Bachelor Thesis

The stock price reaction to an earnings announcement and what explains it, for AEX listed companies.

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Abstract

This paper examines the stock price reaction to a company's annual earnings announcement report. The research is done for 73 AEX listed companies for the period January 1990 – May 2018 for which 772 annual earnings announcements are found. There is a positive relation found between the abnormal announcement return and the earnings announcement, meaning a positive abnormal announcement return for good news events and a negative abnormal announcement return for bad news events. For both the good and bad news events there is an upwards sloping trend of the post-earnings-announcement drift. The magnitude of the announcement return is influenced by the company's size, the change in trading volume and the company's return volatility in the run-up to the actual earnings announcement.

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I. Introduction

Earnings announcements tend to change the stock price of the announcing company, because it releases new information into the market. This newly released information then has to be incorporated into the stock price. This paper examines the relation between annual earnings announcements and the reaction of the company's stock price. The research focusses on Dutch companies which are listed on the Amsterdam Exchange Index (AEX) for the period 1990 – 2018.

Ball and Brown (1968) where one of the first who found a reaction in the stock return around the earnings announcement date. They made a distinction between good and bad news, where they looked at the sign of the earnings announcement. If it was positive, meaning an earnings announcement containing positive information about the company's earnings, it is considered as good news and negative information is considered as bad news. They found that good news leads to a positive stock return and bad news leads to a negative stock return for companies in the United States (Ball & Brown, 1968). The research done by Beaver (1968) also observes a price reaction around the earnings announcement date for United States companies. The price reaction is the biggest on the actual date when the earnings are announced. This means that the announcement contains some extra information leading to a change in the expectations of individual investors and a change in price (Beaver, 1968).

A positive relation between the stocks abnormal return and the earnings surprise at the announcement date is found for European companies as well (Gerard, 2012). The result of Gerard confirms the observations of Dumontier and Raffournier (2002) who summarized results from researches done for different European countries. Gerard (2012) also finds as the holding period after the announcement date becomes longer, up until 60 trading days, the larger the increase in the abnormal return will be. This is in line with the earlier research of Ball and Brown (1968), who found a post earnings announcement drift as an under reaction to information released on the announcement date. Another important role for the size of the earnings announcement return is the information uncertainty, which is measured by the volatility of the stocks. Stocks which are highly volatile, so more information uncertainty, earn higher abnormal returns than stocks with a lower volatility (Gerard, 2012).

The findings of Ball and Brown (1968) are also found for annual earnings announcement of companies listed on the Euronext Paris. A positive relation is found between the earnings surprise and the abnormal stock return. Good news leads to a positive abnormal return, bad news to a negative abnormal return. No news released on the announcement date however, ensures no significant price

reaction. It means that the market already expected the announcement and all the information is already incorporated in the price (Louhichi, 2008).

A lot of research has been done for the stock price reaction after an earnings announcement. The most of the researches, however, are about the companies listed on markets in the United States. The research for European markets is far less. There are some European countries for which a research has been done, like the research of Louhichi (2008) for the Euronext Paris. This research focusses on the Netherlands, companies listed on the AEX in particular. Because there has been little research about the Dutch market, this research will give some insights in whether or not the findings of earlier researches also apply for the Netherlands. The main goal of the research is to find whether there is the same positive relation between the stocks abnormal return and the earnings announcement as is found for Europe and the United States. Another goal is to find which characteristics, such as stock return volatility, the size of the company etc. influence the magnitude of the abnormal return on and around the announcement date. At last some insight will be given in the phenomenon of the post-earnings-announcement drift.

The results of this paper confirm the earlier findings about the positive relation between the abnormal announcement return and the earnings announcement. A positive announcement return is found for good news events and a negative abnormal return is found for bad news events. There is a relation between the magnitude of the announcement return and the size of a company for both the good and bad news events. A positive relation is found between the company's stock return volatility and the announcement return for good news events. The change in the traded number of shares is negatively related to the announcement return for bad news events. For the post-earnings-announcement drift this paper found an upwards sloping trend for both the good and bad news events.

The structure of this paper is as follows: Section II will present relevant literature and earlier findings. In Section III the data will be described, followed by the description of the research methodology in Section IV. Section V describes the main results and last there will be a conclusion and suggestions for further research in Section VI.

II. Literature Review

As discussed before, there is a positive relationship between the sign of the earnings surprise and the stocks abnormal return. A positive earnings surprise leads to a positive abnormal return and a negative earnings surprise leads to a negative abnormal return around the announcement date. There are however some other factors that affect the magnitude of the abnormal stock return.

On and around the earnings announcement date there is an increase or decrease in the volume of the traded shares of the announcing company. The change of the stock price will be in the same proportion and direction as the change in the transactions, the change in the traded number of shares (Beaver, 1968). The change in the trading volume around the announcement date is also found in European markets. As the trading volume increases, the abnormal stock return increases as well (Gerard, 2012).

The company's size also affects the magnitude of the abnormal announcement return. Financial institutions and financial media are less interested in smaller companies. This leads to more information asymmetry in the stock price of smaller companies. When new information is then released in the form of the earnings announcement, there will be a larger information reaction leading to a larger abnormal return (Firth, 1981). Chari, Jagannathan, & Ofer (1988) showed the same results. Companies which were relatively small showed the highest abnormal returns around the earnings announcement date.

Another interesting finding is the change in the stock returns volatility on and around the earnings announcement date. The volatility of the stock return increases (Chari et al., 1988). Combining this with earlier findings, there seems to be a relation between the increase in volatility and the change in the earnings announcement return. This relation is confirmed in the research of Gerard (2012) who finds a higher return for highly volatile stocks than for stock of low volatility. He also finds an increase in the stock return volatility on and around the earnings announcement date, as did Chari et al. (1988).

Earlier researches showed differences in stock returns between growth and value stocks. Value stocks are stocks with a low price relative to a measure of value such as the earnings or cash flows. This means that the earnings-to-price as well as the cash flow-to-price ratio is high. Value stocks also have an high book-to-market value, which can be shown trough the constant growth model of Gordon & Shapiro (1956). Growth stocks are the opposite of the value stocks. They have an high price relative to a measure of value, leading to low earnings-to-price and cash flow-to-price ratio's and a low book-to-market value (Lakonishok, Shleifer, & Vishny, 1994). The research done by Skinner and Sloan (2002) focusses on this value versus growth topic for earnings announcements. In their research they show that stocks with a low market-to-book value, so value stocks, have higher abnormal returns around the announcement date. So there is a positive relation between the market-to-book value and the magnitude of the abnormal announcement return. In other words, the relation between value stocks and the abnormal announcement return is positive and the relation between growth stocks and the abnormal announcement return is negative. The difference between value and growth stocks is even bigger when the information released on the announcement date is negative information (Skinner & Sloan, 2002).

Post-earnings-announcement drift

The post-earnings-announcement drift was first discovered by Ball and Brown (1968). It is the phenomenon of the continuing increase or decrease of the cumulative abnormal earnings announcement returns after the announcement date. The cumulative abnormal returns of firms with good news keep increasing and the cumulative abnormal returns of firms with bad news keep decreasing after the earnings announcement (Ball & Brown, 1968). Ball and Brown (1968) also found out that the information released by the income report is already anticipated by the market before the annual income report is released. However, the market is still anticipating on the earnings announcement even after the announcement date, meaning there is an under reaction in the processing of the released information.

A lot of research has been done after Ball and Brown (1968). Foster, Olsen, and Shevlin (1984) and Bernard and Thomas (1989) where some of the researchers who continued investigating this phenomenon. In the 60 trading days after the announcement date, an abnormal return of 4.2% could be achieved by going long in the stocks with the highest unexpected earnings and by going short in the stocks with the lowest unexpected earnings. Doing so will result of an annualized abnormal return of 18% in the period of 1974-1986 (Bernard & Thomas, 1989). The annualized abnormal return for the period of 1974-1981 was even higher, about 25% (Foster et al., 1984). Seeing these results it can be said that the post-earnings-announcement drift does exist, leading to an increase in the cumulative abnormal returns for firms with good news and a decrease for firms with bad news.

Earlier findings already showed that the smaller companies earned higher abnormal announcement returns. The same is found for the post-earnings-announcement drift. The post-earnings-announcement drift is larger for smaller firms, so the magnitude of the drift is negatively related to the size of the company (Bernard & Thomas, 1989; Foster et al., 1984). Bernard and Thomas (1989) also found that the magnitude of the drift has a positive relation with the size of the earnings surprise. The larger the surprise, the larger the post-earnings-announcement drift.

The post-earnings-announcement drift is present, however, it does not keeps increasing or decreasing forever. Most of the information released at the announcement date is incorporated in the price within 60 trading days after the earnings announcement and a large proportion of the post-earnings-announcement drift occurs within 5 days after the earnings announcement. The time horizon of the post-earnings-announcement drift is different for different size companies. For large companies it will take six months and for small companies nine months for the drift to be at its end (Bernard & Thomas, 1989).

Whereas most of the research is done for the United States' market, the research done by Liu, Strong, and Xu (2003) covers the market of the United Kingdom. They found the same results for companies in the United Kingdom as found for companies in the United States. In the United Kingdom as well as in the United states, the information released by the earnings announcement is not directly incorporated into the stock price, leading to a post-earnings-announcement drift.

Seeing the existence of the post-earnings-announcement drift proven in both the United States and the United Kingdom indicates that the phenomenon is not an anomaly of the market. Therefore it is interesting to see whether or not the post-earnings-announcement drift is present in the Netherlands.

III. Data & Methodology

III.I Data:

The sample of Dutch listed companies for the period of 1990 – 2018 is gotten out of Bureau van Dijk. Bureau van Dijk is a source for company data. It has financial and juridical information for more than 275 million companies worldwide. Only very large companies where retrieved out of the Bureau van Dijk database. For every company retrieved the following information was given: the companies' ISIN number, ticker symbol and name, also information about whether or not the company was publicly quoted and if the company was still active or not. For the period 1990 – 2018 there were 6760 companies retrieved out of Bureau van Dijks database. The companies needed for the research had to be publicly listed, because only then information about the companies' stock price and the earnings announcement dates is available. Next to the public status of the companies, the selected companies for this research all are still active. After meeting this criteria, 146 Dutch companies where left in the sample. However, some of the Dutch companies operated and were listed in non-Dutch countries. The research focusses on only Dutch companies which are listed on the AEX, leading to a sample of 93 AEX listed companies.

The created company sample is now inserted into the I/B/E/S database, making use of the companies' ticker symbol to extract company specific information. The I/B/E/S database contains earnings estimates of over 40.000 companies in 70 different markets. For the period of January 1990 till January 2018, annual earnings announcement dates, the value of the earnings per share and the mean estimated value of the earnings per share were retrieved out of the I/B/E/S database. However, for some companies, the data was not found or insufficient.

The annual earnings announcement dates and their associated values were controlled for correctness using the Thomson One database of Thomson Reuters. Thomson One contains financial content for companies all over the world. For some of the companies for which no information could be found in

I/B/E/S, it could be found in the Thomson One database. In Thomson One some extra earnings announcement dates where found is well broadening the period until May 2018 instead of January 2018.

The final sample contains 73 AEX listed companies for who annual earnings announcement dates and the value of the earnings per share were available for the period January 1990 – May 2018. This all leading to a sample of 772 annual earnings announcement dates. A list of all the companies can be found in Appendix A.

Next, information about the stock price and other company characteristics is needed for every company in the sample and for the AEX. This information will be retrieved out of Datastream. Datastream is a financial database of Thomson Reuters containing financial information, share prices and more for more than 2 million companies worldwide.

Out of Datastream daily data of the total return index, earnings per share, turnover by volume, market-to-book value, market value and the market capitalisation is collected for all the companies, for the period January 1989 – May 2018. The total return index is used instead of the price index, because it assumes that dividends are re-invested to purchase additional units of equity. Next to the company characteristics, daily data for the AEX-index is collected for the same period.

Variable description

The actual value of the EPS is the value at the announcement date. The mean EPS for good news events is higher than for bad news events, Table 1. For the good news events there is a small standard deviation compared to the standard deviation of the bad news events, which indicates that there is a larger spread in EPS for the bad news events.

The estimated EPS is the mean forecasted EPS by analysts. Analysts use mathematical models to forecast the expected EPS based on the earnings of earlier periods. Table 1 shows that the estimated EPS almost equals the actual EPS for the good news events. For the bad news events there is a larger difference. Again the standard deviation is larger for the bad news events, indicating a larger spread in the estimated EPS.

The stock price is shows the company's stock price at the announcement date. The average stock price is about the same for both events, Table 1. However, the standard deviation for the bad news events is much larger than for the good news events, meaning there is a larger difference in the stock price of the companies.

Table 1: Descriptive statistics for good and bad news events

Variable	Number of events	Mean	Standard dev.	Median	Min	Max
Good news	354					
Actual EPS value, in €		1.666	1.543	1.368	-2.819	10.88
Estimated EPS value, in €		1.435	1.481	1.155	-2.867	10.815
Stock price, in €		24.852	23.726	18.148	0.149	186.84
Size of surprise, in €		0.231	0.385	0.095	0.0001	3.153
Trading volume		2,280.596	8,276.235	147	-11,137.3	91,479.4
Ln(Trading volume)		4.162	4.115	5.010	-9.318	11.424
Market value, in €		5,927.126	11,390.416	1,226.755	3.56	80,574.94
Ln(Market value)		6.933	2.242	7.112	1.270	11.297
Market-to-book value		2.903	5.669	2.115	-6.92	96.72
Price-earnings ratio		195.347	2,008.943	17.9	0	26,594.1
Return volatility run-up, in %		1.815	1.127	1.520	0.286	12.466
Buy-and-hold return run-up, in %		4.869	22.505	3.773	-34.352	360
Bad news	418					
Actual EPS value, in €		0.321	9.235	0.795	-160	15.882
Estimated EPS value, in €		1.047	5.975	1.098	-87.5	40.714
Stock price, in €		27.490	107.119	14.793	0.157	1,735.709
Size of surprise, in €		-0.726	5.332	-0.152	-95	0
Trading volume		1,776.863	7,777.824	67.2	-15,809.8	110,039.7
Ln(Trading volume)		3.485	4.215	4.358	-9.668	11.608
Market value, in €		3,867.803	8,200.215	578.545	3.08	67,500.19
Ln(Market value)		6.391	2.138	6.361	1.125	11.120
Market-to-book value		12.032	175.711	1.915	-160.37	3,579.53
Price-earnings ratio		89.320	1,204.83	15.55	0	21,892.2
Return volatility run-up in %		2.200	2.714	1.748	0.207	50.785
Buy-and-hold return run-up, in %		3.316	14.721	2.532	-61.44	66.649

The size of the surprise is the difference in the actual value of the EPS at the announcement date compared to the mean estimated value of the EPS at the announcement date. For the good news events, a positive surprise is shown in Table 1 which is expected, because good news indicates a higher

EPS than the year before. And for the bad news events a negative surprise is shown in Table 1, which also is expected. Again a large standard deviation is seen for the bad news events and a small deviation for the good news events, which is logical looking at the standard deviation of the actual EPS.

Trading volume is the change in the traded number of shares on the announcement date. As Table 1 shows, there is an expected positive mean for the trading volume for good news events. However, for the bad news events there is also a positive change in the number of traded shares. The expectation was that it would be negative. The standard deviation for both the good and bad news events are high as well, indicating that there is a large difference in trading volume for all the events. Because of the size of the change in trading volume, the natural logarithm is taken as well in order to create a better fit in the regressions.

The market value shows the market capitalization of the company at the announcement date. As shown in Table 1, the good news events contain on average larger companies than the bad news events. The large standard deviation for the good and bad news events, however, indicate that there is a spread in the size of the companies. As done for the trading volume, the natural logarithm is taken of the market value as well.

Market-to-book value is the inverse of the book-to-market value. As seen in the literature review a high book-to-market value, so a low market-to-book value leads to higher abnormal returns. The mean market-to-book value is smaller for good news events than for bad news events, Table 1, which is expected because good news events tend to have higher abnormal returns than bad news events. The standard deviation for the bad news events is much higher than the standard deviation for the good news events, so there is a larger spread for the bad news events.

The price-earnings ratio is the inverse of the earnings-to-price ratio. A high earnings-to-price ratio, so a low price-earnings ratio, leads to a higher return as described in the literature review. Table 1 shows a higher price-earnings ratio for good news events. The standard deviations are about the same size as well.

The return volatility run-up is the volatility of the company's return in the run-up period before the event. The higher the volatility the higher the earnings announcement return. However, Table 1 shows that the return volatility is about the same for both the good and bad news events. The volatility of the return volatility is higher for the bad news events, indicating a larger spread in return volatility.

The buy-and-hold return run-up is the company's buy-and-hold return in the run-up period before the event. Table 1 shows a positive return for the good news events as well as the bad news events. The variable tests if the trend of the return before the announcement date continues after the

announcement date. The volatility is high for both the good and bad news events, but it is higher for the good news events. So there is a larger spread in the buy-and-hold returns for the bad news events.

III.II Methodology

An event-study will be done for all the annual earnings announcements in the sample. First we split the sample in to events containing good news and bad news in order to see the difference in the earnings announcement return. To determine whether an event contains good or bad news, the earnings surprise is calculated. The mean estimated value of the earnings per share is subtracted of the actual value of the earnings per share at the announcement date. When the actual value is higher, so a positive earnings surprise, the event will be marked as good news, otherwise the event is marked as bad news.

The earnings announcement date will be marked as t=0. The control period has to be large enough in order to get good estimations of α and β in the market model, so the control period will consist of 100 trading days. Because the price adjustment already starts before the actual event of the earnings announcement happens (Ball & Brown, 1968), the control period will be t=[-150, -51]. Choosing the control period like this ensures that the estimated α and β are not affected by the event. The test period consist of 20 trading days surrounding the event of the earnings announcement, it will be t=[-10,10]. The intervening period t=[-50,-11] will be used to create a variable containing the stocks volatility and a variable containing the buy-and-hold return in the run-up to the event.

In order to calculate the abnormal returns of each event in the test period, some steps are to be made. The market model will be used in the control period in order to get estimates $\hat{a}_i$ and $\hat{b}_i$ of α and β. The return of the AEX-index will be used for the market return, R_{MIt}.

The market model:

$$R_{it} = \alpha_i + \beta_i R_{MIt} + \mu_{it}$$

The calculated estimates $\hat{a}_i$ and $\hat{b}_i$ will then be inserted in the following regression to calculate the normal return, R_{it}^*, for each company if the event of the earnings announcement would not have happened:

$$R_{it}^* = \hat{a}_i + \hat{b}_i R_{MIt}$$

In order to calculate the abnormal returns in the test period we have to subtract the normal return if the event did not happen from the actual return, R_{it}:

$$ar_{it} = R_{it} - R_{it}^*$$

Now all the abnormal returns during the test period for all the events are calculated. The next step is to calculate the mean abnormal return and the t-values for every day of the test period. The t-values are calculated to test whether the mean abnormal return is significantly different from zero, which will be tested on a significance level of 5%.

The formulas for the calculation of the mean abnormal return and the t-values:

$$AR_t = \frac{1}{N}\sum_{i=1}^{N} ar_{it} \qquad s_t^2 = \frac{1}{N-1}\sum_{i=1}^{N}(ar_{it} - AR_t)^2 \qquad T2AR_t = \frac{AR_t}{s_t/\sqrt{N}}$$

After all the mean abnormal returns are calculated, the cumulative abnormal returns can be calculated for the part of the test period for which the AR_t are significant:

$$CAR_{AB} = \sum_{t=A}^{B} AR_t$$

Now some regression are to be made. For the significant period t=[A,B], the car variable is filled with the car_{AB} of every single event. After that has been done, the regressions can be made starting with univariate regressions to test the influence on the cumulative abnormal returns for each variable on its own.

$$car = \alpha_i + \beta_i X_i + u_i$$

The variables which significantly influence the cumulative abnormal return are now all put together in a multivariate regression. By doing the regression we can see which variables influence the magnitude and the sign of the abnormal returns.

$$car = \alpha + \beta_1 X_1 + \cdots + \beta_n X_n + \mu$$

The cumulative abnormal returns for t=[0,60] have to be calculated in order to examine the post-earnings-announcement drift. The abnormal returns for t=[0,10] are already calculated so only the abnormal returns for t=[11,60] are now calculated. The abnormal returns are calculated as earlier described in this research.

When all the abnormal returns are calculated, the cumulative abnormal return can be calculated for t=[0,60]:

$$CAR_{0C} = \sum_{t=0}^{C} AR_t \ , C = 1, \ldots, 60$$

Now the post-earnings-announcement drift (CAR_{01}, … , CAR_{060}) can be plotted for t=[0,60] for both the good and bad news events.

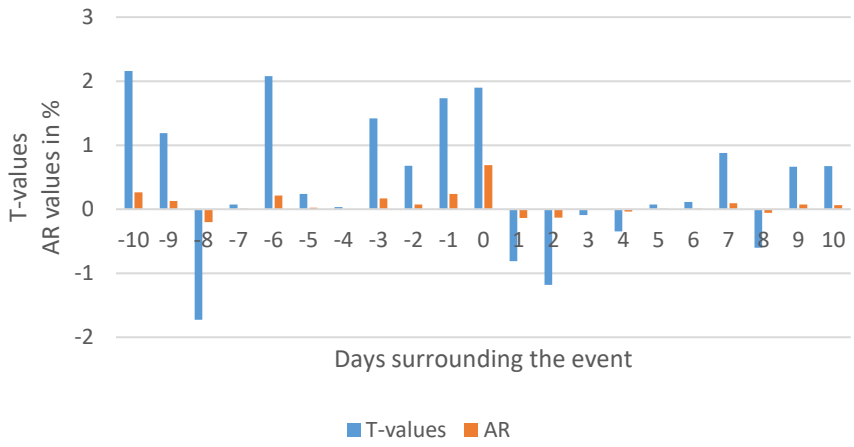
IV. Results

IV.I Good news events

Looking at the average abnormal announcement returns for the test period in Figure 1, it can be seen that there is a positive announcement return of 0.241% at t=-1 and of 0.687% at t=0, both significant at a significance level of 10 %, at t=-1 the t-value is 1.731 and at t=0 the t-value is 1.899. The values of the announcement returns and their corresponding t-values can be found in Appendix B. The positive announcement return was expected for the good news events as shown by Ball and Brown (1968) for the United States and by Gerard (2012) for European companies. The findings by Beaver in 1968 showed that the biggest announcement return was at the announcement date itself. The research done by Beaver (1968) was for the United States. The results in Figure 1 show the biggest announcement return at the actual announcement date as well, for the Netherlands. So this is in line with the earlier findings.

The fact that the announcement returns is significant at t=-1 could be declared by the phenomena of event date uncertainty. Event date uncertainty means that the market does not exactly know the actual date on which the event occurs and so the reaction is around the actual event date.

Figure 1: AR and T-values for good news events



Another explanation for the announcement return to occur on t=-1 could be information leakage, meaning there is already some information about the occurrence of the event. In this case the market will anticipate on the event before it actually occurred.

A company often releases its earnings announcement around the same date every year. In this case the market can also anticipate the occurrence of the earnings announcement in which the announcement return will be higher in the days before the happening of the actual event.

In order to determine what influences the magnitude of the abnormal announcement return some regressions where done. Table 2 shows the results of the univariate and multivariate regression on car, car is the cumulated abnormal return for t=[-1,0].

Table 2: Univariate and multivariate regression models for car

	Univariate regressions			**Multivariate regression**
Variable	Constant, in % (t-value)	Coefficient (t-value)	Adjusted R^2	Model 1
Actual EPS value	1.357** (2.47)	-0.258 (-1.07)	0.0004	
Estimated EPS value	1.266** (2.44)	-0.236 (-0.94)	-0.0004	
Stock price	1.223** (2.26)	-0.012 (-0.75)	-0.001	
Size of surprise	1.079** (2.48)	-0.657 (-0.68)	-0.001	
Trading volume	1.013*** (2.62)	-3.73e-05 (-0.83)	-0.001	
Ln(Trading Volume)	1.290** (2.41)	-0.083 (-0.90)	-0.001	
Market value	0.975** (2.32)	-8.01e-06 (-0.25)	-0.003	
Ln(Market value)	4.147*** (3.45)	-0.464*** (-2.82)	0.019	-0.302* (-1.78)
Market-to-book value	1.037** (2.48)	-0.038 (-0.58)	-0.001	
Price-earnings ratio	0.861** (1.99)	-1.44e-04 (-0.67)	-0.002	
Return volatility run-up	-1.413** (-2.04)	12.894*** (3.97)	0.040	11.157*** (3.30)
Buy-and-hold return run-up	0.887** (2.32)	0.828 (0.50)	-0.002	
Constant	NA	NA	NA	0.999 (0.66)
Adjusted R^2	NA	NA	NA	0.046

*,** & ** meaning significant at a significance level of 10%, 5% and 1% respectively.

As Model 1 in Table 2 shows, there is a relation found between the natural logarithm of the market value and the announcement return, which is significant at a 10% significance level. When the market value increases with 1, the announcement return will decrease with 0.302%. This is in line with the

findings of Chari et al. (1988) and Firth (1981), who found that the size of the company and the announcement return had a significant negative relation. A higher announcement return was found for smaller companies.

A significant positive relation between the company's return volatility in the run-up to the event and the announcement return can also be seen in Model 1 of Table 2. When the volatility increases with 1, the announcement return will increase by 11.157%. This means that the higher the volatility of the company's returns before the event, the higher the announcement return will be. This is in line with the findings of Chari et al. (1988) and Gerard (2012).

There is no evidence for a relation between the announcement return and the other variables for companies listed on the AEX, as they showed no significant relation in the univariate regressions, see Table 2.

Post-earnings announcement drift

The post-earnings announcement drift of the good news events is shown in Figure 2. It shows an upward sloping curve for the cumulative abnormal announcement return until 40 days after the occurrence of the earnings announcement. The values for the cumulated abnormal announcement returns can be found in Appendix C.

Figure 2: Post-earnings-announcement drift

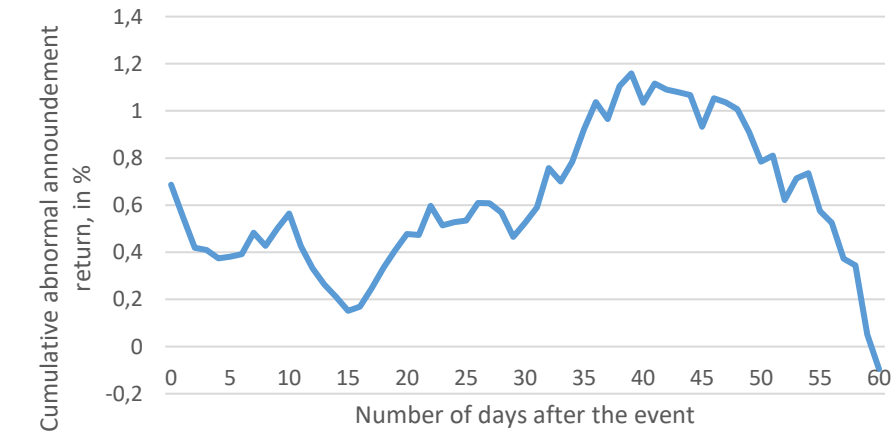


Figure 2 indicates a delayed response to the newly released information through the earnings announcement. The new information is not directly incorporated in the stock price of a company. The increase of the accumulated abnormal announcement return is up until 39 days after which it declines until 60 days after the event. The effect of the earnings announcement is then completely incorporated in the price, because the cumulative abnormal return is back at zero. After 39 days an abnormal return of 1.159% can be made which declines to 0% after 60 days. The findings are in line with the findings of

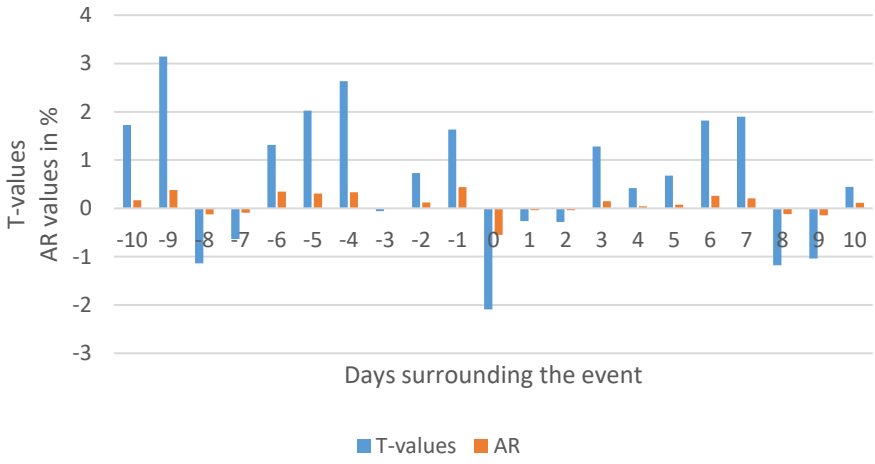
Ball and Brown (1968) who also found an delayed response to the newly released information and an increasing accumulated announcement return for the good news events. Bernard and Thomas (1989) found an abnormal announcement return of 4.2% 60 days after the occurrence of the event for companies in the United States. For the Netherlands Figure 2 shows an abnormal announcement return around 0% 60 days after the event. An explanation could be that the price nowadays is much quicker incorporated in the stock price and therefore the post-earnings-announcement drift is now smaller.

IV.II Bad news events

Figure 3 shows the average abnormal announcement returns for the test period. It shows a negative abnormal return of 0.547% on the announcement date, t=0, and it is significant at a 5% significance level, the t-value is -2.093. The values of the announcement returns and their corresponding t-values can be found in Appendix B. The negative abnormal announcement return was expected for the bad news events as shown by earlier research of Ball and Brown (1968) for the United States and Gerard (2012) for European countries. The most negative announcement return is at the announcement date itself, Table 5, confirming the findings of Beaver (1968).

In the contrary to the good news events, where the abnormal earnings announcement return was significant at t=-1 as well, the negative abnormal earnings announcement return only significant at t=0. In this case there is no sign of event date uncertainty or information leakage.

Figure 3: AR and T-values for bad news events



To determine what causes the negative abnormal return some regressions are made. The results of the univariate and multivariate regressions on the car at t=0 are shown in Table 3.

Table 3: Univariate and multivariate regression models for car

	Univariate regressions			Multivariate regression
Variable	Constant, in % (t-value)	Coefficient (t-value)	Adjusted R^2	Model 2
Actual EPS value	-0.541** (-2.07)	-0.019 (-0.65)	-0.001	
Estimated EPS value	-0.541** (-2.03)	-0.006 (-0.14)	-0.002	
Stock price	-0.591** (-2.19)	0.002 (0.66)	-0.001	
Size of surprise	-0.582** (-2.20)	-0.048 (-0.97)	-0.0001	
Trading volume	-0.331 (-1.25)	-1.22e04*** (-3.66)	0.029	-1.38e-04*** (-4.03)
Ln(Trading Volume)	-0.336 (-0.98)	-0.065 (-1.03)	0.0002	
Market value	-0.655** (-2.26)	2.78e-05 (0.87)	-0.001	
Ln(Market value)	-1.846** (-2.24)	0.203* (1.66)	0.004	6.11e-05* (1.88)
Market-to-book value	-0.552** (-2.10)	4.19e-04 (0.28)	-0.002	
Price-earnings ratio	-0.384 (-1.45)	3.45e-05 (0.16)	-0.003	
Return volatility run-up	-0.517 (-1.53)	-1.372 (-0.14)	-0.002	
Buy-and-hold return run-up	-0.620** (-2.31)	2.191 (1.23)	0.001	
Constant	NA	NA	NA	-0.538* (-1.88)
Adjusted R^2	NA	NA	NA	0.035

*,** & *** meaning significant at a significance level of 10%, 5% and 1% respectively.

As shown in Table 3, for the univariate regressions, the trading volume and the natural logarithm of the market value are the only variables with a significant effect on the announcement return. They are put together in Model 2, Table 3. When the trading volume increases with 1, the announcement return decreases with 1.38e-04%. The effect is significant at a 1% significance level and it is negative, so the higher the trading volume, the lower the announcement return will be. This is in the opposite of the earlier findings of Beaver (1968) and Gerard (2012) who found a positive relation between the trading volume and the announcement return.

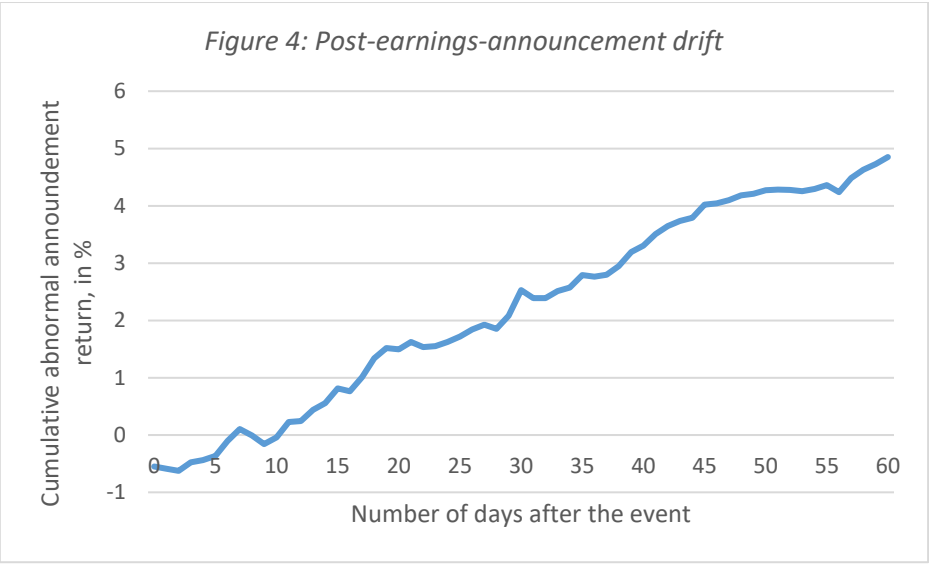
The natural logarithm of the market value has a significant positive effect on the announcement return, at a significance level of 10%, Model 2 in Table 3. When the natural logarithm of the market value of the company increases by 1, the announcement return will increase by 6.11e-05%. So the bigger the company, the higher the announcement return will be. This result is in the opposite of the findings considering the good news events and it is not in line with earlier findings. In fact it is in the opposite of the findings by Chari et al. (1988) and Firth (1981). They found that smaller companies earn higher announcement returns, so a negative effect between the market value and the announcement return.

For the rest of the variables no significant effect on the announcement return is found for AEX listed companies, as they showed no significant relation in the univariate regressions, see Table 3.

Post-earnings-announcement drift

Figure 4 shows the post earnings announcement drift for bad news events. The values of the cumulative abnormal announcement return can be found in Appendix C. As seen in Figure 4, the cumulative abnormal announcement return starts below zero, however it directly increases, which is not in line with the earlier findings of Ball and Brown (1968). It shows that the newly released information is not immediately incorporated in the stock price, so there is a delayed reaction. However, the reaction is expected to be a downwards sloping trend instead of an upward sloping trend for the bad news events. This result is not in line with all the earlier research done for the post-earnings announcement drift of bad news event. According to the research of Ball and Brown (1968), Bernard and Thomas (1989) and Foster et al. (1984) the post-earnings announcement drift of bad news events will decrease up until the minimum of 60 days after the event, which here is not the case.

Figure 4: Post-earnings-announcement drift



According to the results an abnormal announcement return of 4.851% can be made when holding the stock for 60 days after the event. Which is more than the abnormal announcement return that can be

made when holding the stocks of companies which had good news, considering the earnings announcement. For good news event the abnormal return after 60 days was around 0%. It seems highly unlikely given the fact that the company released unfavourable information considering the future earnings of the company.

However, given the result of the research it seems that a positive abnormal earnings announcement return can be made for AEX listed companies, releasing bad news. An explanation could be that the company still outperforms the market. Leading to a positive abnormal return.

V. Conclusion

The goal of the research was to see how the stock market reacts to the new information released with an annual earnings announcement and how long this reaction kept going on after the occurrence of the event. The following step was to look at the explanation for this stock market reaction on the basis of univariate and multivariate regression analysis. This all was done for AEX listed companies for the period of January 1990 until May 2018.

The sample of annual earnings announcement was divided into two separate groups. One group containing good news events and the other group containing bad news events. The groups were divided on the basis of the sign of the earnings surprise, which is defined as the difference between the actual value of the earnings per share and the mean forecasted value of the earnings per share at the announcement date. For both groups an event study was done in which the market model was used to calculate the returns if the event did not occur. Thereafter the abnormal announcement returns could be calculated.

For the good news event a positive abnormal announcement return of 0.687% was found on the day of the actual earnings announcement and an abnormal announcement return of 0.241% on the day before the announcement. The findings of the positive abnormal announcement return confirms the findings of earlier research about the event of an earnings announcement. The findings of the positive announcement return the day before the actual event, indicates that there is some form of information leakage or event-date uncertainty.

A negative abnormal announcement return of 0.547% is found at the day of the actual earnings announcement for the bad news events. This again confirms the findings of earlier research where a negative abnormal announcement return is found for bad news events. There is no sign of information leakage considering the bad news events.

The explanation for the magnitude of the abnormal announcement return was found using the regression analysis. A negative relation between the company's market value and the abnormal announcement return was found for the good news events. For the bad news events the opposite relation is found. The findings of the negative relation between the company's market value and the abnormal announcement return means that smaller companies will earn higher abnormal announcement returns when releasing an earnings announcement. This is in line with earlier research.

The findings of the positive relation between the abnormal announcement returns and the company's market value for bad news events is a new finding. It is in the direct opposite of earlier research. However, bigger AEX listed companies earn higher abnormal announcement returns when releasing an earnings announcement report considering bad news.

Earlier research about the positive relation between the company's return volatility and the abnormal announcement return is confirmed for good news event as well. The higher the volatility of the company's stock return in the run-up to the earnings announcement, the higher the actual abnormal announcement return will be. For the bad news events no such relation is found.

There is, however, a negative relation between the trading volume and the abnormal announcement return for the bad news event, which is not found for the good news events. Meaning that a decrease in the traded number of shares around the announcement date leads to a higher abnormal announcement return. The findings of this negative relation are in the opposite of the findings in earlier research for companies listed on the stock market in the United States. So there is an opposite reaction to the change in trading volume for AEX listed companies.

The post-earnings-announcement drift is examined for both the good and bad news events. For the good news events an abnormal return of 1.159% can be made when holding the stock for 39 days after the actual announcement date. When the stock is hold for 60 days, the abnormal return is around 0%. This means that the newly released information is completely incorporated in the stock price within 60 days after the announcement date. The increase in the 39 days after the events confirms the earlier findings about the post-earnings-announcement drift. However, the return to zero within 60 days after the event means that the prices nowadays are adjusted much quicker than in the earlier 1970's. For the bad news events the post-earnings-announcement drift is an increasing trend as well, whereas earlier research shows that the trend should be decreasing. An abnormal return of 4.851% can be made when holding the stock for 60 days after the event, which is much higher than the abnormal return for good news events. So it seems that a higher abnormal return can be made when holding stocks of AEX listed companies who released bad news.

In sum, there is a positive abnormal announcement return on the day of the earnings announcement and the day before for good news companies. A negative abnormal announcement return is found on the day of the earnings announcement for bad news companies. There is a negative relation of the announcement return and the market value for good news events and the opposite relation is found for the bad news events. The return volatility has a positive relation with the abnormal announcement return for good news events and no such relation is found for the bad news events. A negative relation is found between the abnormal announcement return and the change in the traded number of shares around the announcement date for the bad news events. Last, for both the good and bad news events there is an upwards sloping post-earnings-announcement drift. However, for the good news events the post-earnings-announcement drift returns to zero and for the bad news events it does not. Meaning a higher abnormal return can be achieved when holding the stocks of bad news companies for 60 days after the actual event date.

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Appendix A: List of companies

AALBERTS INDUSTRIES N.V.
ACCELL GROUP N.V.
AFC AJAX N.V.
AKZO NOBEL N.V.
ALTICE N.V.
AMG ADVANCED METALLURGICAL GROUP N.V.
AMSTERDAM COMMODITIES N.V.
AND INTERNATIONAL PUBLISHERS N.V.
ARCADIS N.V.
ASM INTERNATIONAL N.V.
ASML HOLDING N.V.
BATENBURG TECHNIEK N.V.
BE SEMICONDUCTOR INDUSTRIES N.V.
BETER BED HOLDING N.V.
BRUNEL INTERNATIONAL N.V.
CORBION N.V.
CORE LABORATORIES N.V.
CTAC N.V.
DPA GROUP N.V.
EUROCOMMERCIAL PROPERTIES N.V.
EURONEXT N.V.
EUROPEAN ASSETS TRUST N.V.
FORFARMERS N.V.
FUGRO N.V.
GEMALTO N.V.
GRANDVISION N.V.
GROOTHANDELSGEBOUWEN N.V.
HEIJMANS N.V.
HEINEKEN HOLDING N.V.
HEINEKEN N.V.
HOLLAND COLOURS N.V.
ICT GROUP N.V.
IMCD N.V.
INTERTRUST N.V.
KENDRION N.V.
KIADIS PHARMA N.V.
KONINKLIJKE AHOLD DELHAIZE N.V.
KONINKLIJKE BAM GROEP N.V.
KONINKLIJKE BOSKALIS WESTMINSTER N.V.
KONINKLIJKE BRILL N.V.
KONINKLIJKE DSM N.V.
KONINKLIJKE KPN N.V.
KONINKLIJKE PHILIPS N.V.
KONINKLIJKE VOLKERWESSELS N.V.
KONINKLIJKE VOPAK N.V.
KONINKLIJKE WESSANEN N.V.
LUCAS BOLS N.V.
MKB NEDSENSE N.V.
N.V. NEDERLANDSCHE APPARATENFABRIEK 'NEDAP'
NEWAYS ELECTRONICS INTERNATIONAL N.V.
NOVISOURCE N.V.
NSI N.V.
OCI N.V.
ORDINA N.V.
PHARMING GROUP N.V.
PHILIPS LIGHTING N.V.
POSTNL N.V.
RANDSTAD HOLDING NV
RELX N.V.
ROODMICROTEC N.V.
SBM OFFSHORE N.V.
SIF HOLDING N.V.
SLIGRO FOOD GROUP N.V.
SNOWWORLD N.V.
STERN GROEP N.V.
TAKEAWAY.COM N.V.
TIE KINETIX N.V.
TKH GROUP N.V.
TOMTOM N.V.
UNILEVER N.V.
VASTNED RETAIL N.V.
WERELDHAVE N.V.
WOLTERS KLUWER N.V.

Appendix B: Abnormal announcement returns and t-values

	Good news events		Bad news events	
Day	Abnormal return, in %	T-values	Abnormal return, in %	T-values
-10	0.262**	2.157	0.169*	1.723
-9	0.128	1.190	0.377***	3.143
-8	-0.201*	-1.727	-0.123	-1.140
-7	0.008	0.071	-0.092	-0.634
-6	0.215**	2.077	0.346	1.314
-5	0.025	0.240	0.310**	2.026
-4	0.005	0.035	0.334***	2.632
-3	0.169	1.417	-0.006	-0.055
-2	0.073	0.676	0.120	0.731
-1	0.241*	1.731	0.442	1.630
0	0.687*	1.899	-0.547**	-2.093
1	-0.135	-0.811	-0.040	-0.263
2	-0.132	-1.181	-0.038	-0.282
3	-0.009	-0.090	0.148	1.279
4	-0.036	-0.349	0.039	0.416
5	0.007	0.072	0.074	0.679
6	0.011	0.113	0.260*	1.815
7	0.091	0.879	0.209*	1.901
8	-0.057	-0.600	-0.115	-1.176
9	0.074	0.662	-0.146	-1.038
10	0.065	0.673	0.116	0.447

*,** & *** meaning significant at a significance level of 10%, 5% and 1% respectively.

Appendix C: Values of the cumulated abnormal announcement returns

Day	Good news CAR, in %	Bad news CAR, in %	Day	Good news CAR, in %	Bad news CAR, in %
0	0.687	-0.547	**31**	0.591	2.391
1	0.551	-0.588	**32**	0.757	2.388
2	0.419	-0.625	**33**	0.700	2.512
3	0.410	-0.477	**34**	0.784	2.576
4	0.374	-0.438	**35**	0.921	2.790
5	0.382	-0.364	**36**	1.037	2.763
6	0.392	-0.104	**37**	0.965	2.795
7	0.484	0.105	**38**	1.105	2.948
8	0.427	-0.009	**39**	1.159	3.191
9	0.501	-0.156	**40**	1.035	3.303
10	0.565	-0.039	**41**	1.116	3.508
11	0.424	0.228	**42**	1.090	3.646
12	0.333	0.246	**43**	1.079	3.736
13	0.263	0.440	**44**	1.067	3.789
14	0.210	0.559	**45**	0.933	4.018
15	0.152	0.811	**46**	1.053	4.041
16	0.170	0.765	**47**	1.036	4.099
17	0.248	1.006	**48**	1.007	4.185
18	0.335	1.340	**49**	0.910	4.212
19	0.408	1.515	**50**	0.785	4.271
20	0.478	1.498	**51**	0.811	4.284
21	0.474	1.626	**52**	0.621	4.275
22	0.598	1.535	**53**	0.714	4.257
23	0.514	1.553	**54**	0.736	4.295
24	0.527	1.623	**55**	0.576	4.360
25	0.534	1.719	**56**	0.525	4.241
26	0.610	1.839	**57**	0.372	4.486
27	0.608	1.927	**58**	0.345	4.630
28	0.568	1.851	**59**	0.051	4.727
29	0.465	2.081	**60**	-0.096	4.851
30	0.525	2.530			