Industry Effects on the Abnormal Returns to Acquiring Firms

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Abstract

Jensen (1988) sketches some empirical predictions of the shareholder wealth effects of acquisitions in various industries. This study examines the acquisition rates, wealth effects, and subsequent rates of restructuring associated with acquisitions in these and other industries. The results show that the industries discussed by Jensen experience higher rates of acquisitions and subsequent restructuring and more significant wealth effects than other industries. The signs of the wealth effects are also consistent with Jensen's predictions. Overall the findings provide some empirical support for the free cash flow theory. More detailed tests will be useful.

I. Introduction

The mid-1980s was a period of record activity in the mergers and acquisitions market. The wealth generated from returns to shareholders of acquired firms has been monumental and shareholders of acquiring firms have not suffered wealth losses; see Jensen and Ruback (1983), Jarrell, Brickley, and Netter (1988), Jarrell and Poulsen (1989), and Loderer and Martin (1990) for a review. Somewhat puzzling is the absence of significant returns, on average, to the shareholders of acquiring firms. Roll (1986) hypothesizes that this phenomenon may be a manifestation of the winners' curse. He argues that managers of acquiring firms are affected by hubris, and that this overconfidence leads to bids that transfer any value creation from an acquisition to the acquired firm.

Jensen (1986) develops the free cash flow theory of acquisitions. Subsequently, Jensen (1988) analyzes the free cash flow theory and sketches some empirical predictions of the theory. The analysis is not inconsistent with Roll's hubris hypothesis, but it does provide a potential explanation for some of the variation in the wealth effects to acquiring firm shareholders. While some of Jensen's predictions have been empirically tested (e.g., effect of method of payment on shareholder wealth, performance of acquiring and acquired firms prior to acquisition, etc.), others have not; see Jensen (1988) for a summary, and Bradley, Desai, and Kim (1988), Jarrell and Poulsen (1989), Lang, Stulz, and Walkling (1989), Morck, Shleifer, and Vishny (1990), and Lang, Stulz, and Walkling (1991) for more recent studies.

The objective of this paper is to empirically investigate Jensen's predictions regarding: 1) industry concentration of acquisitions, 2) rates of subsequent restructuring by firms in industries characterized by Jensen as high free cash flow generating industries compared to restructuring rates in other industries with a high volume of acquisition activity, and 3) the industry specific wealth effects to acquiring firms. The remainder of the paper is organized as follows. Section II summarizes Jensen's analysis of individual industries and his empirical predictions for these industries. Section III describes the data and methodology used to investigate the empirical predictions. Section IV contains the results. Section V provides a summary and the conclusions. Section VI contains recommendations for further research.

II. Industry Specific Wealth Effects

Jensen (1988) describes the free cash flow theory as one of approximately a dozen theories that have some relevance in explaining the factors motivating merger and acquisition activity. Managers of firms with large free cash flows are more likely to undertake acquisition programs. He asserts that the free cash flow theory predicts which mergers and acquisitions are more likely to destroy rather that create value. The impact on value will depend on the nature of the firm and the acquisitions that it undertakes; factors which he argues are impacted by the industry that the firm is in.

Jensen (1988) argues that industry structure, macroeconomic events, product markets, etc. have an impact on the free cash flows that a firm generates and on the shareholder wealth effects of disbursing the free cash flows. Acquisitions are more likely to occur in industries generating large free cash flows, whose industry conditions dictate retrenchment. He argues that acquisitions motivated by diversification or the desire to spend

corporate cash flows on new investment projects with low returns, rather than pay it out to shareholders, will result in reductions in shareholder wealth. Further, acquisitions outside of the acquiring firm's industry are more likely to produce negative returns to acquiring firm shareholders because managers are likely to be less efficient at managing a firm in a different line of business.

Jensen (1988) analyzes conditions in the Petroleum Refining, Tobacco, and Drug (included in Chemicals)[2] industries and predicts that firms in these industries are likely to make acquisitions that have low returns and reduce shareholder wealth. He argues that each of these industries generates large free cash flows and faces economic situations that dictate retrenchment. The Petroleum Refining industry experienced large output price changes, decreased product demand, and high interest rates. The Chemicals industry experienced large cash inflows from previous successful discoveries and faced fewer future growth prospects. The Tobacco industry generated large cash flows from established brands, yet faced declining product demand and pressures to limit advertising. These conditions led to firms in these industries generating large free cash flows while facing economic situations that called for retrenchment. Due to management resistance, political pressures, etc. firms were reluctant to pay out the free cash flows to shareholders or engage in horizontal acquisitions (i.e., the acquisition of firms in the same line of business) that would encourage resources to leave the industry. The acquisitions of unrelated firms by firms in these three industries and the resulting operating inefficiencies are expected to produce reductions in the value of the acquiring firms.

Jensen (1988) argues that horizontal acquisitions are more likely to be value-creating either because they are positive net present value investments in firms in the same line of business, or because they facilitate the exit of resources from mature industries.[3] The assumption that horizontal acquisitions facilitate the exit of resources stems from the idea that acquiring firms use their free cash flow to acquire other firms in the industry rather than to expand internally by purchasing new assets. For example, suppose that instead of building a new plant, a food processing firm acquires another food processing firm with its free cash flows. The stockholders in the acquired firm now have a great deal of cash which their own firm was reluctant to pay out to them. These stockholders will invest their newly acquired cash in a new industry with better investment prospects. Thus, the free cash flows (resources) from the first food processing firm have exited the industry through the stockholders of the acquired firm.[4] Even if these acquisitions are not value-increasing by themselves, the value of the firm may increase because they are less wasteful than expanding internally and adding capacity

to the industry.[5]

Jensen (1988) characterizes Food Processing as an industry that generates large cash flows with few growth opportunities. Mature product lines with strong sales volumes, but lower future growth, led to large free cash flows and a need for resources to exit the industry. The response of firms in the Food Processing industry differs from the responses of firms in the three industries discussed above. Food Processing firms tended to undergo leveraged buyouts and to invest free cash flows in horizontal acquisitions and consolidations rather than in new capacity in an industry that was mature. These restructurings resulted in an exit of resources from the industry as capacity was reduced. The consolidation which took place in the Food Processing industry should result in an increase in the shareholder wealth of acquiring firms.[6]

To summarize, Jensen's (1988) analysis suggests that firms in the Food Processing, Petroleum Refining, Chemicals, and Tobacco industries would be likely to initiate a high level of acquisition activity. Food Processing industry acquisitions tended to be leveraged buyouts and horizontal mergers which should result in positive returns to acquiring stockholders. Companies in the Petroleum Refining, Chemicals, and Tobacco industries, on the other hand, tended to acquire unrelated companies. Jensen argues that firms in these latter industries generate substantial free cash flows and face few opportunities to realize economies of scale and scope. Therefore, they should experience a high level of restructuring subsequent to acquisition as they 1) realign resources, carry out planned asset divestitures, and downsize the combined entity, or 2) face takeover threats if resources have been wasted in their acquisition programs. Their acquisitions should result in low or negative returns.

III. Data and Empirical Methodology

All firms listed on the New York or American stock exchanges which are engaged in manufacturing or mining operations and have the required data available on the Standard and Poor's Compustat Industrial or Research tapes and the CRSP daily returns tapes are included in the study. All acquisitions greater than $100 million, of U.S. firms by U.S. firms, completed during the years 1984, 1985, and 1986 are identified by reviewing the transactions rosters in *Mergers and Acquisitions*.[7] Acquisitions made by firms in the top six industries in terms of dollars of acquisitions are examined.[8]

The impact of acquisitions on the wealth of shareholders of the acquiring firms is computed as follows. First, *The Wall Street Journal Index* is reviewed to ascertain the date that the acquisition was first announced to the public (day 0). Second, cumulative abnormal returns are

To investigate subsequent restructurings of acquired firms, the annual indexes in *Mergers and Acquisitions* are searched for each firm. Each company is compared to the index for all years subsequent to its acquiring another firm, for the years 1985 through 1989. Divestitures by the acquiring firms and subsequent takeovers or acquisitions of a major interest in them are recorded.

Table 1

Acquisition Rates by Industry
Detailed for the Top Six Acquiring Industries by Dollars of Acquisitions
Classified by the Acquiring Firm's Industry

Completed Transactions 1984-1986

Industry	SIC	(1) Number of Firms	Acquisitions (2) Number	Acquisitions Dollars (Mill.)	(2)/(1) Acquisition Rate (%)*
Industries Discussed by Jensen:					
Petroleum Refining	29	42	13	$25,953	31.0
Chemicals	28	98	28	12,770	28.6
Tobacco	21	6	4	11,055	66.7
Food Processing	20	66	24	10,827	36.4
Subtotal		212	69	$60,605	32.5
		(18.2%)	(32.5%)	(45.3%)	
Other Industries:					
Electrical Machinery	36	195	18	$18,707	9.2
Transportation Equipment	37	67	19	14,600	28.4
All Other (21)		689	106	39,854	15.4
Subtotal		951	143	$73,161	15.0
		(81.8%)	(67.5%)	(54.7%)	
Grand Total		1,163	212	$133,766	18.2
		(100.0%)	(100.0%)	(100.0%)	

*Rates are statistically different at the 1% level for industries discussed by Jensen versus those not discussed by Jensen; determined by a difference in means test.

IV. Empirical Results

Exhibit 1 provides a summary of the acquisitions by industry. The results show that the Petroleum Refining, Chemicals, Tobacco, and Food Processing industries, characterized by Jensen as generating high free cash flows, are among the top six industries in terms of dollar value of acquisition activity. These industries contained only 18.2% of the manufacturing and mining firms, yet they accounted for 32.5% of the number of acquisitions completed and 45.3% of the dollar amount. The rate of acquisitions in each of the industries discussed by Jensen is higher than for the other industries in the top six and for all other manufacturing and mining industries. The overall acquisition rate is 32.5% for the four industries versus 15.0% for the others. This difference is statistically significant at the 1% level. As predicted, the four industries discussed by Jensen as generating high free cash flows did account for a disproportionate number of acquisitions.

The results in Exhibit 2 indicate that the cumulative abnormal return (CAR) for the aggregate sample is -0.03%, and is not statistically significant. This result is consistent with other studies of abnormal returns to acquiring firms listed in the introduction. However, when the CARs are computed for individual industries the results indicate varying returns and varying levels of statistical significance across industries.

The four industries for which Jensen makes predictions (Food Processing, Petroleum Refining, Chemicals,

computed for each company around the time of the acquisition (for days -1 to 0). The expected returns for each company are computed using standard market model methodology as described in Brown and Warner (1985). Each company's return is regressed against the CRSP equally-weighted index for days -200 to -40 before the acquisition announcement. The alphas and betas from these regressions are then used, along with the contemporaneous market returns, to compute the expected daily returns for each company. Abnormal returns are defined as the actual returns for each day minus the contemporaneous expected returns. These abnormal returns are cumulated for days -1 to 0 and then averaged for all firms and for all firms within each of the six industries. Third, standardized prediction errors are computed to test the statistical significance of the cumulative abnormal returns (see Dodd and Warner (1983) for a description).

Table 2

Cumulative Abnormal Returns To Acquiring Firms
Completing Acquisitions 1984-1986
Days (-1 to 0) Around Acquisition Announcement

Industry Name	Number of Acquisitions*	Cumulative Abnormal Returns (-1,0)	Z-Statistic
Food Processing	24	1.1%	2.97(a)
Petroleum Refining	12	-0.9%	-1.30(d)
Chemicals	27	-0.7%	-2.02(c)
Tobacco	4	-1.4%	-2.24(b)
Electrical Machinery	18	0.8%	0.37
Transportation Equipment	18	-0.5%	-1.06
All 6 Industries	103	-0.03%	-0.78

*May be less than in Exhibit 1 due to data not on the CRSP Tapes.
a Significant at the .005 level.
b Significant at the .01 level.
c Significant at the .02 level.
d Significant at the .10 level.

Acquiring firms in the four high free cash flow industries discussed by Jensen (1988) experienced higher levels of subsequent restructuring than acquiring firms in the two industries not discussed. Food Processing, Petroleum Refining, Chemicals, and Tobacco, each have restructuring rates higher than those for Electrical Equipment and Transportation Equipment The overall restructuring rate for the four industries discussed by Jensen is 53.7% versus 33.3% for the two industries not discussed. This difference is statistically significant at the 1% level. The results show that there is a higher rate of restructuring, subsequent to acquisitions, for firms in the high free cash flow industries discussed by Jensen.

V. Summary and Conclusions

Jensen (1988) argues that industry structure, macro-economic events, product markets, etc. have an impact on the free cash flows that a firm generates and on the shareholder wealth effects of disbursing the free cash flows. He then sketches empirical predictions of the free cash flow theory, arguing that: 1) certain industries will experience concentrated acquisition activity, 2) subsequent restructuring of acquiring firms will be high in these industries, and 3) the impact on shareholders' wealth will differ across industries. This paper empirically investigates Jensen's predictions of industry effects on the shareholder wealth of acquiring firms. The study includes the top six manufacturing and mining industries in terms of dollars of acquisitions completed during 1984-1986. Four of the top six industries are discussed by Jensen as industries whose firms are likely to undertake acquisitions.

and Tobacco) have cumulative abnormal returns that are statistically significant. As predicted, the CARs are negative for Petroleum Refining, Chemicals, and Tobacco, and positive for Food Processing. While omission from Jensen's discussion does not guarantee that an industry does not possess industry characteristics that lead to a systematic wealth effect, we find that acquiring firms in the Electrical Machinery and Transportation Equipment industries do not experience abnormal returns that are statistically different from zero.[9],[10]

The results of examining the acquiring firms for subsequent restructuring activity are shown in Exhibit 3. A restructuring rate is computed as the number of acquisitions with subsequent divestiture or takeover threats, divided by the total number of acquisitions completed in each industry.

The results indicate that industries discussed by Jensen (1988) experienced higher rates of acquisition activity than other industries. Significant cumulative abnormal returns are found for acquiring firms in the four industries discussed by Jensen (1988). Insignificant

Table 3

Restructuring Rates Experienced by Acquiring Firms
(Takeover Threats and Divestitures Subsequent to Acquisitions)

Completed Transactions 1984-1986
Subsequent Restructurings 1985-1989

Industry	SIC	(1) Number of Acquisitions*	(2) Number Subsequently Restructured	(2) / (1) Restructuring Rate (%)**
Industries Discussed by Jensen:				
Petroleum Refining	29	12	11	91.7
Chemicals	28	27	12	44.4
Tobacco	21	4	2	50.0
Food Processing	20	24	11	45.8
Subtotal		67	36	53.7
Other Industries:				
Electrical Machinery	36	18	5	27.8
Transportation Equipment	37	18	7	38.9
Subtotal		36	12	33.3
Grand Total		103	48	46.6

*May be less than in Exhibit 1 due to data not on the CRSP Tapes.
**Rates are statistically different at the 1% level for industries discussed by Jensen
versus those not discussed by Jensen; determined by a difference in means test.

cumulative abnormal returns are found for the industries not discussed by Jensen. The signs of the returns are consistent with Jensen's predictions for each of the four industries. Firms in these industries also experienced higher rates of subsequent restructuring.

Overall the results provide additional empirical support for the predictions sketched by Jensen and for the free cash flow theory. The findings are useful for analyzing acquisition decisions. The likely outcomes of these decisions are affected by industry circumstances. More efficient forms of monitoring, e.g., institutional pressures, may enhance shareholder wealth if they are directed at firms in industries where circumstances lead firms to make wealth-reducing acquisitions.

VI. Recommendations for Further Research

Preliminary support for Jensen's empirical predictions points to a need for future research to investigate the effects of free cash flows on acquisitions in more detail.

Discussion by Jensen does not mean that these are the only industries with free cash flows, and within the industries discussed there may be cross-sectional differences among firms. Future research is required to compute direct measures of free cash flows and potential agency costs for each firm, and to relate these measures to the wealth effects of acquisition announcements. Other firm/transaction specific variables that might impact the wealth effects (e.g., method of payment, managerial ownership, etc.) could also be controlled for in a more detailed model.

Endnotes

2. Industries are defined by two-digit SIC codes. Drug firms are included in the Chemicals industry; many firms manufacture both drugs and chemicals. A review of *Standard and Poor's Industry Surveys* around the time of this study indicates that Chemical firms faced conditions similar to Drug firms (e.g., large cash flows from previous successful discoveries and excess capacity after large capital expansion programs in the 1970s), leading to the generation of free cash flows.

3. It is also possible that horizontal acquisitions create value by creating monopoly power. However, studies by Eckbo (1983), Stillman (1983), Eckbo (1984), and Eckbo and Wier (1984) indicate that shareholder wealth increases from horizontal acquisitions are not the result of the creation of monopoly market power.

4. I am indebted to an anonymous referee for providing this example explaining how the exit of resources is facilitated.

5. The same argument could be made for diversification acquisitions. However, it is assumed that diversification acquisitions result in operating inefficiencies, from operating in a new and different line of business, that more than offset the benefits of resources leaving the industry.

6. Lehn and Poulsen (1989) provide some empirical support for this. They find a positive relationship between abnormal returns and free cash flows for firms announcing that they are going private, typically accomplished through a leveraged buyout.

7. The $100 million cutoff is used to help ensure that the acquisitions are material to the acquiring firms. The time period is selected to be consistent with Jensen's (1988) analysis, to cover a period of high acquisition activity, and to leave a post-acquisition period to check for subsequent restructuring activity.

8. The original intent was to study the top five industries. Since the fifth industry (Tobacco) has only four acquisitions, bringing the results close to case study, and the sixth industry (Food Processing) is one of the industries discussed by Jensen, six industries are included in the study.

9. The *Wall Street Journal Index* is examined for each acquisition and firms with significant other news announced during trading days -1 to +1 around the event date are identified. A total of 11 potentially confounding events are identified (5 earnings announcements, 2 dividend changes, 1 adoption of defensive measures, 1 product recall, 1 major contract received, and 1 divestiture). The results are computed excluding these confounding events and do not differ materially from the reported results.

10. It is also interesting to note the shareholder wealth effects experienced by acquirers who have completed multiple acquisitions. For example, Coca Cola completed five acquisitions and Pepsi Co. completed three. All eight of these acquisitions by the two companies resulted in increases in shareholder wealth. General Electric completed four acquisitions and USX completed two. All six of the acquisitions completed by these two companies resulted in decreases in shareholder wealth. These results suggest that individual firms often tend to be seen consistently as good or bad bidders, and will be the subject of future research.

References

1. Bradley, Michael, Anand Desai, and E. Han Kim, "Synergistic Gains From Corporate Acquisitions and Their Division Between the Stockholders of Target and Acquiring Firms," *Journal of Financial Economics*, Vol. 21, May, pp. 3-40, 1988.

2. Brown, Stephen J. and Jerold B. Warner, "Using Daily Stock Returns: The Case of Event Studies," *Journal of Financial Economics*, Vol. 14, March, pp. 3-32, 1985.

3. Dodd, Peter and Jerold B. Warner, "On Corporate Governance: A Study of Proxy Contests," *Journal of Financial Economics*, Vol. 11, April, pp. 401-438, 1983.

4. Eckbo, B. Espen, "Horizontal Mergers, Collusion, and Shareholder Wealth," *Journal of Financial Economics*, Vol. 11, April, pp. 241-273, 1983.

5. _____, "Horizontal Mergers, Industry Structure, and the Market Concentration Doctrine," University of Rochester Managerial Economics Research Center Working Paper No. MERC 84-08 (Rochester, N.Y.: March 1984).

6. _____, and Peggy Wier, "Antimerger Policy and Stockholder Returns: A Reexamination of the Market Power Hypothesis," University of Rochester Managerial Economics Research Center Working Paper No. MERC 84-09 (Rochester, N.Y.: March 1984).

7. Jarrell, Gregg A., James A. Brickley, and Jeffry M. Netter, "The Market for Corporate Control: The Empirical Evidence Since 1980," *Journal of Economic Perspectives*, Vol. 2, Winter, pp. 3-40, 1988.

8. _____, and Annette B. Poulsen, "The Returns to Acquiring Firms in Tender Offers: Evidence From Three Decades," *Financial Management*, Vol. 18, Autumn, pp. 12-19, 1989.

9. Jensen, Michael C., "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers,"*American Economic Review*, Vol. 76, July, pp. 323-329, 1986.

10. _____, "The Takeover Controversy: Analysis and Evidence," in: Coffee, J. C., L. Lowenstein, and S. Rose-Ackerman, eds., *Knights, Raiders, and Targets: The Impact of the Hostile Takeover* (Oxford University Press, New York 1988), pp. 314-354.

11. _____ and Richard S. Ruback, "The Market for Corporate Control: The Scientific Evidence," *Journal of Financial Economics*, Vol. 11, April, pp. 5-50, 1983.

12. Lang, Larry, H. P., Rene M. Stulz, and Ralph A. Walkling, "Managerial Performance, Tobin's Q, and the Gains From Successful Tender Offers," *Journal of Financial Economics*, Vol. 24, September, pp. 137-154, 1989.

13. _____, "A Test of the Free Cash Flow Hypothesis," *Journal of Financial Economics*, Vol. 29, March, pp. 315-335, 1991.

14. Lehn, Kenneth and Annette Poulsen, "Free Cash

Flow and Stockholder Gains in Going Private Transactions," *Journal of Finance*, Vol. 44, July, pp. 771-787, 1989.

15. Loderer, Claudio and Kenneth Martin, "Corporate Acquisitions by Listed Firms: The Experience of a Comprehensive Sample," *Financial Management*, Vol. 19, Winter, pp. 17-33, 1990.

16. Morck, Randall, Andrei Shleifer, and Robert W. Vishny, "Do Managerial Objectives Drive Bad Acquisitions?," *Journal of Finance*, Vol. 45, March, pp. 31-48, 1990.

17. Roll, Richard, "The Hubris Hypothesis of Corporate Takeovers," *Journal of Business*, Vol. 59, April, pp. 197-216, 1986.

18. Stillman, Robert, "Examining Antitrust Policy Towards Horizontal Mergers," *Journal of Financial Economics*, Vol. 11, April, pp. 225-240, 1983.