



NE-165

# PRIVATE STRATEGIES, PUBLIC POLICIES & FOOD SYSTEM PERFORMANCE

**Motives for Mergers in Food Manufacturing**

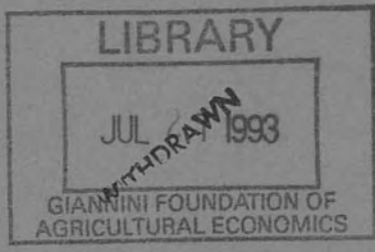
by

**Ronald W. Cotterill\* and Don Pinkerton\***

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**WORKING PAPER SERIES**



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### **Abstract**

This paper reviews theories that identify motives for mergers, reviews recent empirical research, specifies a model that incorporates alternative motives, and tests the model with data from food manufacturing mergers between 1979 and 1986. Results suggest that capital markets are not efficient, and that mergers are not to redress agency problems. Acquirers paid higher premiums for target firms that have recently had low profitability, and paid higher premiums when the stock market was low. The model explains at best 30 percent of the variation in premiums, suggesting that major explanations for mergers remain as yet unidentified.

## MOTIVES FOR MERGERS IN FOOD MANUFACTURING

### I. Introduction

Industrial organization economists have evaluated merger activity, here defined to include friendly mergers and acquisitions, hostile takeovers, and leveraged buy-outs, by analyzing the ex post performance of the merged firms. Ravenscraft and Scherer, for example, report "on average, profitability declines and efficiency losses resulted" after the conglomerate merger wave of the 1960 and 1970s. However, they clearly state "we must be cautious in imputing motives from results (Ravenscraft and Scherer, p. 212). This paper directly analyses motives for merger.

Event studies constitute a second major conceptual approach to the analysis of mergers. that at first seem to analyze motives. However, the correspondence is not exact. Corporate finance economists analyze the impact of a merger "event" upon the stock price performance of target and acquiring firms (Fama, et al.; Jarrell et al.). If one assumes that capital markets are efficient, then changes in the valuation of firms represent efficiency gains and such gains may very well be motives for merger. They may be due to synergy between the merging firms or the elimination of agency problems—i.e., good management replacing bad.

Jarrell et al. report that event study analysis of the mergers during the 1980s confirm work on prior merger waves as reported by Jensen and Ruback. Target stockholders gain via premiums paid. Acquiring firm stockholders gain nothing, and often subsequently suffer declines in stock prices performance. Jensen and Ruback noted that this subsequent decline in acquiring firms stock price performance raises disturbing questions about the efficient capital market assumption.



Scherer has recently summarized the link between capital market efficiency and the efficiency interpretation of high merger premiums as follows:

Differential willingness to accept the efficient markets axiom is at the heart of much disputation between those who infer from event studies that takeovers are efficiency-enhancing and those who are more skeptical.

The skeptical view of takeovers advances an alternative explanation for the stock price behavior observed in merger event studies. It is well accepted that stock prices move over time in something approximating a random walk. Companies can, therefore, become targets not only because their managers have erred in failing to maximize profits, but because the stock market has erred, randomly (or through fad-like movements (Shiller, 1987)), setting share prices so low as to make their issuer a bargain worth snapping up.<sup>1</sup> Random stock market valuation errors may also nominate likely acquirers, for the company whose stock is overvalued (and knows it) has a uniquely economical currency with which to make acquisitions or raise the cash for making them. Thus, premiums may be paid to gain control of undervalued companies even when no efficiency gains are expected to result from the ownership change (Scherer, p. 72).

Whether observed stock price movements measure efficiency gains of the firms involved, or corrections to an inefficient capital market, is a question that has important implications for public policy as well as strategy formulation by large firms. The acquirers motives are distinctly different under these alternative scenario. This paper analyzes motives for merger by examining the premium that an acquirer pays over the market valuation of the firm two months prior to the acquisition. We argue that this premium may be more directly correlated with measures that identify acquirers motives.

## **II. Model Specification**

Event studies are single variable studies, and as such examine only changes in the stock market valuation of a target or acquired firm due to merger. Following Halpern and others this

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<sup>1</sup> Merger-makers often behave, or at least claim to behave, as if the efficiency axiom were untrue. They search actively for "bargain" companies to acquire. For numerous examples, see Ravenscraft and Scherer pp. 9-10. (This footnote is part of the quote.)

paper will analyze the motives for mergers by moving beyond the traditional event study to develop a model that analyzes the determinants of the premiums paid for target companies. This exercise sheds light on alternative theories of corporate control and capital market efficiency.

### *Dependent Variable*

Merger premium (PREM2M): is defined as the percentage amount that the acquirer's offer price is above the target price two months prior to the announcement date. The choice of the 40 day cutoff is consistent with much of the literature. Asquith, for example, observed that stock prices begin to move, possibly in response to information leakage or speculation as much as 40 days before the event date.

This study analyzes acquirer's offer price rather than the market price of the target's stock on the announcement date because, given our interest in motives for merger, we are interested in what an acquiring firm will pay for a target company, not the stock market's valuation of what the firm will pay. The announcement date target stock price may not shift immediately to the offer price for several reasons. The market may think the deal will not go through. The market may think that higher bids may appear. The payment terms of the offer (cash, securities, long term debt) may influence market valuation. Finally, the acquirer may have more information than the market. Hirschey has documented the role of asymmetric, inside information in the merger process.

Event studies control for general movement in the value of all stocks (firms) by removing such systematic variation to produce a measure of excess or abnormal or unsystematic returns to a stock over the event window (2 months in this study). Typically, betas for target stocks are estimated in a capital asset pricing model to make this adjustment (Copeland and Weston, Ch

7; Pinkerton p. 28-30). Since many of the food mergers analyzed here are not listed on the major exchanges, price information over time is not readily available to estimate betas. Using unadjusted premiums, however, seems acceptable. The average two month premium in the sample is 49.4 percent and the average change in the S & P 500 stock price during the two month event window for the sample is only 2.3 percent. To the extent that betas are similar for food manufacturing firms the CAPM adjustment would be uniform across the sample and affect only the model's intercept term. Also to the extent that the betas are low, changes in general market valuation during the event window explain but a small portion of the observed premiums.<sup>2</sup>

### *Independent Variables*

SP 500 is the level of the Standard and Poors Stock Index at the merger announcement date. The general level of the stock market is hypothesized to be negatively related to merger premiums because stocks generally are undervalued in a low rather than a high market. Alternatively, if the stock market is efficient there, should be no relationship between premiums and the level of the market.

ROEAVG: The target's return on equity is an average for the two most recent fiscal years prior to the merger. If the market undervalues firms with poor short term earnings and acquirers recognize this, then merger premiums should be negatively related to ROEAVG. Alternatively, if the market is efficient, then there should be no relationship between premiums and ROEAVG.

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<sup>2</sup> We did compute the standard event study measure of excess returns for the 37 targets using CRSP data and found that the model explains significantly less variation in excess returns. This is consistent with our argument for analyzing offered premiums rather than stock market valuation or the announcement day (Pinkerton p. 83).

ROE and ROECHNG are target return on equity the year prior to the announcement and the change in ROE from year, t-2 to t-1. These variables are an alternative to ROEAVG. Firms with low ROE in year t-1 are hypothesized to have higher premiums. Herman and Lowenstein as well as Ravenscraft and Scherer report that target profits are often on the rebound prior to merger. ROECHNG is hypothesized to have a positive effect on the premium.

LOBTEQ is the ratio of total long term debt to total equity. A negative coefficient is expected for two reasons. First, acquiring firms may seek targets with low debt levels so that leverage can finance the merger. Second, Jensen's free cash flow theory suggests that low debt firms lack close oversight by capital markets and thus tend to have higher agency costs (poor management).<sup>3</sup> The merger process disciplines "poor" management. "Good" managers compete and pay a premium for low debt (poorly managed) firms. As Scherer explained, this hypothesis assumes that the capital market is efficient.

WORKCAP: Net working capital is defined as current assets minus current liabilities, and as such is a measure of a firm's cash position. To the extent that the market does not incorporate excess working capital into stock prices, such target firms will have higher premiums. Liquidity also may be attractive to acquirers because it can be a source of finance for the merger.

HTO is a binary variable with value one indicating a hostile takeover and value zero indicating a friendly merger or acquisition. A hostile takeover is hypothesized to command a

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<sup>3</sup> Taken at face value, Jensen's theory suggests that the optimal capital structure of a firm consists of 100 percent debt. However, he extends the theory by observing that the cost of debt increases with its level because risk, via bankruptcy cost, increases. The optimal debt level will occur at the point where the marginal cost of debt (bankruptcy cost) equals its marginal benefit (reduction in agency costs) (p. 324).



higher premium because, according to Marris and Manne, the market for corporate control removes incumbent managers who are not maximizing the value of the firm. Acquirers must pay a higher premium than would be necessary in a friendly situation to offset incumbent management resistance and influence with the target firm share holders.

LBO is a binary variable with value one indicating a leveraged buy-out by management and zero a friendly merger. Managers that go LBO may have recognized their own prior poor management and/or the market's shortfall in valuing their company. Since managers have inside information on the magnitude of the valuation gap that they do not necessarily share with directors who represent outside stockholders, we hypothesize that the LBO premium will be lower than that which would occur in a friendly merger.

OWNER is the percentage of the targets outstanding common equity held by officers and directors. Target firms with more disperse ownership may yield higher the premiums (Connor and Geithman, Ferris et al.). There are two reasons for this. First, with more disperse ownership there is a larger number of non-marginal stockholders. The transactions cost of assembling a controlling interest in the target will be higher. A second reason is that the board of a firm with dispersed management may be acting a rubber stamp, and may not be acting to maximize shareholder wealth.

INSIDE is the percent of board positions held by managers. If a firm's board is dominated by officers and top managers, then there also may be divergence from shareholder wealth maximization, and such firms will command a higher premium.

HORIZ, VERT, and RELATE are three binary variables that identify horizontal, vertical and related as opposed to purely conglomerate mergers. To the extent that they measure

synergies, efficiencies or market power gains they are expected to have a positive impact on premiums.

NBIDS is the number of bids made prior to the accepted offer. Weiss explains how "winners curse" may force premiums up in a bidding war. Varaiya also hypothesized and reported that the presence of other bidders increased merger premiums (p. 176-178).

CONSID is a binary variable that identifies mergers that use stock possibly in conjunction with cash to purchase target stock shares. Melicher and Nielson suggest that this practice may inflate premiums.

### **III. Empirical Results**

Data for this study were purchased from the Mergers and Acquisitions (M&A) database and are for 1979 to 1986. The data identify all targets publicly traded on the major exchanges or over the counter (OTC) market in SIC 20 (food and kindred products) where the total value of the acquisition exceeded \$25 million. It is not necessary that the merger be ultimately consummated, although all but four were. Firm-specific financial data used in the computation of ROEAVG, ROE, ROECHNG, LDBTEO, and WORKCAP were collected from the COMPUSTAT data base, 10-K forms, Moody's Industrial Manual, and Moody's O.T.C. manual. Information on firm ownership (OWNER, INSIDE) was collected from the Moody's manuals, Value Line Investment Survey, and purchased from the CDA Investment Technologies data service. Data for the market index variable (SP500) were obtained from Standard and Poor's Statistical Service. NBIDS and the binary variables HORIZ, VERT, and RELATE were constructed from information on primary and secondary four digit SIC codes provided by M&A. Additional information came from descriptions of business activities provided by M&A and other

news sources. Information for the construction of HTO, LBO, and CONSID was obtained from a description of deal terms provided by M&A and the Wall Street Journal.

Table 1 provided the mean, range, and standard deviation for each of the dependent and independent variables in the data set. There are 53 observations on each variable except for OWNER (51 observations). The average premium was 0.4944, indicating that acquirers offered on average 49 percent more than the target's market price 40 days before the announcement. The average target long term debt ratio (LDBTEQ) was 0.5591. One firm (Associated Coca Cola Bottling Co.) reported no long term debt in the year prior to the merger. Table 1 also shows that the average number of bids (NBIDS) was 1.24, with a maximum of five. In addition, officers and directors (OWNER) held an average of 18 percent of target stock, and on average 35 percent of board seats were held by top managers (INSIDE).

The mean value for the binary variables represent the proportion of the sample for which that variable carries a value of one. The mean value of HORIZ, for example, indicates that 15.09 percent of the mergers were horizontal. Additionally, the variable CONSID indicates that all-cash transactions composed 79.25 percent of the deals, while the remaining 20.75 percent involved the exchange of cash and stock.

Table 2 reports regression results. In equation 1 the stock market trend variable, SP500, has a negative coefficient and is significant at the one percent level. The stock market, thus, appears to be inefficient. When the stock market is low (high), acquirers are willing to pay a high (low) premium because the difference in the firms market and "warranted" value is high (low). A similar result holds for two year return on equity (ROEAVG). Premiums are significantly higher (one percent level) on low profit firms. Target long term debt equity ratios

Table 1. Descriptive Statistics of Variables

VARIABLE	N	MEAN	MIN	MAX	STD DEV
PREM2M	53	0.4944	0.0127	1.3937	0.3036
SP500	53	157.1154	100.2100	252.8400	43.4263
ROEAVG	53	0.1133	-0.3741	0.3367	0.1203
ROE	53	0.0985	-0.5232	0.3557	0.1528
ROECHG	53	-0.0296	-0.8591	0.2851	0.1649
LDBTEQ	53	0.5591	0	3.4039	0.6853
WORKCAP	53	0.2413	-0.1158	0.5485	0.1448
HORIZ	53	0.1509	0	1	0.3614
VERT	53	0.0566	0	1	0.2333
RELATE	53	0.3396	0	1	0.4781
HTO	53	0.2830	0	1	0.4548
LBO	53	0.2075	0	1	0.4094
CONSID	53	0.7925	0	1	0.4094
NBIDS	53	1.2453	1	5	0.7313
OWNER	51	0.1799	0.0004	0.6300	0.1960
INSIDE	53	0.3532	0	1	0.1899



Table 2. Multiple Regression Analysis of Merger Premiums in Food Manufacturing: 1979-1986 (t ratios in parentheses).

	1	2	3	4	5
INTCPT	1.27846	1.27874	1.27948	1.28490	1.26687
SP500	-0.00292	-0.00293	-0.00275	-0.00278	-0.00296
	(-3.442) <sup>a</sup>	(-3.405) <sup>a</sup>	(-3.148) <sup>a</sup>	(-2.870) <sup>a</sup>	(-3.337) <sup>a</sup>
ROEAVG	-1.07210		-1.10995	-0.96902	-1.19349
	(-2.766) <sup>a</sup>		(-2.767) <sup>a</sup>	(2.152) <sup>b</sup>	(-2.931) <sup>a</sup>
ROE		-1.07032			
		(-2.721) <sup>a</sup>			
ROECHNG		0.54733			
		(1.828) <sup>c</sup>			
LDBTEO	-0.14155	-0.14051	-0.14657	-0.12845	-0.13856
	(-2.040) <sup>b</sup>	(-1.919) <sup>b</sup>	(2.033) <sup>b</sup>	(1.684) <sup>c</sup>	(1.931) <sup>b</sup>
WORKCAP	-0.46871	-0.47049	-0.46752	-0.50246	-0.47926
	(1.718) <sup>c</sup>	(-1.692) <sup>c</sup>	(-1.694) <sup>c</sup>	(-1.535)	(-1.715) <sup>c</sup>
HTO			0.00395		
			(0.044)		
LBO			-0.09827		
			(-0.978)		
OWNER				0.01404	
				(0.057)	
INSIDE				-0.06601	
				(-0.282)	
NBIDS				0.00260	
				(0.045)	
CONSID				-0.02700	
				(-0.247)	(-0.179)

Table 2. Continued

	1	2	3	4	5
HORIZ					-0.02084
VERT					-0.01293
					(-0.076)
RELATE					0.10799
					(1.197)
F	4.606 <sup>a</sup>	3.609 <sup>a</sup>	3.187 <sup>b</sup>	1.850 <sup>c</sup>	2.853 <sup>b</sup>
R <sup>2</sup> /adj R <sup>2</sup>	0.2774	0.2774	0.2937	0.2606	0.3073
	0.2172	0.2006	0.2015	0.1198	0.1996

Significance levels: a = 1 percent, b = 5 percent, c = 10 percent.

are negatively related to premiums as hypothesized and significant at the 5 percent level. Low debt targets are self financing deals and possibly firms with high agency costs. Working capital (WORKCAP) has a negative rather than hypothesized positive impact on premiums and is marginally significant (10 percent level).

Equation 2 specifies ROE and ROECHNG in lieu of ROEAVG. They perform as hypothesized and are significant at the 1 and 5 percent level, respectively. Low profit firms receive higher premiums and those whose profitability is increasing have higher premiums.

Equation 3 adds the hostile takeover and leveraged buy-out binary variables to the model to test for agency costs impacts on premiums. Neither is significant.

Equation 4 adds the stock ownership dispersion variable (OWNER) the degree of managerial control on the board of directors (INSIDE), the number of bids (NBIDS) and the type of payment (CONSID) to the basic model. None are statistically significant.

Equation 5 adds the merger types binary variables, horizontal merger (HORIZ), vertical merger (VERT) and related merger (RELATE). None of the premia of these types are significantly different from those for the benchmark category (conglomerate). Buying conglomerates, breaking them up, and selling business units possibly to horizontal or vertical competitors appears to be an equally important motive for merger.

## **Conclusions**

There was substantial variation in merger premia paid for food manufacturing firms during the boom years of the 1980s. Stock market and target firm financial variables significantly affected merger premia. Proxies for agency costs and market structure features explain virtually none of the variation in premia. These results suggest that capital market inefficiency, not agency cost minimization, was the primary driving force behind the merger wave of the 1980s. Routine stock trading by investors did not value certain types of firms at their "warranted" value. Acquiring firms can and did pay substantial premiums for these undervalued firms during the 1980s.

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# PRIVATE STRATEGIES, PUBLIC POLICIES & FOOD SYSTEM PERFORMANCE

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