perhaps, in the case of financially distressed firms, best be described as “too much of a good thing”.

Although most studies that have looked at the impact of advertising on performance have focused on the absolute level of advertising expenditures, it has been long realized that no two dollar investments produce equal results. Instead, the actual impact of the expenditures is more

meaningful, and the ability to design advertising campaigns with maximum productivity and efficiency is crucial to overall success (Kinnucan and Yuliang 1999; Pritchett, Lui, and Kaiser 1998). Unfortunately, a great deal of total advertising expenditures are wasted in ineffective campaigns (Abraham and Lodish 1990; Lodish, Abraham, Kalmenson, Livelsberger, Lubetkin, Richardson, and Stevens 1995). The same can probably be said for R&D expenditures. Therefore, rather than simply increasing the level of spending on intangibles, managers should instead seek to enhance the effectiveness of those intangible investments. In fact, it is highly possible that one reason our sample of firms found themselves to be in a state of financial distress in the first place is that their spending has not produced successful results. The dollar value of their investments in market-based assets does not make up for their lack of effectiveness, and any additional increases would be likely to further perpetuate an ineffective and inefficient allocation of financial resources.

Finally, the current study sets the stage for additional future research. As the only current study in the marketing literature to examine the relationship between investments in intangible assets and capabilities and the outcome of the bankruptcy process, there is clearly more work to be done. Foremost would be the need to utilize additional metrics of our market-based assets and intangible capabilities that do not rely on the financial measures found in the income statements and balance sheets. Although Srivastava, Shervani and Fahey (1998) recognize that perhaps the simplest approach to valuing





assets is on the basis of their costs, future studies should use a wider variety of nonfinancial measures of intangible marketing-related assets. For instance, rather than using advertising expenditures as a proxy for brand equity, more direct measures of this significant market-based asset should be employed. In fact, measures that take into consideration the productivity of firm investments, rather than simply their dollar value, have the potential to yield dramatically different results. Likewise, the use of R&D expenditures as a proxy for a firm's ability to

develop new products and services could also be supplanted by a more direct measure of this important capability. Finally, although our measures were designed to account for firm size, the fact remains that smaller firms are more likely to be associated with liquidation whereas larger firms are more likely to be restructured post-bankruptcy. Perhaps future studies can more fully account for the impact of firm size on post-bankruptcy outcomes or can investigate differences by more specific lines of trade.



## References:

- Aboddy, David and Baruch Lev (1998), "The Value-Relevance of Intangibles: The Case of Software Capitalization," *Journal of Accounting Research*, 36, 161-191.
- Abraham, Magid and Leonard M. Lodish (1990), "Getting the Most out of Advertising and Trade Promotion," *Harvard Business Review*, May-June, 50-63.
- Altman, Edward I. (1968), "Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy," *Journal of Finance*, 23 (September), 589-609.
- \_\_\_\_\_ (1993), *Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting and Avoiding Distress and Profiting from Bankruptcy*, New York: John Wiley & Sons.
- Baird, Douglas G. (1986), "The Uneasy Case for Corporate Reorganizations," *Journal of Legal Studies*, 15, 127-147.
- Bebchuck, Lucian A. (1988), "A New Approach to Corporate Reorganization," *Harvard Law Review*, 775.
- Berger, Philip G. and Eli Ofek (1995), "Diversification's Effect on Firm Value," *Journal of Financial Economics*, 37, 39-65.
- Blum, Mark (1974), "Failing Company Discriminate Analysis", *Journal of Accounting Research*, 12, 1 (Spring), 1-25.
- Bradley, Michael, and Michael Rosenzweig (1992), "The Untenable Case for Chapter 11," *Yale Law Journal*, 101, 1043-1095.
- Broyles, S. Allen, David W. Schumann, and Thaweephan Leingpibul (2009), "Examining Brand Equity Antecedent/Consequence Relationships," *Journal of Marketing Theory and Practice*, 17, 2 (Spring), 145-161.
- Casey, Cornelius J., Victor E. McGee, and Clyde P. Stickney (1986), "Discriminating Between Reorganized and Liquidated Firms in Bankruptcy," *The Accounting Review*, 6, 2 (April), 249-262.
- Conchar, Margy P., Melvin R. Crask, and George M. Zinkhan (2005), "Market Valuation Models of the Effect of Advertising and Promotional Spending: A Review and Meta-Analysis," *Journal of the Academy of Marketing Science*, 33, 4, 445-460.
- Dahmash, Firas, Robert B. Durand, and John Watson (2009), "The Value



- Relevance and Reliability of Reported Goodwill and Identifiable Intangible Assets," *The British Accounting Review*, 41, 120-137.
- Datta, Sudip and Mai E. Iskandar-Datta (1995), "Reorganization and Financial Distress," *Journal of Financial Research*, 18, 15-32.
- Dutta, Shantanu, Om Narasimhan, and Surendra Rajiv (1999), "Success in High Technology Markets," *Marketing Science*, 18(4), 547-568.
- Frantzen, Dirk (2003), "The Causality Between R&D and Productivity in Manufacturing: An International Disaggregate Panel Data Study," *International Review of Applied Economics*, 17, 2, 125-146.
- Giammarino, Ronald (1989), "The Resolution of Financial Distress," *Review of Financial Studies*, 2, 25-47.
- Haanes, Knut and Øystein D. Fjeldstad (2000), "Linking Intangible Resources and Competition," *European Management Journal*, 18, 1, 52-62.
- Hanssens, Dominique M., Roland T. Rust, and Rajendra K. Srivastava (2009), "Marketing Strategy and Wall Street: Nailing Down Marketing's Impact," *Journal of Marketing*, 73 (November), 115-118.
- Haxthausen, Ove (2009), "Valuing Brands and Brand Investments: Key Learnings and Future Expectations," *Journal of Brand Management*, 17, 1, 18-25.
- Heiens, Richard A., Robert T. Leach, and Leanne C. McGrath (2007), "The Contribution of Intangible Assets and Expenditures to Shareholder Value," *Journal of Strategic Marketing*, 15 (May-July), 149-159.
- Islam, Shahidul and S.T. Syed Shazali (2011), "Determinants of Manufacturing Productivity: Pilot Study on Labor-Intensive Industries," *International Journal of Productivity and Performance Management*, 60, 6, 567-582.
- Jensen, Michael C. (1986), "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers," *American Economic Review*, 76, 323-329.
- \_\_\_\_\_ (1991), "Corporate Control and the Politics of Finance," *Journal of Applied Corporate Finance*, 4, 2, 13-33.
- Keller, Kevin Lane (2003), *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*, 2<sup>nd</sup> ed., Upper Saddle River, NJ: Prentice Hall.
- \_\_\_\_\_, and Donald R. Lehmann (2009), "Assessing Long-Term Brand



- Potential," *Journal of Brand Management*, 17,1, 6-17.
- Kinnucan, Henry W., and Yuliang Miao (1999), "Media-Specific Returns to Generic Advertising: The Case of Catfish," *Agribusiness*, 15, 1 (Winter), 81-99.
- Krasnikov, Alexander, and Satish Jayachandran (2008), "The Relative Impact of Marketing, Research-and-Development, and Operations Capabilities on Firm Performance," *Journal of Marketing*, 72 (July), 1-11.
- Lang, Larry H. P. and Rene M. Stulz (1994), "Tobin's Q, Corporate Diversification and Firm Performance," *Journal of Political Economy*, 102, 1248-1280.
- Lev, Baruch, and Theodore Sougiannis (1996), "The Capitalization, Amortization, and Value-Relevance of R&D," *Journal of Accounting and Economics*, (February), 107-138.
- Lodish, Leonard M., Magid Abraham, Stuart Kalmenson, Jeanne Livelsberger, Beth Lubetkin, Bruce Richardson, and Mary Ellen Stevens (1995), "How T.V. Advertising Works: A Meta-Analysis of 389 Real World Split Cable T.V. Advertising Experiments," *Journal of Marketing Research*, 32, 2 (May), 125-139.
- LoPucki, Lynn M. (1983), "The Debtor in Full Control-System Failure Under Chapter 11 of the Bankruptcy Code?," *American Bankruptcy Law Journal*, 57, 99-126.
- Madden, Thomas J., Frank Fehle, and Susan Fournier (2006), "Brands Matter: An Empirical Demonstration of the Creation of Shareholder Value Through Branding," *Journal of the Academy of Marketing Science*, 34, 2, 224-235.
- Myers, Stewart C., and Nicholas S. Majluf (1984), "Corporate Financing and Investment Decisions when Firms Have Information that Investors Do Not Have," *Journal of Financial Economics* 13, 187-221.
- Nath, Pravin, and Vijay Mahajan (2008), "Chief Marketing Officers: A Study of Their Presence in Firms' Top Management Teams," *Journal of Marketing*, 72 (January), 65-81.
- Ohlson, James A. (1980), "Financial Ratios and the Probabilistic Prediction of Bankruptcy," *Journal of Accounting Research*, 18, 1 (Spring), 109-131.
- O'Sullivan, Don, and Andrew V. Abela (2007), "Marketing Performance Measurement Ability and Firm Performance," *Journal of Marketing*, 71 (April), 79-93.
- Petersen, J. Andrew, Leigh McAlister, David J. Reibstein, Russell S. Winer, V. Kumar, and Geoff Atkinson (2009), "Choosing the Right Metrics to Maximize Profitability and Shareholder Value," *Journal of Retailing*, 85, 1, 95-111.



- Pritchett, James G., Donald J. Liu, and Harry M. Kaiser (1998), "Optimal Choice of Generic Milk Advertising Expenditures by Media Outlet," *Journal of Agricultural and Resource Economics*, 23, 1 (July), 155-169.
- Rockoff, Jonathan D. (2010), "Pfizer Details Plans for 6,000 Job Cuts," *Wall Street Journal*, (May 19), B3.
- Rust, Roland T., Tim Ambler, Gregory S. Carpenter, V. Kumar, and Rajendra K. Srivastava (2004), "Measuring Marketing Productivity: Current Knowledge and Future Directions," *Journal of Marketing*, 68 (October), 76-89.
- Srinivasan, Shuba, and Dominique M. Hanssens (2009), "Marketing and Firm Value: Methods, Findings, and Future Directions," *Journal of Marketing Research*, 46 (June), 293-312.
- Srivastava, Rajendra K., Tasadduq A. Shervani, and Liam Fahey (1998), "Market-Based Assets and Shareholder Value: A Framework for Analysis," *Journal of Marketing*, 62 (January), 2-18.
- Thurm, Scott (2010), "Recalculating the Cost of Big Layoffs," *Wall Street Journal*, (May 5), B1.
- Verhoef, Peter C., and Peter S.H. Leeflang (2009), "Understanding the Marketing Department's Influence Within the Firm," *Journal of Marketing*, 73 (March), 14-37.
- Warren, Elizabeth, and Westbrook, J. Lawrence (2009), "The Success of Chapter 11: A Challenge to the Critics," *Michigan Law Review*, 107, 4, 603-641.
- White, Michele J. (1983), "Bankruptcy Costs and the New Bankruptcy Code," *Journal of Finance*, 38, 2 (May), 477-488.
- Zavgren, Christine V. (1985), "Assessing the Vulnerability to Failure of American Industrial Firms: A Logistic Analysis," *Journal of Business Finance and Accounting*, 12, 1, 19-45.
- Zmijewski, Mark E. (1984), "Methodological Issues Related to the Estimation of Financial Distress Prediction Models," *Journal of Accounting Research*, 22, 1, 59-82.

