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## Merger Announcements and Insider Trading Activity: An Empirical Investigation

ARTHUR J. KEOWN and JOHN M. PINKERTON\*

### ABSTRACT

This paper provides evidence of excess returns earned by investors in acquired firms prior to the first public announcement of planned mergers. The study is distinguished from earlier merger studies in its use of daily holding period returns for the 194 firms sampled. The results confirm statistically what most traders already know. Impending merger announcements are poorly held secrets, and trading on this nonpublic information abounds. Specifically, leakage of inside information is a pervasive problem occurring at a significant level up to 12 trading days prior to the first public announcement of a proposed merger.

THE SEMISTRONG FORM EFFICIENT market hypothesis states that all public information is reflected in the market price of a security so that only those possessing inside information can outperform the market on a risk adjusted basis. To help prevent trading on nonpublic information, Rule 10b-5 of the Securities Exchange Act of 1934 regulates trading by insiders and requires trading by corporate officers, directors, and substantial owners to be reported to the S.E.C. Since it would be impossible to monitor trades by relatives and friends of insiders, the law also considers anyone possessing nonpublic information to be a *de facto* insider and prohibits trading on this information. In spite of these measures, trading on inside information does exist; however, the degree to which inside information is leaked and the amount of trading on this inside information is unknown.

This study deals with one area of possible insider leakage—unannounced merger plans, and examines the impact of trading on inside information in advance of planned takeover announcements by focusing on the daily stock price movements of 194 successfully acquired firms (1975–78) prior to the first public announcement of their proposed mergers. Systematic abnormal price movements can be interpreted as *prima facie* evidence of the market's reaction to information in advance of its public announcement. Using residual analysis, the abnormal returns occurring prior to the announcement are calculated. A comparison is then made between the pre-announcement abnormal returns occurring on listed versus unlisted stocks to determine if regulation associated with an organized exchange acts to deter trading on inside information.

The remainder of the paper is organized as follows. Section I reviews the existing work pertaining to trading on inside information in general, and pre-

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merger stock price changes of acquired firms in particular. An explanation is also provided as to why inside information concerning merger activity appears to be particularly susceptible to leakage. Section II presents the methodology and data used in the study while Section III examines the results of the study. Finally, Section IV presents some concluding comments.

### I. Review of the Problem

The strong-form efficient market hypothesis states that all relevant information both public and private, is reflected in a security's market price. This hypothesis has been tested using registered insider trading data collected from the S.E.C.'s *Official Summary of Security Transactions* [4, 7, 8]. Jaffe [8], for example, found that a trading strategy based upon intensive registered insider trading was able to outperform the market, and concluded that registered insiders do in fact possess special information and can gain superior returns: the residual return was approximately 5 percent in the eight months following an intensive trading event. Finnerty [4] expanded upon Jaffe's work by examining the entire population of registered insider transactions from January 1969 to December 1972 and his results corroborated those of Jaffe: he found that registered insiders were able to outperform the market when both buying and selling.

As both of these studies drew their data from the S.E.C.'s *Official Summary of Security Transactions* their observations and conclusions on insider trading are limited to registered insiders. However, trades channeled through friends or relatives or trades made by other employees who have access to privileged information are not monitored by the S.E.C. Thus, while trading on the basis of nonpublic information is illegal, only the trading activities of registered insiders can be directly examined.

While it is impossible to monitor directly all trading motivated by the possession of inside information, the effects of such trading activities can be seen through stock price movements immediately prior to the public announcement of some major event. Mandelker [10] and Halpern [6] have shown that positive residual returns occur for acquired firms just prior to the announcement date of a merger. Halpern, for example, found that the proportion of positive residuals climbed from 50 percent two months before the announcement date, to 58 percent one month prior, to 62 percent in the month of the announcement. Mandelker [10, p. 314] concluded from similar results that good news correlated with the acquisition, or positive information regarding the acquisition, had leaked out. This trading activity based upon nonpublic information that Mandelker refers to is, of course, illegal insider trading.

While the studies by Mandelker [10] and Halpern [6] focused on the overall returns to companies involved in mergers, their use of monthly trading data obscured much of the information concerning abnormal returns occurring just prior to the announcement date. For example, all abnormal returns that occur prior to the announcement date but during the same month as the announcement date would go unnoticed. It is for this reason that the use of daily returns becomes critical to the accurate measurement of any abnormal price movement that might occur prior to the merger announcement date.

Merger announcements pose two unique and difficult problems to the regulatory authorities. First, they generally involve significant price affecting information, and secondly, their planning generally includes a wide circle of people all of whom possess material inside information. As J. William Robinson, a principal in Georgeson & Co., which solicits shareholder proxies for companies engaged in takeover battles states, "You start with a handful of people, but when you get close to doing something the circle expands pretty quickly. You have to bring in directors, two or three firms of lawyers, investment bankers, public relations people, and financial printers, and everybody's got a secretary. If the deal is a big one, you might need a syndicate of banks to finance it. Every time you let in another person, the chance of a leak increases geometrically."<sup>1</sup> It appears that not only does the chance of leakage of inside information increase as the announcement date draws near, but the leakage actually takes place and is in fact quite common as Robert M. Bleiberg, Editor of *Barrons*, points out in his biting editorial, "Who's Afraid of 10b-5?" [1]. Mr. Bleiberg, after citing several unusual stock trading patterns of takeover stocks prior to their announcement date, attacked the S.E.C.'s ability to control this leakage of merger related inside information, stating that illegal trading on inside information is "running riot" on Wall Street. Thus, while the leakage of merger related inside information appears to be prevalent, control of related stock transactions is almost impossible since trading can be routed either through Swiss banks which refuse to disclose the actual purchasers of the stock they buy, or simply through friends and relatives. Moreover, regulation is further complicated by the almost impossible burden of proving that the trade was motivated by the trader's access to nonpublic information.

## II. Data and Methodology

In order to examine the price movements of stocks of companies that were eventually taken over, a sample of 101 stocks listed on the New York and American Stock Exchanges and 93 stocks traded on the Over-the-Counter Market with announcement dates ranging from 1975 through 1978 was gathered (See Appendix A). To assure the accuracy of the first public announcement of the merger each firm involved was asked by letter to supply their date.

From Standard and Poor's *Daily Stock Price Record*, the daily stock prices and dividends of the sample firms were gathered for 157 trading days surrounding the announcement date, with 126 trading days occurring before and 31 trading days on and after the announcement date. For each of the sample securities daily rates of return were calculated as:

$$R_{jt} = \ln(P_{jt+1} + D_{jt+1}) - \ln(P_{jt})$$

where

$P_{jt}$  = the closing price for security  $j$  on day  $t$

$D_{jt+1}$  = cash dividend on the ex dividend day  $t + 1$ .

<sup>1</sup> Frederick C. Klein. "Merger Leaks Abound Causing Many Stocks to Rise Before the Fact." *Wall Street Journal* 192 (12 July 1978). 1, 31.

Abnormal returns were estimated by means of the market model:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \tilde{\epsilon}_{jt} \quad (1)$$

where

$\alpha_j, \beta_j$  = the intercept and slope respectively of the linear relationship between the return of stock  $j$  and the returns of the general market;

$R_{jt}$  = the return on stock  $j$  on day  $t$ ;

$R_{mt}$  = the return on the S & P 500 stock index on day  $t$ ;

$\tilde{\epsilon}$  = the unsystematic component of firm  $j$ 's return;

The estimated abnormal return is given by

$$\hat{\epsilon}_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt}) \quad (2)$$

where  $\hat{\alpha}_j$  and  $\hat{\beta}_j$  are the ordinary least squares estimates of  $\alpha_j$  and  $\beta_j$ .<sup>2</sup>

To eliminate bias in the estimates of  $\alpha_j$  and  $\beta_j$ , they were estimated over the first 100 trading days of the study, thus excluding the 25 trading days prior to the announcement date. A check of the stability of  $\beta_j$  between the first 40 and last 40 trading days of this 100 trading day sample indicated the  $\beta_j$ 's were stable over this period. The decision to eliminate 25 trading days prior to the announcement date was based on the results of Halpern [7] who found, using monthly data, that the proportion of residuals that were positive was 50 percent in the second and third months prior to the announcement date, and 58 percent in the month prior.

The daily average residual for day  $t$  is defined as

$$\bar{\epsilon}_t = \frac{1}{194} \sum_{j=1}^{194} \hat{\epsilon}_{jt} \quad t = -125, \dots, 30$$

Thus, a total of 156 average residuals were estimated for the 125 trading day period prior to the announcement date and 31 trading day period on and after the announcement date, and used as the basis for examining unusual price movements prior to the announcement date. The cumulative average residual ( $\overline{\text{CAR}}$ ), defined as the sum of previous daily average residuals, was also determined for each trading day of the study as

$$\overline{\text{CAR}}_t = \bar{\epsilon}_t + \overline{\text{CAR}}_{t-1} \quad t = -125, \dots, 30$$

If there are no unusual price movements prior to the announcement date, one would expect both the  $\bar{\epsilon}_t$  and  $\overline{\text{CAR}}_t$  to fluctuate randomly about zero. However, if there is leakage of and trading on inside information just prior to the announcement date, this should show up in the form of positive daily average residuals as  $t$  approaches 0 and a corresponding build up in  $\overline{\text{CAR}}_t$ .

It might be expected that the regulation of organized exchanges and the added visibility associated with stocks trading on them would reduce the extent of leakage of inside information and the subsequent trading on this information.

<sup>2</sup> The Instrumental Variables Approach of Scholes and Williams [12] and the Aggregated Coefficients Approach of Dimson [3] were also employed to estimate the  $\hat{\alpha}_j$  and  $\hat{\beta}_j$  coefficients. No significant difference in results was found between these methodologies and the ordinary least squares market model. Results of these models are available from the authors.

**Table I**  
**Market Model Statistics for the Aggregated Sample Over the**  
**Period  $t = -60$  to  $t = +10$**

Day	Daily Average Residual, $\bar{\epsilon}_t$	T-Statistic <sup>a</sup>	Cumulative Average Residual $\overline{CAR}_t$	Percent of Daily Residuals Positive
-60	-0.125	0.677	-1.550	42
-59	-0.256	1.157	-1.806	37
-58	0.037	0.204	-1.769	50
-57	-0.028	0.113	-1.797	40
-56	-0.291	1.503	-2.089	40
-55	0.004	0.029	-2.084	43
-54	-0.164	0.504	-2.248	44
-53	0.088	0.568	-2.160	46
-52	-0.122	0.789	-2.281	39
-51	-0.102	0.489	-2.383	38
-50	-0.117	0.706	-2.500	45
-49	-0.275*	1.655*	-2.774	39
-48	0.109	0.656	-2.665	47
-47	-0.080	0.318	-2.745	42
-46	0.084	0.689	-2.662	46
-45	0.238	1.064	-2.424	48
-44	-0.137	0.721	-2.561	48
-43	-0.194	1.056	-2.755	47
-42	0.067	0.368	-2.688	47
-41	0.016	0.082	-2.671	44
-40	0.191	0.976	-2.480	52
-39	-0.110	0.609	-2.590	42
-38	0.310	1.553	-2.281	50
-37	0.158	1.037	-2.122	50
-36	0.629*	1.926*	-1.494	49
-35	-0.106	0.488	-1.600	45
-34	0.169	0.495	-1.431	41
-33	-0.209	0.958	-1.640	45
-32	0.213	0.976	-1.427	49
-31	0.314	1.582	-1.113	51
-30	0.240	1.136	-0.873	53
-29	0.053	0.250	-0.820	44
-28	-0.168	0.852	-0.988	47
-27	0.318	1.084	-0.670	50
-26	0.251	0.897	-0.420	42
-25	0.420	1.357	0.000	46
-24	0.286	0.916	0.286	47
-23	0.069	0.249	0.355	47
-22	0.320	1.522	0.676	51
-21	0.360	1.237	1.035	49
-20	0.347	1.042	1.383	50
-19	0.403**	1.993**	1.786	47

<sup>a</sup>  $T$ -Statistic =  $\bar{\epsilon} \cdot \sqrt{n} / [\sum_{j=1}^{194} (\epsilon_{jt} - \bar{\epsilon}_j)^2 / (n - 1)]^{1/2}$

\* Daily Average Residual is significant at the .90 level

\*\* Daily Average Residual is significant at the .95 level

\*\*\* Daily Average Residual is significant at the .98 level

\*\*\*\* Daily Average Residual is significant at the .995 level

Table I—continued

Day	Daily Average Residual, $\bar{\epsilon}_t$	T-Statistic <sup>a</sup>	Cumulative Average Residual $\overline{CAR}_t$	Percent of Daily Residuals Positive
-18	0.071	0.292	1.856	45
-17	0.527**	1.964**	2.384	47
-16	0.215	1.015	2.598	49
-15	0.079	0.381	2.677	46
-14	0.179	0.593	2.856	48
-13	-0.058	0.308	2.798	53
-12	0.423	1.581	3.221	49
-11	0.480***	2.405***	3.700	49
-10	0.424**	2.176**	4.124	51
-9	0.718***	2.427***	4.842	49
-8	0.409	1.276	5.252	44
-7	0.497*	1.801*	5.749	46
-6	0.345*	1.875*	6.094	49
-5	0.670****	2.902****	6.764	56
-4	1.260****	4.933****	8.025	60
-3	1.060****	3.705****	9.084	59
-2	1.620****	5.091****	10.704	65
-1	2.551****	5.933****	13.255	64
0	12.020****	11.526****	25.275	84
1	1.443****	3.210****	26.718	53
2	-0.044	0.242	26.674	44
3	-0.024	0.091	26.650	44
4	-0.050	0.393	26.600	49
5	0.231	1.194	26.831	46
6	-0.055	0.418	26.776	42
7	0.330**	2.012**	27.106	50
8	0.253	1.223	27.359	50
9	-0.172	1.016	27.187	45
10	-0.144	1.151	27.042	46

Therefore, the price behavior of listed and unlisted securities was also examined separately.

### III. Empirical Results

The Daily Average Residuals,  $\bar{\epsilon}_t$ , and the Cumulative Average Residuals,  $\overline{CAR}_t$ , for the total sample over the entire time period are given in Table I and Figures 1 and 2. In examining the movement of the  $\overline{CAR}_t$ , there appears to be a downward drift during the first 77 days of the study: Brown and Warner [2] suggest “like any process which follows a random walk, the CAR can easily give the appearance of ‘significant’ positive or negative drift, when none is present.” However, on those trading days closer to the announcement date both the  $\overline{CAR}_t$  and the  $\bar{\epsilon}_t$  take on abnormal characteristics. The  $\overline{CAR}_t$  becomes positive 25 trading days prior to the announcement date and approximately half of the total increase in  $\overline{CAR}_t$  occurs prior to the announcement date. Similarly, the Daily Average Residuals are positive on 26 out of the final 27 days prior to the announcement date, and

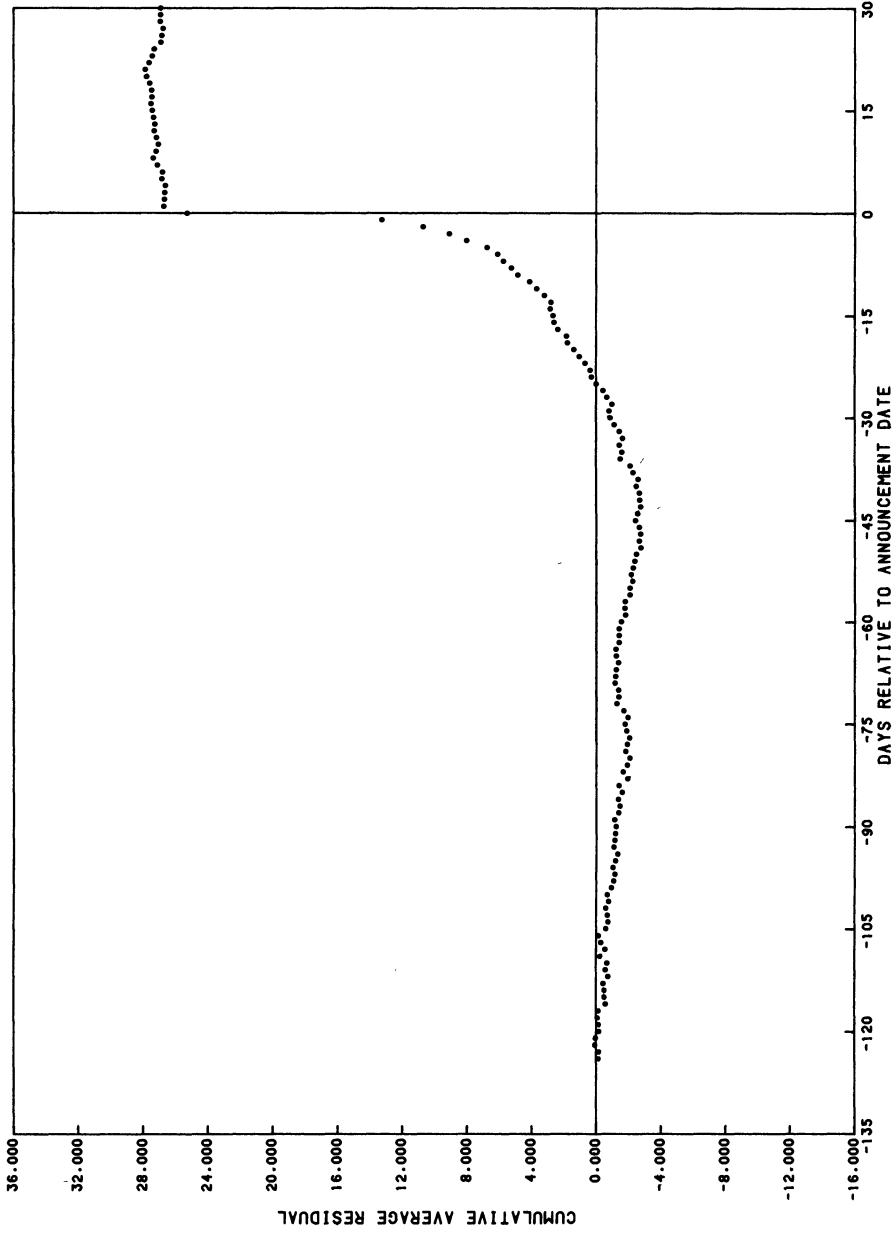


Figure 1. Cumulative Average Residuals—Market Model—Entire Sample



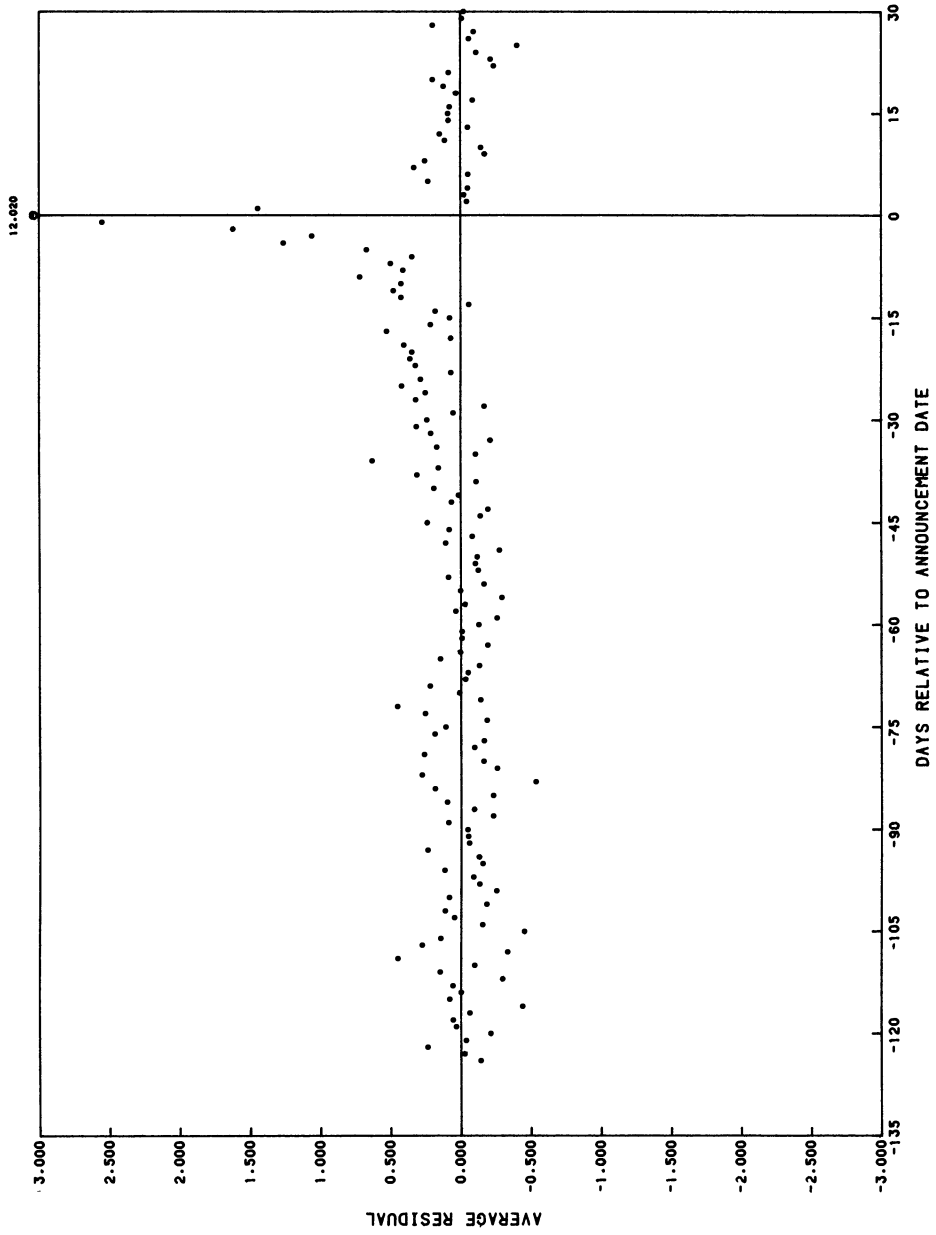


Figure 2. Average Residuals—Market Model—Entire Sample

are significantly different from zero at a minimum significance level of .90 on 10 of the final 11 days prior to the announcement date, the final 5 days significant at the .995 level. Finally, substantially more than half the Daily Residuals are positive on each of the 5 days prior to the announcement. This suggests substantial trading upon inside information concerning the prospective merger, beginning approximately one month before the announcement date with uncontrolled abuse of Rule 10b-5 occurring in the five to eleven trading days immediately prior to the announcement date.

The buildup in the  $\overline{CAR}$ , just prior to the announcement date is paralleled by a dramatic increase in trading volume which lends further support to the insider information leakage hypothesis. It was found that 79, 60, and 64 percent of the acquired firms exhibited higher volume one, two, and three weeks prior to the announcement date than they had three months earlier with the weekly average volume over this three week period 247, 112, and 102 percent higher than it was three months earlier. Such a pattern of volume is, of course, what one would expect to find prior to a public merger announcement if inside information had leaked out. It should also be noted that this increase in trading volume was not caused by the trading of registered insiders. In fact, 76 percent of the firms studied experienced no open market purchases or sales by registered insiders during the month prior to the announcement date. Further, only 12 percent of the sample firms had positive net open market purchases during the month prior to the announcement date (See Table II). Thus the frantic trading that occurred prior to the merger announcement was not caused by registered insiders for whom trades during this period would attract unwanted attention. The absence of registered insider trading combined with the dramatic increase in volume suggests

Table II  
Total Registered Insider Transactions During Month  
Prior to Announcement

Transaction	Number of Firms
None	148
Net Purchases 1-1000 shares	9
Net Sales 1-1000 shares	7
Net Purchases 1001-10,000 shares	11
Net Sales 1001-10,000 shares	14
Net Purchases 10,001 + shares	3
Net Sales 10,001 + shares	2
Total	194
Other Additional Transactions Not Included Above <sup>a</sup>	
Transaction	Number of Firms
Private Sale	4
Private Purchase	3
Other Disposition	6
Other Acquisition	6
Gifts and Exercise of Options	20

<sup>a</sup> More than one of these may occur in one month for any firm.

Source: S.E.C., *Official Summary of Security Transactions*, 1975-78.

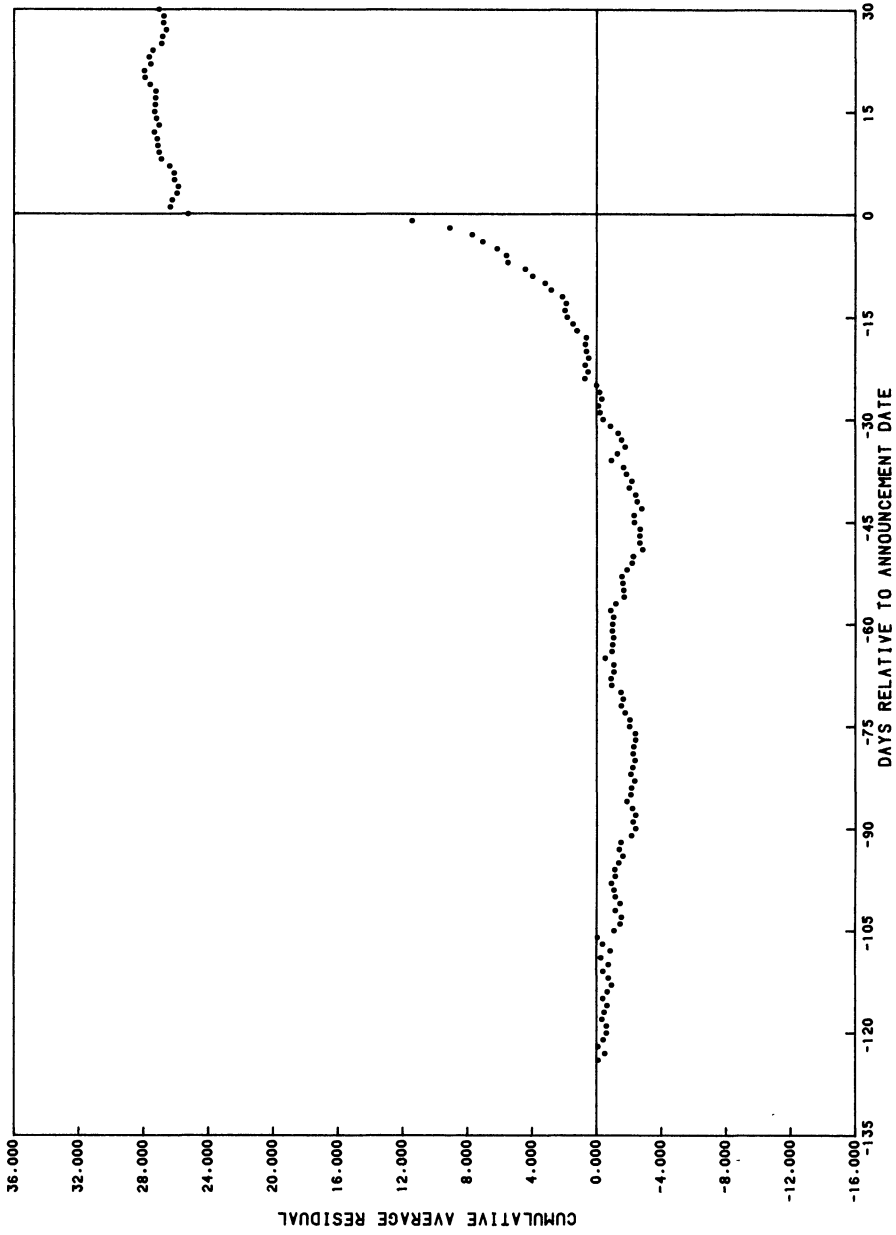


Figure 3. Cumulative Average Residuals—Market Model—Companies Traded on an Organized Exchange

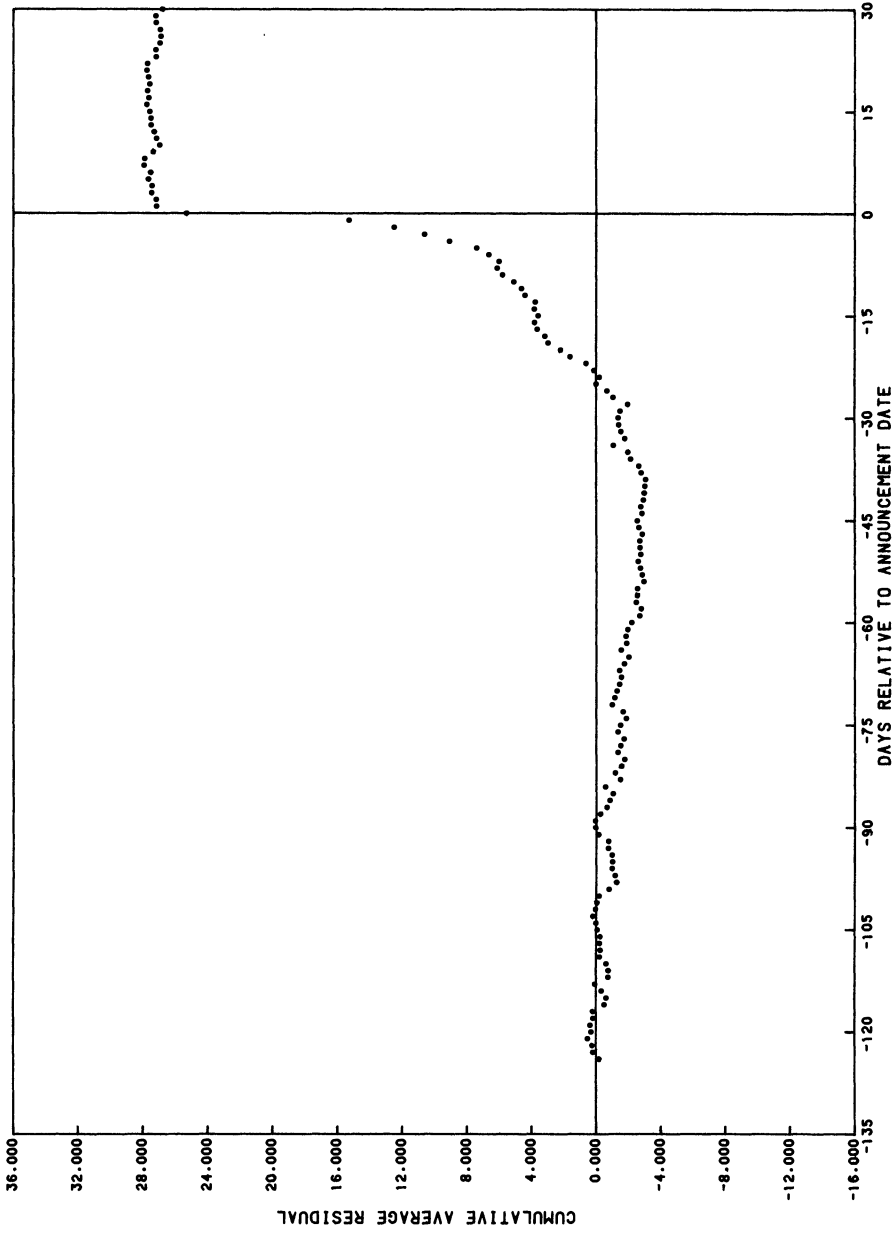


Figure 4. Cumulative Average Residuals-Market Model-Companies Traded on the Over-the-Counter Markets

that much insider trading is carried out through third parties so as to escape detection.

The market does appear to adjust immediately to the first public announcement of the planned takeover. As previously mentioned, approximately half of the market reaction occurs before the first public announcement date. Most of the remaining market reaction occurs on the announcement date with an additional smaller reaction amounting to approximately 5 percent of the buildup in the  $\overline{\text{CAR}}_t$  occurring the following day. The apparent lag in adjustment to the public announcement is no doubt due to the fact that some public announcements are made after the market closes.

For many of the firms acquired the pattern of price movements just prior to the announcement date appeared to take the form of almost continuous price increases, and a runs test for the 12 day period prior to the announcement date revealed that the residual returns of 22 firms were found to display a nonrandom pattern at the .02 significance level. Moreover, as the significance level was raised to .075 and .175 the number of firms found to display a nonrandom pattern rose to 52 and 85 respectively.

There appear to be only minor differences between the price movements of securities traded on an organized exchange and those traded on the over-the-counter market (see Figures 3 and 4) and these are not statistically significant. Neither a *t*-test nor a Wilcoxon sign rank test were able to detect any significant difference between the  $\bar{\epsilon}_t$ 's for organized and unorganized exchanges.<sup>3</sup> However, more of the build up in the  $\overline{\text{CAR}}_t$  for unlisted securities occurs before the announcement date. Specifically, while 43.3% of the total price adjustment for listed securities occurs before the announcement date, the corresponding figure for unlisted securities is 56.3%.

#### IV. Summary

This study has shown that the market reaction to intended mergers begins to occur before the first public announcement of the intended merger. To the extent that this pre-announcement trading is based upon inside information it is illegal. The findings show what appears to be common knowledge on the street: impending merger announcements are poorly held secrets, and trading on this nonpublic information abounds. However, results do support the semistrong form efficient market hypothesis since the market reaction to the new public information is complete by the day after the announcement.

#### REFERENCES

1. R. M. Bleiberg. "Who's Afraid of 106-5?." *Barrons* (24 July 1978), p. 7.
2. S. J. Brown and J. B. Warner. "Measuring Security Price Performance." *Journal of Financial Economics* 8 (September 1980), 205-58.
3. E. Dimson. "Risk Measurement When Shares are Subject to Infrequent Trading." *Journal of Financial Economics* 7 (June 1979), 197-226.

<sup>3</sup> The results of these tests are available from the authors.

4. J. E. Finnerty. "Insiders and Market Efficiency." *The Journal of Finance* 31 (September 1976), 1141-8.
5. M. Gort. "An Economic Disturbance Theory of Mergers." *Quarterly Journal of Economics* 83 (November 1969), 624-42.
6. J. P. Halpern. "Empirical Estimates of the Amount and Distribution of Gains to Companies in Mergers." *The Journal of Business* 46 (October 1976), 554-75.
7. J. J. Jaffe. "The Effect of Regulation Changes on Insider Trading." *Bell Journal of Economics and Management Science* 5 (Spring 1974), 93-121.
8. J. J. Jaffe. "Special Information and Insider Trading." *The Journal of Business* 47 (July 1974), 410-28.
9. F. C. Klein. "Merger Leaks Abound Causing Many Stocks to Rise Before the Fact." *Wall Street Journal* 192 (12 July 1978), 1.
10. G. Mandelker. "Risk and Return: The Case of Merging Firms." *Journal of Financial Economics* 1 (1974), 303-35.
11. D. C. Mueller. "The Effects of Conglomerate Mergers: A Survey of the Empirical Evidence." *Journal of Banking and Finance* 1 (December 1977), 315-47.
12. M. Scholes and J. Williams. "Estimating Betas From Nonsynchronous Data." *Journal of Financial Economics* 5 (December 1977), 309-27.
13. K. V. Smith. "The Effect of Intervaling on Estimating Parameters of the Capital Asset Pricing Model." *Journal of Financial and Quantitative Analysis* 13 (June 1978), 313-32.

APPENDIX A

Firms Included in the Sample

<i>Acquired Firm</i>	<i>Exchange<sup>a</sup></i>	<i>Acquired Firm</i>	<i>Exchange</i>
Acushnet Co.	O	Campbell Chain Co.	O
Advanced Systems Inc.	O	Campus Casuals of California	O
Airpax Electronics Inc.	A	Canoga Ind.	A
Alcon Laboratories	N	Carbon Industries Inc.	A
Allied Thermal Corp.	A	Channel Cos.	O
Ambac Industries	N	Chemetron Corp.	N
American Air Filter Co.	N	Christensen Inc.	O
American Biomedical Corp.	O	Circle Seal Corp.	O
American Chain & Cable Co. Inc.	N	Coast Catamaran Corp.	O
American Rubber Plastics	O	Coca-Cola Bottling Midwest Inc.	O
American Telecommunications	O	Compac Corp.	A
Amtel Inc.	N	Cook Electric Co.	A
Anaconda Co.	N	Cooper Range Co.	N
Archon Inc.	O	Coquina Oil Corp.	O
Arvida Corp.	O	Corco Inc.	O
Aspen Skiing Corp.	O	Cox Cable Communication Inc.	A
Automation Industries	N	Culligan International	N
Avis Inc.	N	Cutler-Hammer Inc.	N
Azcon Corp.	O	Daniel International Corp.	O
Babcock & Wilcox Co.	N	Data Technology Corp.	O
Baker Industries	N	Debron Corp.	O
Basin Petroleum Corp.	A	Delos International Group Inc.	O
Bertea Corp.	A	Diamond Coal Co.	O
Block Engineering Inc.	O	Diamond M. Co.	N
Book of the Month Club Inc.	N	Dixilyn Corp.	A
C Brewer and Co.	A	Downe Communications Inc.	O
Calbiochem	O	Dymo Industries Inc.	N

<sup>a</sup> A American Stock Exchange  
 N New York Stock Exchange  
 O Over the Counter

## APPENDIX A-Continued

Dynell Electronics Corp.	A	McIntosh Corp.	A
Eason Oil Company	A	McKee Corp.	N
Eckerd Drugs Inc.	N	McCord Corp.	N
Egan Machinery	A	McCrory Corp.	N
El Chico Corp.	O	Medical Computer Systems	O
Emergency Industry Inc.	N	Menasco Mfg Co.	N
Extracorporeal Medical	O	Microdot Inc.	N
Farmers New World Life Ins.	O	Midwestern Gas Transmission	O
FCA Industries	O	Miles Laboratories Inc.	N
Fingerhut Corp.	O	Modern Maid Food Products	A
Flynn Energy Corp.	O	Mogul Corp.	O
Foodways Natl Inc.	A	Molycorp Inc.	N
Fresnillo Co.	A	Monroe Auto Equipment Co.	N
Gilbert Robinson Inc.	O	Nasco International Public	O
Globe Union Inc.	N	National By-Products	O
Graham Magnetics	O	National Industries	N
Graphic Arts Packaging Corp.	O	National Starch & Chemical	N
Gregg's Food Products Inc.	O	Navajo Freight Lines Inc.	O
Greyhound Computer Corp.	A	Neptune International Corp.	N
H. G. Parks Inc.	O	Offshore Co.	A
Hamilton International Corp.	O	Old Stone Mortgage Realty	O
Henry Pratt Co.	O	Oregon Freeze Dry Foods Inc.	O
Her Majesty Industries Inc.	A	PPD Corp.	O
HMO International	O	P. A. and S. Small Co.	O
Hoerner Waldorf	N	Pan Ocean Oil Corp.	A
Hoffman Electronics Corp.	N	Pandel-Bradford Inc.	A
Howard Bros. Disc Stores Inc.	O	Pemcor Inc.	A
Hughes Hatcher Inc.	N	Peter Paul Inc.	N
Immuno-Sciences Corp.	O	Philadelphia Life Insurance	O
Incoterm Corp.	A	Pickwick International Inc.	N
Inland Container Corp.	N	Pizza Hut Inc.	N
Inmont Corp.	N	Pott Industries Inc.	O
International Couriers Corp.	A	Powers Regulator Company	O
International Mining Corp.	N	Presto Products	O
ITE Imperial Corp.	N	Quantor Corp.	O
Ivac Corp.	O	Racon Inc.-Del	A
KAR Products Incorporation	O	Rahall Communications	O
Kawecki Berylco Industries	N	Raymond International Inc.	N
Kewanee Industries	A	Redactron Corporation	O
Keyes Fibre Co.	O	Reed Tool Co.	N
Keystone Centers Inc.	O	Resistoflex Corp.	A
Kingstip Inc.	A	Rex Precision Products Inc.	O
Lewis Business Product	A	Richmond Corp.	N
Lexitron Corp.	O	Riviana Foods Inc.	N
Lippincott (JB) Co.	O	Rosemount Inc.	O
LMF Corp.	O	Rotron Inc.	O
Logistic Industries Corp.	A	Rucker Co.	N
Lone Star Brewing Co.	O	Safeguard Automotive Corp.	O
Madison Foods Inc.	N	Safran Printing Co.	O
Mammoth Mart Inc.	A	Search Investments	O
Mann Manufacturing	O	Seven Up Co.	O
Manning Gas & Oil Co.	O	Sherwood Medical Industries	A
Marquette Co.	N	Simplex Industries	A
Masoneilan International Inc.	A	Sky City Stores Inc.	A

**APPENDIX A-Continued**

Southland Paper Mills	O	Utah International Inc.	N
Spectral Dynamics Corp.	O	Vanier Graphics Corp.	O
Speidel Newspapers Inc.	O	Vapor Corp.	O
Spencer Foods Inc.	A	Veeder Industries Inc.	N
Stanray Corp.	N	Ventron Corp.	O
Surety Financial Corp.	O	Vetco Inc.	N
Sycor	N	Viking Industries	O
Synercon Corp.	O	Wagner Electric Corp.	A
Taco Bell	O	Wangco Inc.	O
Taylor Wine Company Inc.	O	Weatherhead Co.	N
Technical Publishing	O	Weightwatchers International	O
Texstar Corp.	A	West Knitting Corp.	O
Tuftco Corp.	A	Whitting Corp.	N
Unitek Corp.	A	Y & S Candies Inc.	O
University Savings Assoc.	A	Youngstown Steel Door Co.	N
USM Corp.	N	Yunker Brothers Inc.	O