

Sönmezer, Sıtkı

Article — Published Version

## A Sectorial Analysis of Possible Information leakages prior to Merger and Acquisition Deals in Istanbul Stock Exchange

Journal of Economics and Political Economy

*Suggested Citation:* Sönmezer, Sıtkı (2014) : A Sectorial Analysis of Possible Information leakages prior to Merger and Acquisition Deals in Istanbul Stock Exchange, Journal of Economics and Political Economy, ISSN 2148-8347, KSP Journals, Istanbul, Vol. 1, Iss. 2, pp. 186-194, <https://doi.org/10.1453/jepe.v1i2.63>, <http://kspjournals.org/index.php/JEPE/article/view/63>

This Version is available at:

<https://hdl.handle.net/10419/105848>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<http://creativecommons.org/licenses/by-nc/4.0>

**A Sectorial Analysis of Possible Information  
leakages prior to Merger and Acquisition Deals in  
Istanbul Stock Exchange**

*By* Sıtkı SÖNMEZER <sup>†</sup>

**Abstract.** This study aims to track insider trading activities prior to announcement of merger and acquisition deals in Istanbul Stock Exchange. 35 companies and 50 deals are examined for the period 2002 -2013 and significant average abnormal returns one months to twelve months prior to the dissemination of the related information are detected, indicating private information becoming public in some way. Abnormal price changes in M&A deals in Turkey may call for closer monitoring, stricter legislations and more cautious investors in the market. Significant returns are detected but no evidence regarding with sectorial differences are found in terms of information leakage.

**Keywords.** Mergers, Acquisitions, Insider Trading.

**JEL.** E40, E44, E52.

**1. Introduction**

**M**ost of the time investors and funds don't suffice with the risk free asset returns and they seek higher returns and take higher risks in security markets. However, they are cautious not to be below the security market line. Technical analysis, fundamental analysis and their ability to read the market may determine their success in a fair and an efficient market.

However, an efficient market may be fair only when the material information is disseminated simultaneously. In other words, every investor shall have the equal chance to react to the new information released otherwise, as prices adjust to new information, an investor may miss an opportunity or incur losses. Insider information may help the ones who possesses it to trade earlier than remaining lot therefore it is forbidden in almost in every reputable market.

Even if the most strict laws and regulations are in place, it may not be easy to detect insider trading by its nature. Investigations require time, effort, willingness and funding. Regulators may refrain from banning insider traders when they significantly contribute to the trading volume of the market in some cases. Despite these factors, it is obvious that insider trading is something that regulatory bodies shall fight against to build trust in the market.

This study, aims to put forth that there are significant variances in returns of companies that have announced a merger and acquisition (M&A) deal which may be linked to information linkage but refrains from any sort of accusation for these

<sup>†</sup> Beykent University, Faculty of Economics and Administrative Sciences, Business Administration Department, Turkey. ✉. sitkisonmezer@beykent.edu.tr The author gratefully acknowledges the constructive comments of the anonymous referees and esteemed recommendations of Tolunay K. Ergin and is thankful for the diligent work of Ufuk Unver in helping the collection and analysis of some data.

companies. This study has studied recent merger and acquisition deals in Turkey and aimed to trace possible insider trading prior to these deals. The main assumption of this study is that there is a significant relationship between abnormal returns prior to M&A deals and insider trading activities. There many deals taking place in Turkey but they are mostly private deals. Their data are not available and are beyond the scope of this study. Insider trading have other forms such as before making quarterly financials public but other forms of insider trading are also beyond the scope of this study.

Academicians have sought heavily insider trading prior to M&A deals in option markets as these markets may be more convenient to circumvent particular regulations such as short selling. However, Turkish options market is at the emerging stage in terms of both depth and breadth therefore the possible information in options market are left out and beyond the scope of this study. Similarly, bankruptcy filings and insider trading relationship is beyond the scope of this study due to the present strict short selling requirements and insufficient option volume in the market.

The information should be material and information related with financials, expected profit or losses, financial difficulties, change in dividend policies, legal issues, issue of new securities and M&A deals are regarded as material information. According to the decision of Capital Markets Board (CMB) of Turkey on 14.07.2011, chairman and members of the board, managers, auditors, other employees of the firm, people who may be informed about the material information by the nature of their profession or duty, and, people who may be in contact with these people directly or indirectly.

**TABLE 1.** *Sectoral Merger and Acquisition totals in Turkey between 2002-2013 (Million\$)*

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Energy	139,8	163	674	4.822	1.187	682	5.718	1.362	16.728	443	6.968	5.979
F&B	198,5	387	30	154	868	765	-	802	287	3.178	1.983	288
FinancialServ.	108,3	30	232	4.806	11.448	6.331	2.394	264	6.381	680	4.534	1.679
Cement	46,9	-	-	945	908	-	1.076	265	-	-	-	-
Automotive	37	-	27	-	202	-	-	-	-	-	-	-
IT	5,6	-	-	-	-	422	-	-	-	-	-	-
PetroChem.	-	184	85	-	-	2.040	-	-	-	-	-	-
Durables	-	159	-	-	-	-	-	-	-	-	-	-
Retail	-	154	-	576	-	-	2.062	-	-	559	-	989
Pharma.	-	63	-	-	311	612	-	-	-	-	-	-
Mining	-	44	266	186	59	-	-	385	-	-	286	-
Paper	-	29	-	-	-	-	-	-	-	-	-	-
Textile	-	21	48	-	25	-	228	-	-	-	-	-
Service	-	-	614	130	77	-	-	108	-	-	-	-
Tourism	-	-	367	642	213	352	-	-	922	-	-	-
Leather	-	-	32	-	-	-	-	-	-	-	-	-
Ceramics	-	-	85	-	-	-	-	-	-	-	-	-
Telecommun.	-	-	-	12.690	650	-	-	-	-	-	-	-
Aluminum	-	-	-	350	-	-	-	-	-	-	-	-
Port Services	-	-	-	940	127	-	-	-	-	-	-	-
MediaEntert.	-	-	-	824	833	1.472	232	-	165	452	-	556
Iron-Steel	-	-	-	3.039	42	-	-	-	-	-	-	-
Infrastructure	-	-	-	-	463	-	-	-	-	-	-	-
Malls	-	-	-	-	422	-	-	-	-	-	-	-
Manufacture	-	-	-	-	100	-	-	140	156	887	457	831
Isolation	-	-	-	-	171	-	-	-	-	-	-	-
AirportManag.	-	-	-	-	-	6.650	-	-	-	-	-	-
Real Estate	-	-	-	-	113	1.223	495	-	437	-	502	308
Production	-	-	-	-	-	650	1.954	-	-	-	-	-
Shipping	-	-	-	-	-	3.043	382	-	441	-	-	-
Construction	-	-	-	-	-	-	676	-	-	-	-	-
Health	-	-	-	-	-	-	554	294	-	1.712	838	-
Transportation	-	-	-	-	-	-	-	-	-	2.354	6.914	2.563

**Source:** (Ernst & Young)

Table 1 indicates that energy, food and beverage and financial service sectors attract the attention of market players almost every year. Each year top three

JEPE, 1(2), S. Sönmezer, p.186-194.

sectors that have enjoyed the highest investment amount in terms of merger and acquisition are bolded. Transportation sector, interestingly, have had significant deals in the last three years whereas, there were no deals recorded earlier. Media, manufacture, cement, real estate, and health sector have also had changes in their market structure. The rest of the sectors have had deals but they seem more extraordinary.

**TABLE 2.** *World Wide Announced Merger and Acquisitions (Billion\$)*

Year	2010		2011		2012		2013	
	Deals	Worth	Deals	Worth	Deals	Worth	Deals	Worth
America	12.569	1.097.178	12.800	1.234.909	12.582	1.204.407	11.812	1.230.241
Europe	15.853	643.356	16.036	711.763	14.274	783.009	12.540	547.625
Africa- M. East	1.160	81.207	1.139	47.495	1.356	62.190	1.069	80.699
Asia- Pacific	10.891	480.134	10.212	444.318	9.536	408.014	9.274	454.638
Japan	2.182	94.812	1.887	106.813	2.030	85.081	2.124	80.093
Total	42.655	2.396.689	42.074	2.545.300	39.779	2.542.703	36.819	2.393.298

**Source:** (Thomson Reuters Mergers and Acquisition Report, 2013)

In Table 2, it is apparent that there is no significant change in any region and they almost preserve their share throughout the period. Europe has the highest share, America and Asia- Pacific Countries also have substantial shares however, it is interesting to note that Africa and Middle East are almost half of Japan which is almost out of picture. The majority of the Mergers and Acquisitions take place in Eurozone, America and Asia- pacific and there is no recent interest in Middle East. Some of the mergers and acquisitions are conducted by foreign firms and by intuition, they may seem more valuable compared to deals among national firms. Geographical differences may play a role in moving prices or in terms of dissemination of material information but number of data are not sufficient yet to make a meaningful analysis for Turkish case. This table shows us that an M&A deal is a rare phenomenon that may easily be used to reap profits by insiders.

**TABLE 3.** *Horizontal, Vertical and Mix Mergers Approved by Competition Board in Turkey between 2002 and 2013*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Horizontal	28	26	42	47	45	67	51	56	11	108	121	134
Vertical	5	9	22	15	28	27	39	35	59	75	67	
Mix	1	1	1	1	5	6	4	17	67	5	6	17
Total	34	36	65	63	78	100	94	108	137	188	194	151

**Source:** Competition Board, 2013

Competition Board has a vital role in approving the deals in a merger process. Any information that may leak from the approval process may be material and constitute a source for insider traders therefore utmost precaution shall be taken when disseminating such information. Table 3 indicates that number of horizontal mergers have increased significantly recently and potential for insider information has increased. There may be other possible sources of information leakages such as higher circles in the acquiring firms or the firm being acquired. Here, it is important to differ insider information and the information that may be derived from rationing as mosaic theory points out.

## 2. Literature Survey

There are numerous studies regarding with mergers and acquisitions in the literature however, studies working with its linkage with insider trading is relatively scarce. [Augustin, Brenner and Subrahmanyam \(2014\)](#) have investigated the movements in equity options prior to M&A announcements. They provide

JEPE, 1(2), S. Sönmezer, p.186-194.

evidence that insider traders who have private information enjoy substantial positive returns after the date of announcement. They have used trading volumes, excess implied volatility and bid-ask spreads as indicators of insider trading.

Chesney, Crameri and Mancini (2011) provide empirical evidence that insider trading is present in the options market prior to particular events such as the take overs of AIG and Fannie Mae/Freddie Mac, the collapse of Bear Stearns Corporation and public announcements of large losses or write downs. They report that hundreds of millions of dollars' worth of profits are realized via insider trading.

Some deals are financed by cash and some are financed by external debt. Andrade, Mitchell and Stafford (2001) show evidence that deals financed with cash have relatively higher abnormal returns. Augustin et al, (2014) has shown that cash-deals have 6.37 % more cumulative abnormal volume than non-cash financed deals during the month before the announcement date.

Ge, Humphery-Jenner and Lee (2014) have examined bankruptcy filing announcements and insider trading relationship. Even though, they fail to find a significant relationship, they point out the fact that liquidity decreases substantially when there is a bankruptcy possibility. Thus, even if investors have a private information, they may have hardship in converting that information into cash.

Keown and Pinkerton (1981) have indicated that information leakage is highly possible in M&A deals even in the US markets. Their sample was composed of 101 shares listed in New York Stock Exchange and American Stock Exchange and 93 shares that are traded over the counter. They have provided evidence that insider trading activities occur 12 days prior to announcements. Stricter laws and regulations have passed since than therefore this period may have been diminished and it may be analyzed in another study.

A much broader and recent study is conducted by Chan, Ge and Li (2012) regarding with M&A deals. They have examined the period of 1996-2010 with a sample of 5,099 events and 1,754 firms. They conclude that informed option trading measures prior to announcements have a significant predictive power on the M&A acquirer announcement return. Moreover, they have stated that the predictive power is strengthened if the option is relatively more liquid than the stock traded.

Regarding with regulations, Securities Exchange Commission (SEC) has been eager to pursue insider trading enforcement actions and international trading activities are also taken into considerations in recent times. (Lehtman & White, 2013). The authors point out the importance of policies and procedures especially when the information is price sensitive; training programs regarding with insider trading; and finally firms should be able to know what to do when there is to a cross-border regulatory investigation.

Knewton and Nofsinger (2014) has the analyzed the end user of insider information. They provide evidence that CFO-based trading portfolios enjoy higher returns compared to CEO-based insider trading portfolios because CFOs has the ability to exploit information more fully than CEOs.

Archarya and Johnson (2010) show evidence that suspicious trading activity is positively related to number of investors in that particular deal. They have not found significant relation between target size and returns prior to deals but they have found a significant relation with target size and volume before deals.

Early researches that study Istanbul Stock Exchange claim that there are no significant abnormal returns after the acquisition or merger dates and when there are, they are only for a short period of time, namely within 5 days around the announcement day, it is possible to achieve abnormal returns (Yörük and Ban,

2006). Tanyeri and Hekimoglu (2011) point out that in the three day period around the announcement day, target firm shareholders enjoy an cumulative abnormal returns of 8.56 % in mergers and 2.25 % in partial acquisitions. No research aiming to detect insider trading in ISE prior to M&A deals is found.

### 3. Data and Methodology

Data is composed of 35 companies and 50 M&A deals for the period 2002-2103. For each incident; 1 month, 3 month, 6 month and 1 year returns prior to announcement dates are calculated. Secondly, average monthly, quarterly, semi-annually and annual returns are calculated for that particular firm prior to the particular announcement date. For each sector, insider trading may be the case when the former returns vary significantly from the latter. Normality tests and variance analysis is done by STATA. The hypothesis are as follows:

Ho: there is no significant difference between average period returns and pre-announcement returns.

H1: there is significant difference between average period returns and pre-announcement returns.

When H0 is rejected, than, insider trading may be speculated. Statistically significant period returns may give an idea regarding with the timing of the insider trading activity.

$$R_{it} = (P_{it} - P_{it-1}) / P_{it-1} \quad (1)$$

$$(R_{it} - \mu R_{it}) / s_{it} = t - score \quad (2)$$

Where,

$R_{it}$  is the observed return for the particular period and  $\mu R_{it}$  is the average period return and  $s_{it}$  is the standard deviation for the particular period. Significance of z-scores are test for significances 10%, 5% and 1 %.  $s_{it}$  is calculated from the variances of returns as shown below:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2}$$

### 4. Findings

Turkish market has been segmented into five sectors for analysis which are namely the finance sector, food sector, energy sector, media and entertainment sector and service sector. Each company under study is clustered into one sector and analyzed separately. The aim was to seek differences among sectors and timing of insider activities.

**TABLE 4.** Returns prior to announcements of the Finance Sector

Prior returns	1 year	6 months	3 months	1 month	Acquisition rate%
1 Türk Ekonomi Bankası	-0,2222	0,1371	-0,0132	-0,0549	100
2 Ak Sigorta	-0,1571	-0,2876	-0,1827	0,0000	31
3 Akbank	0,0182	-0,2432	0,2174	0,0120	20
4 Yapı Kredi	0,5944	0,4548	-0,0965	-0,0463	57,4
5 Denizbank - Zorlu Holding	1,4870	0,3619	0,2017	0,0142	74,99
6 Denizbank - Dexia	0,7067	0,3602	0,3602	0,1564	99,85
7 Alternatif Bank	0,5505	0,8370	0,4696	0,2336	70,84
8 Şekerbank	0,0000	-0,2945	-0,3312	0,0553	33,98
9 Garanti Bankası	0,0477	0,2500	0,0348	-0,1140	25,5
10 İş Yatırım	-0,3456	-0,2124	-0,0918	-0,0532	31,57

Finance sector exhibits significant changes in the prices of shares 3 to 12 months prior to announcement dates in Aksigorta, Akbank and Şekerbank cases whereas the last month was significant in Garanti Bankası case. The highest significance is with Alternatif Bank but it is worth to note that each of the deals had had significant returns prior to announcements.

**TABLE 5.** Analysis of Finance Sector

Z-scores and significance	1 month	3 months	6 months	1 year
T. Ekonomi Bankası	-3,7885 ***	-2,2384 **	-0,5911	-5,3408 ***
Ak Sigorta	-0,2548	-6,6171 ***	-6,7839 ***	-1,8924 *
Akbank	-0,2817	3,2518 ***	-9,9523 ***	-1,2770
Yapı Kredi	-3,1734 ***	-4,4388 ***	1,9262 *	1,3018
Denizbank-Zorlu Holding	-5,2038 ***	-3,0313 ***	-9,9179 ***	-0,0003
Denizbank-Dexia	6,8576 ***	8,5315 ***	3,2274 ***	4,7076 ***
Alternatif Bank	14,0691 ***	15,8401 ***	19,2584 ***	4,5232 ***
Şekerbank	0,6686	-8,3555 ***	-6,7637 ***	-3,5022 ***
Garanti Bankası	-6,0859 ***	-1,7088 *	1,5405	-1,0353
İş Yatırım	-4,1204 ***	-4,7748 ***	-6,7128 ***	-8,0306 ***

\*\*\* %99, \*\* %95, \* %90

**TABLE 6.** Returns prior to announcements of the Food Sector

Prior returns	1 year	6 months	3 months	1 month	Acquisition rate %
11 Anadolu Efes	-0,0265	-0,0456	0,0115	0,0329	100
12 Gözde Girişim Sermayesi	1,5749	0,4828	0,3738	0,1846	39
13 Kiler Alışveriş Hizmetleri	-0,5250	-0,1003	0,2052	-0,0212	100
14 Migros	-0,0980	0,1288	0,4488	-0,0515	100
15 Ülker Gıda	0,2315	0,0310	-0,0859	0,0000	100
16 Ülker Gıda	0,2441	-0,0541	-0,0948	-0,0367	78,2
17 Migros	0,3631	0,1088	0,0700	0,0190	70,77
18 Bizim Toptan	0,1589	0,0679	-0,0132	0,0170	100
19 Gözde Girişim Sermayesi	0,1385	0,0989	-0,1065	0,0816	100
20 Ülker Gıda	0,8196	0,5293	0,1386	0,0177	12,3

Food sector exhibits significant changes in the prices of shares throughout the year before the announcement dates. There is no clear picture in food sector. This may arise from the fact that sometimes there are negotiations among firms regarding with deals and there is uncertainty at the same time. Significant negative returns are reversed in the following months as in Kiler's case or significant positive returns are given back in the following months as in the second Ülker's case.

Insiders lack the ability to short sell in the Turkish market as short selling orders are alerted on screens and have to be reversed back within the day. Thus, a negative information on prices have less value to a positive information in this market. But still they may liquidate a position earlier than others which may be a breach and material.



**TABLE 7. Analysis of Food Sector**

Z-scores and significance	1 month	3 months	6 months	1 year
Anadolu Efes	2,2724 **	0,0737	-1,3729	-1,0595
Gözde Girişim	2,9017 ***	3,4951 ***	-7,0703 ***	-0,0003
Kiler Alışveriş Hizmetleri	1,1283	11,5101 ***	-14,7006 ***	-20,0000 ***
Migros	-2,7042 ***	15,0089 ***	3,0644 ***	0,4927
Ülker Gıda	-0,5208	-4,8224 ***	-0,5236	7,8354 ***
Ülker Gıda	-3,7596 ***	-4,6056 ***	-2,0891 **	10,8205 ***
Migros	0,3101	0,5181	1,2729	6,1979 ***
Bizim Tiptan	0,9944	-2,1017 **	1,2563	7,0725 ***
Gözde Girişim	1,9431 *	-8,0681 ***	-2,8350 ***	-4,7551 ***
Ülker Gıda	0,6978	6,4951 ***	14,4565 ***	11,5294 ***

\*\*\* %99, \*\* %95, \* %90

**TABLE 8. Returns prior to announcements of the Service Sector**

Prior returns	1 year	6 months	3 months	1 month	Acquisition rate %
21 Gözde Girişim Sermayesi	0,0305	0,0411	-0,1383	0,0492	48,81
22 İş Girişim Sermayesi	0,2000	0,0286	0,0189	-0,0137	20
23 Tav Havalimanı Holding	0,3780	0,0571	0,0176	-0,0211	100
24 Trakya Cam	-0,4791	-0,5353	-0,2866	-0,2000	100
25 Boyner Mağazacılık	-0,1990	0,0368	0,4091	0,2551	63
26 Arçelik	-0,7536	-0,6352	0,0759	-0,0058	100
27 Doğu Otomotiv	-0,0397	-0,0833	-0,0242	-0,1769	100
28 Gözde Girişim Sermayesi	1,0645	0,9277	-0,1281	-0,1645	67
29 Tav Havalimanı Holding	0,1813	0,1456	0,0974	-0,0048	38
30 Netaş Telekomünikasyon	2,3538	1,9727	0,1978	0,1978	100

Boyner had a highly significant positive return one month prior to announcement date. Netaş enjoyed returns throughout the previous year of the announcement date with even higher significance. The deals Gözde Girişim, Trakya Cam, Doğu Otomotiv and second deal of Gözde Girişim had significant negative returns that may indicate information leakage. Investors that had the shares seems like they have timely abandoned the shares.

**TABLE 9. Analysis of Service Sector**

Z-scores and significance	1 month	3 months	6 months	1 year
Gözde Girişim Sermayesi	-19,9130***	-16,7802***	-5,4742***	-6,7673***
İş Girişim Sermayesi	-1,2254	1,1306	1,3727	8,6133***
Tav Havalimanı Holding	-2,2477**	-0,1180	0,3113	7,7383***
Trakya Cam	-11,0315***	-8,3850***	-11,2139***	-7,5745***
Boyner Mağazacılık	12,5590***	10,4861***	-1,8186*	-5,5309***
Arçelik	-0,7513	1,5567	-11,0072***	-8,1495***
Doğu Otomotiv	-12,7773***	-2,4291***	-5,1202***	-7,0709***
Gözde Girişim	-10,0404***	-6,7100***	7,0718***	0,0002
Tav Havalimanı Holding	-0,7736	4,0420***	3,4772***	0,9426
Netaş Telekomünikasyon	10,5544***	3,3696***	30,2906***	21,7781***

\*\*\* %99, \*\* %95, \* %90

**TABLE 10. Returns prior to announcements of the Energy Sector**

Prior returns	1 year	6 months	3 months	1 month	Acquisition rate %
31 Demir Döküm	-0,2808	-0,1343	-0,1262	-0,1652	72,56
32 Petrol Ofisi-OMV Holding	0,1138	0,8716	0,3301	0,3866	95,72
33 Petkim	-0,1623	-0,2008	-0,1732	-0,1116	25
34 Tüpraş	0,8017	0,2440	0,2222	0,0773	51
35 Afyon Çimento	-0,4157	-0,0459	-0,1510	-0,0756	51
36 Aygaz	-0,0524	-0,1242	0,0833	0,1556	100
37 Doğan Holding	-0,4057	-0,4750	-0,2588	-0,0308	52
38 Doğan Holding	0,5039	0,0778	0,2357	0,0157	88,36

JEPE, 1(2), S. Sönmezer, p.186-194.



39	Akfen Holding	-0,1004	0,0489	0,4345	0,0663	40
40	Doğan Holding	-0,3333	0,4118	0,0000	-0,1325	99,99

Energy sector is one of the most interesting sector to examine in terms of abnormal returns. Acquisition of Petrol Ofisi, Aygaz and Akfen indicate information leakages based on our assumption. In the remaining deals that are not promising from the investors point of view for any reason, are sold in each period under study indicating information is not kept confidential.

**TABLE 11. Analysis of Energy Sector**

Z-scores and significance	1 month	3 months	6 months	1 year
Demir döküm	-7,7263 ***	-4,8768 ***	-5,5342 ***	-6,8283 ***
Petrol Ofisi - OMV Holding	19,8938 ***	11,5153 ***	21,9563 ***	3,9633 ***
Petkim	-7,7881 ***	-7,5832 ***	-5,8254 ***	-0,9436
Tüpraş	1,9477 *	5,8834 ***	5,0805 ***	10,6463 ***
Afyon Çimento	-5,1604 ***	-6,3122 ***	-3,7074 ***	-7,0673 ***
Aygaz	20,4158 ***	8,9539 ***	-1,9092 *	7,6055 ***
Doğan Holding	-2,3409 ***	-8,7376 ***	-12,1877 ***	-9,8888 ***
Doğan Holding	-1,0366	2,8628 ***	-3,0322 ***	-1,0553
Akfen Holding	5,9112 ***	19,7895 ***	11,3478 ***	-0,0037
Doğan Holding	-8,8148 ***	-0,8404	13,5529 ***	-6,6214 ***

\*\*\* %99, \*\* %95, \* %90

**TABLO 12. Returns prior to announcements of the Media and Entertainment Sector**

Prior returns	1 year	6 months	3 months	1 month	Acquisition rate %
41 Doğan Yayın Holding	-0,5035	-0,6502	-0,3364	0,1094	100
42 Hürriyet Gazetecilik	-0,4663	-0,4181	-0,2897	-0,1004	99,99
43 Doğan Yayın Holding	-0,8766	-0,7261	-0,6780	-0,3529	9,8
44 Doğan Yayın Holding	-0,3115	0,0347	0,0982	0,0347	100
45 Adel Kalemcilik	0,9291	0,1956	0,0149	0,2197	50
46 Doğan Holding	0,7101	0,5526	-0,0167	0,1028	100
47 Dagi Yatırım Holding	0,3082	-0,1938	-0,0714	-0,1186	12
48 Doğan Gazetecilik	-0,1838	-0,0563	0,0000	-0,0793	22
49 Doğan Holding	-0,5351	-0,4301	-0,1719	0,0192	99,99
50 Doğan Yayın Holding	0,0032	-0,3804	-0,3319	-0,4306	19,99

Media and entertainment sector resembles the other sectors in terms of significant returns. Adel Kalemcilik had a highly significant return one month prior to the announcement whereas, Dogan Yayın Holding had significant returns before almost all of the announcements. Here negative announcement expectations might have brought additional sales to this company and might have contributed the significance of returns.

**TABLE 13. Analysis of Media and Entertainment Sector**

Z-scores and significance	1 month	3 months	6 months	1 year
Doğan Yayın Holding	4,3197 ***	-7,9678 ***	-11,6072 ***	-9,1784 ***
Hürriyet Gazetecilik	-4,7599 ***	-7,7641 ***	-8,5000 ***	-8,5402 ***
Doğan Yayın Holding	-13,5999 ***	-14,0838 ***	-11,8893 ***	-13,8419 ***
Doğan Yayın Holding	-0,3333	-1,2594	-2,6928 ***	-6,9802 ***
Adel Kalemcilik	13,7820 ***	-2,2070 **	1,0688	10,1725 ***
Doğan Holding	6,1202 ***	-1,9042 *	12,8359 ***	7,8658 ***
Dagi Yatırım Holding	-8,0557 ***	-4,2369 ***	-6,4578 ***	4,6876 ***
Doğan Gazetecilik	-4,7706 ***	-0,9639	-2,5215 ***	-4,2197 ***
Doğan Holding	1,1225	-6,4368 ***	-9,6493 ***	-3,0267 ***
Doğan Yayın Holding	-13,8515 ***	-6,9434 ***	-9,9772 ***	-2,5426 ***

\*\*\* %99, \*\* %95, \* %90

## 5. Conclusion

Information leakage is an international problem that deteriorates the belief in markets that already have hardship in attracting investors. Apparently, M&A deals are a good source to obtain insider information in Istanbul Stock Exchange and information seems to be obtained twelve to one month in advance before the announcement date.

Strict regulations or discouraging penalties may play a role in predating the transactions as insiders may believe they may avoid investigations this way. There may be other factor in the abnormal variation in prices of shares that have an announcement to make regarding with M&A deals they have experienced but prices seem like adjusting to the information before the announcement dates which is a clear breach of trust and duty against small investors. Penalties shall be stricter and regulators may closely monitor trading activities 6 to 12 months prior to announcements.

It is hard to say insider trading changes from sector to sector but it is a problem to fight with in general. Discouraging penalties may help investors to refrain from such activities but monitoring foreign investors and penalizing them may be a challenge for Turkish regulators in the coming terms.

## References

- Acharya, V. V., & Johnson, T. C. (2010). More insiders, more insider trading: Evidence from private-equity buyouts. *Journal of Financial Economics*, 98(3), 500-523.
- Andrade, G., Mitchell, M., & Stafford, E. (2001). New Evidence and Perspectives on Mergers. *The Journal of Economic Perspectives*, 15(2), 103-120.
- Augustin, P., Brenner, M. & Subrahmanyam, M. G. (2014). Informed Options Trading ahead of M&A Announcements: Insider Trading? *Working Paper*.
- Chan, K., Ge, L., & Lin, T. C. (2012). Informational Content of Options Trading on Acquirer Announcement Return. *Journal of Financial and Quantitative Analysis*.
- Chesney, M., Crameri, R., & Mancini, L. (2011). Detecting Informed Trading Activities in the Options Markets. NCCR FINRISK *Working Paper* No. 560.
- Ge, L., Humphrey-Jenner, M., & Lin, T. C. (2014). Informed Options Trading Prior to Bankruptcy Filings. *Working Paper*.
- Keown, A. J., & Pinkerton, J. M. (1981). Merger Announcements and Insider Trading Activity: An Empirical Investigation. *The Journal of Finance*, 36(4), 855-869.
- Knewton H. S. & Nofsinger J. R. (2014). Why are CFO Insider Trades More Informative? *Managerial Finance*, 40(2), 157-175.
- Lehtman J., & White. W. (2013). US insider trading enforcement goes global. *Journal of Investment Compliance*, 14(3), 4-10.
- Tanyeri, B., & Hekimoğlu, M. H. (2011). Türk Şirket Birleşmelerinin Satın Alınan Şirketlerin Hisse Senedi Fiyatları Üzerine Etkileri. Bilkent Üniversitesi. Ankara, Türkiye
- Yörük, N., & Ban, Ü. (2006). Şirket Birleşmelerinin Hisse Senedi Fiyatlarına Etkisi: İMKB'de İşlem Gören Gıda Sektörü Şirketlerinde Birleşme Etkisinin Analizi. *Muhasebe Finansman Dergisi*, 88-101.



## Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by-nc/4.0>).

