

Bachelor Thesis Financial Economics

ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Bachelor Thesis: Bachelor Economics and Business economics

Title thesis: News sentiment effects on the Aviation industry.

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Date final version: 05-08-2021

The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

Abstract

First, this thesis examines the systematic effects of news sentiment on the financial market of the aviation industry. Second, it is examined whether the possible effects news sentiment has, is influenced by the firm or region size that the news articles cover. Last, this thesis tests whether there is momentum for the financial market of the aviation industry. Multiple regressions have been performed and trading portfolios are constructed. No evidence is found for a significant effect of news sentiment on the aviation industry. Not enough evidence is found, that the firms/regions covered by the news articles has an effect on the aviation industry. Some highly profitable zero-cost trading portfolios are constructed, based on momentum.

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1. Introduction:

Since the first reported case of covid 19 in China, many industries have drastically changed. In the West, the global pandemic gained attention during the beginning of 2020. At first, schools started closing down, major sport events were cancelled, national lockdowns spread across almost all European countries, and the traveling between countries became forbidden. The airline industry suffered major consequences. With a huge decline in flights around the world, the trust in the flying industry declined and the stock prices of airline firms decreased.

Around the time that flight restrictions were initiated aviation stock prices plummeted, for example the stock price of Lufthansa and KLM dropped more than 50% in March 2020 *Air France-KLM stock prices (2020)*. As the Keynesian Economic theory states, government intervention is needed to help economies emerge out of a recession. With this thought, more than ever before, governments started preparing aid packages for several industries hit by COVID-19, including the airline industry. This (likely) resulted in an increase in stock prices for these airline companies.

Never before did the stock market recover so quickly after an apparent economic recession. After record lows it went to record highs for some exchanges like the AEX, as well as for the flying industry. For example after just decreasing 53% in stock prices in a month, Lufthansa stock prices increased up to 50% within the following month *Lufthansa stock prices (2020)*. Ranging from simple announcements to big news articles, publicly announced information seems to have quite some effects on airline stocks for this period.

Especially in a time of recession and a time of ongoing growth in telecommunication and retail investors, it seems as if news announcements have even more effects on certain industries in the stock market than before. This could be the cause of an overreaction or underreaction to news by the investors, perhaps retail investors are less capable of processing information quickly.

In existing literature in behavioral finance it is argued that economists, individually, and even in the aggregate, cannot process the entirety of the economic impact of news fast enough. Take for example the publicly available news headlines that reported that big investors like Warren Buffet announced that they would not be investing in airline companies. After this announcement we could see a sharp decline in a majority of airline stock prices and shortly after this decline we could see a rise in the stock prices again.

It is thus crucial to understand the flight industry market reaction to news announcement in a period of recession, so that if there are strong systematic changes in airline stock prices after a news announcement in such a period, an investor could benefit from it or manage their risk better by

adjusting their portfolio accordingly. However, the question remains if news announcements in 2020 and 2021 did significantly and systematically affect stock prices for the airline industry. This could have severe consequences for investor portfolios.

Therefore the research question of this paper states:

How did news announcements affect stock prices for the airline industry during the period 2020 until 2021?

To answer this main question the following hypotheses have to be answered first, these hypotheses shed light on financial subjects such as the weak form of efficient market hypothesis, investor attention, investor over- or underreaction to information, the importance of firm sizes in news effects on stock returns, herd behavior and momentum.

Hypothesis 1: News sentiments have a systematic effect on the aviation industry proxied by JETS ETF returns in the period of January 1st 2020 until April 1st 2021.

Hypothesis 2: The effects of news announcement on airline stocks in January 1st 2020 until April 1st 2021 are dependent on the size of the firm or region which the news announcement is written about.

Where size of the firm is measured relatively within the industry looking at the market value.

Hypothesis 3: In the period of January 1st 2020 until April 1st 2021 there is momentum for the flight industry.

Before testing these hypotheses, first previous literature surrounding the field of the research question will be thoroughly investigated. This way, a better background knowledge of financial subjects that seem to effect stock market activities is developed, which gives us a better understanding of the news effects on stock returns in general.

Second, data on the stock returns of the airline industry will be gathered, together with the market capacities of the firms and all the news announcements regarding the flying industry during the period January 1st 2020 until April 1st 2021, from the sources: Financial Times and Wall Street Journal.

Third, a time-series analysis will be conducted to find any potential systematic effects of news announcements on stock returns of the flying industry. Upon these analyses the results will be detracted, whereafter conclusions regarding the hypotheses will be made if possible. Finally, the research in its whole will be discussed.

2. Theoretical framework

In this section, the theoretical background on the effects of news announcement on financial markets is given.

In previous literature news announcement effects on the stock market are debated. In early research some doubts are casted upon the relationship between news announcements and stock returns. Cutler, et al (1988) for example, shows that it is very difficult to account more than one third of the returns variance from the sources of macroeconomic news. They even state that there is very little market response to major political and world events. One year later the Efficient Market Hypothesis was established Malkiel (1989). For equities, this hypothesis states that, if all information is fully and correctly transparent, this will be reflected in the price of the equity. Meaning that if all information is transparent, this will be immediately be reflected in the prices. According to this hypothesis, there could not be a delayed effect of news articles on the aviation industry.

On the other hand, there are quite some papers that do find evidence for a relationship between news announcements and stock market activities. For example, in contrast with Kim, et al (2004), a paper by Brewer & Klingenhagen (2010) states that stock returns for banks are significantly affected by the announcement of government aid. Other papers that argue that news announcement have an effect on stock market, are the following: Heston & Sinha (2017); Garcia (2013); Dzielinski & Hasseltoft (2013); Boudoukh, et al (2013); Dougal, et al (2012); Hao & Zhang (2011); Tetlock (2007); Nikkinen, et al (2006); Bomfim (2003) and Mitchell & Mulherin (1994). The effect of news announcements is researched in different economical states, looking at different time frames, considering different news announcements, with social media even considered as news announcements in a paper by Cheng, Hu & Hwang (2014).

Some arguments certain researchers give, is that the effects of news announcements on stock markets is a form of investor attention, which may cause an over- or underreaction to news. One such paper is that of Smales (2020), which is researched during the COVID-19 crisis. In this research in 2020 it is stated that heightened investor attention, proxied by google searches, influenced stock returns. This could suggest that the investors are trying to understand the effects of COVID-19 on the financial markets and because of this, the investors over- or underreact to information. There is even research done on whether in general there is herd behavior in the stock market when looking at news announcements Sinha (2016).

Furthermore there are some papers on the manipulation of media to get desired stock price movements, with one of these papers being Solomon (2012). This paper states that investor relations firms manipulate media to get the wanted stock price movements. Next to this, Yermack

(1997) argues that CEOs who are aware of impending improvements want incentive pay prior to the good news reaching investors.

Thus, there is an ongoing supply of varying research on different news announcement effects on the stock market. Yet, very little research has been done on the flying industry stock market, even though airline companies such as KLM-Air France seem quite influenced by news announcements about government aid. KLM-Air France has received government aid several times in the past as well as during the pandemic period in 2020 until 2021.

The aviation industry is a large polluter in the world. It tries to go greener, yet it remains environmentally unfriendly. Furthermore, the aviation industry receives a great deal of government aid packages, of which a majority often go to the pockets of the owners of the company. This can be seen in the news data. On the other hand the aviation industry made transportation easier than it has ever been. In this time, where the world is so connected, and transportation is so heavily used, a world without aviation seems impossible. Because of these reasons, a better understanding of the aviation industry seems of great importance.

There is one paper which examines technical efficiency innovations and the US flying industry stock market. This paper shows that upon publicly receiving technical efficiency innovation news, it may take up to 2 months before the given information is reflected in the stock prices Alam & Sickles (1998). This paper makes use of the news impact and can gain up to 17% excess returns. This is in contrast with the semi-strong form of the efficient market hypotheses, which states that all publicly available information is instantaneously reflected in the stock price and, hence, no opportunity exists to extract excess returns Fama (1970), Malkiel (1989).

All in all it, seems that news announcements effects are more present now than in the past and there is very little to no research done nowadays on the effects of news announcements on the stock market for the flying industries. Even though in times of recession, several governments announced that they will be coming to the aid of numerous flying industries.

3. Data

In this part all of the data which is used for this thesis is summarized and explained. Furthermore, it is explained where this data is gathered from.

The news announcement will be divided in positive news, negative news and neutral news. The classification of news will be done in a human-supervised manner. All the articles will be looked by the author instead of a textual sentiment program, for example such as VADER.

News is deemed as positive news by the author when it contains information about: Positive financial news, less environmental impact or positive financial expectations (or hinting at any of it). On average news articles with words such as “profit”, “aid” and “rising demand” have a very high chance of being deemed as positive news. Some news announcements require more thinking of the context. Real examples of sentences signaling positive news from the dataset which needed more thought on the context are: “planes not grounded anymore”, “The new largest plane maker”, “positive cashflow again”, “... slows output to focus on greener jets”, “plans to restart flying” and “may lose less”.

News is deemed as negative news if it contains: negative financial information, more or continuous environmental impact or negative financial expectations (or hinting at any of it). Words such as “job cuts”, “quarantine”, “pandemic”, “demand drops” and “losses” have a high chance of making a news article negative. Here as well certain news announcements need some more thought on the context of the news before it can be deemed as negative. Some real examples of these sentences are “CEO receives pay”, “long haul recovery” and “airlines slash costs” . Neutral news displays news which does not contain either positive or negative information about the airline companies. News articles with positive and negative information can also be deemed as neutral, dependent on the individual news articles. When a news article does not give any hints on expectations, it is also deemed as neutral. The days where there are no news announcements about the flying industry will also be classified as neutral news.

Note that these news articles are gathered manually and are manually classified as either positive, negative or neutral. Therefore it is very important to keep in mind the definition of positive, negative and neutral news as given in this research. Furthermore the looks on positive or negative news are also related to the news surrounding that day, thus a news article which might be deemed as positive usually, could be regarded as negative if it seems negative in context, or if it does not live up to investors’ expectations.

The upside of human manual classifying compared to classifying with machine learning is that certain disadvantages are avoided. An example for a disadvantage of classifying with machine

learning is that unintended information from news articles can be missed, for example a manager making a statement may use weak modal words such as 'may' or 'could' indicating trouble for the firm.

Another disadvantage can be that certain news announcements contain words or information which is beyond the criteria of the chosen text sentiment analyses program. Whereas a human could still give valid judgement in these cases.

Furthermore, manual classification is more robust to double negatives and the importance of relative magnitude. For example, if KLM-Air France would get a government aid package of 1 million euro's, a machine learning classifier may deem this as very positive, but in the period of 2020 until 2021 the aviation industry made losses in the billions. Considering this, the 1 million euros seems less positive.

To account for the validity of the human judgement in this research, the author uses his background in financial academics, dozens of papers about news sentiment effects in finance, the relative context of the period as well as the help of a survey on textual analysis in finance by Loughran & Mcdonald (2016).

This method of manually defining news as positive, negative or neutral is also in line with a paper by Baker, Bloom & Davis (2016), where students of the Chicago university assessed whether the news articles where about political uncertainty according to the researchers criteria. Showing that manual classification by human judgement can be valid. In their research, the student results are highly correlated with computer audited results.

The next figures show the amount of times news articles are deemed as 1 (=negative), 2 (=neutral) and 3 (=positive). The different figures showing these summaries, are for different cases of handling both positive and negative news on the same day. In case 1, when there is both positive and negative news, negative news is disregarded. In case 2, when there is both positive and negative news, positive news is disregarded. And in case 3, the news articles that remain in the data, are the news articles about the biggest firms or regions. The argumentation and further explanation of these cases will be done in the subsection *methodology*.

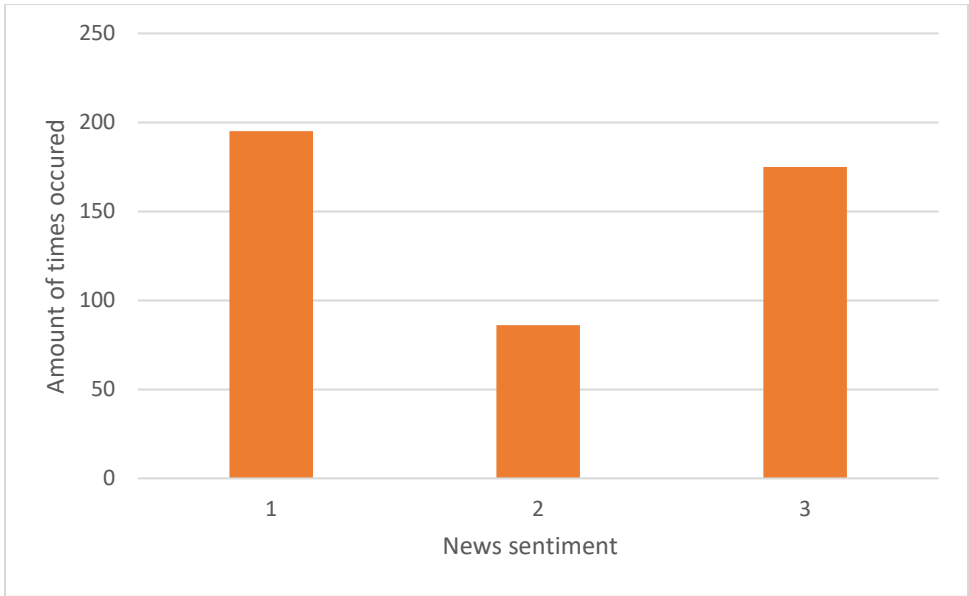


Figure 1: The number of times that news articles are deemed as either 1 (=positive), 2 (=neutral) or 3 (=positive) for case 1. The distribution of news articles deemed negative, neutral or positive seems to look like a bimodal distribution.

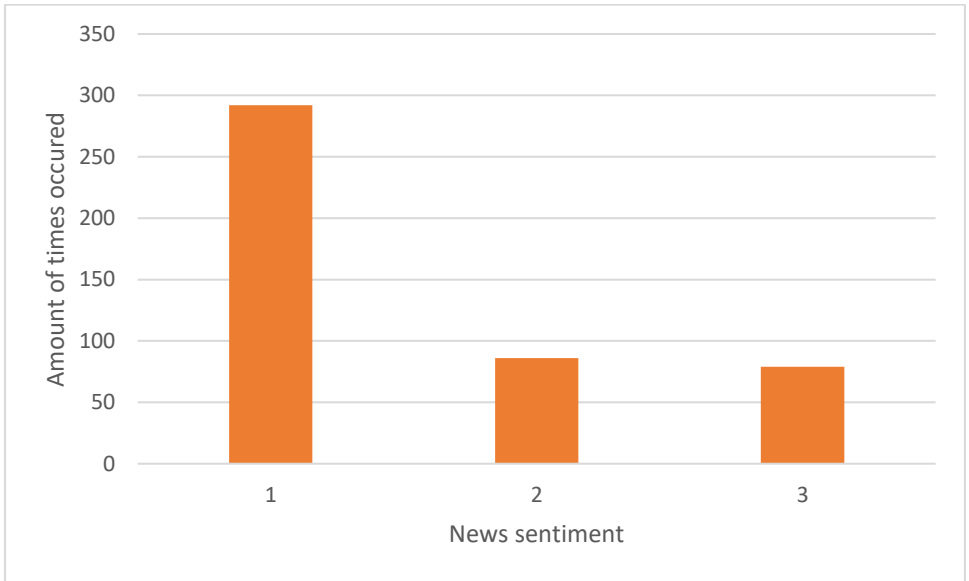


Figure 2: The number of times that news articles are deemed as either 1 (=positive), 2 (=neutral) or 3 (=positive) for case 2. The distribution of news articles deemed negative, neutral or positive for case 2 seems to look like a skewed distribution.

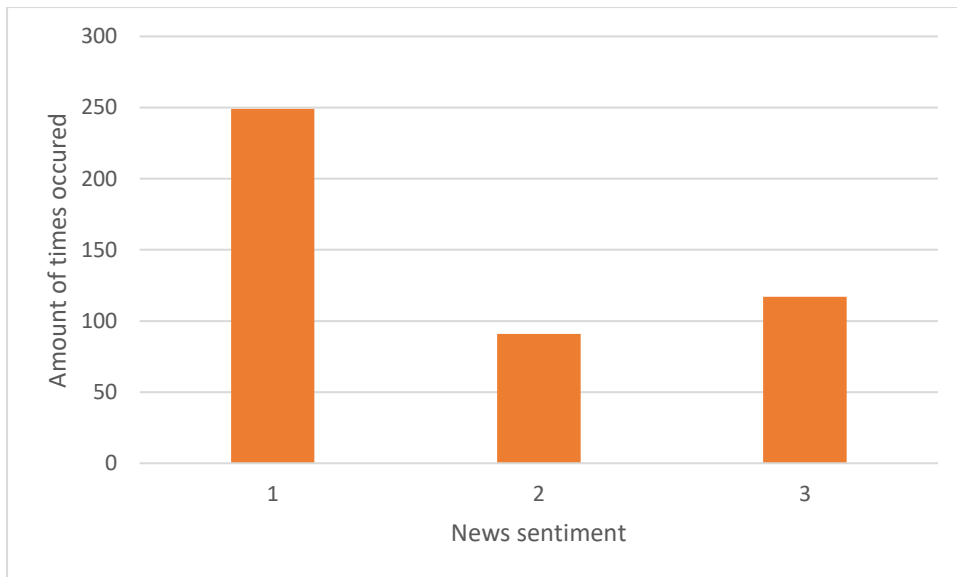


Figure 3: The number of times that news articles are deemed as either 1 (=positive), 2 (=neutral) or 3 (=positive) for case 3. For this case the distribution of the data seems unclear.

The sources of the announcements that will be used are two of the major financing media companies Financial Times and Wall Street Journal. These sources are deemed to be reliable by their use of it in the academical world. The Financial Times has 1 million subscribers and the Wall Street Journal has 3.2 million subscribers. From these sources, news announcements of the entire airline industry during the period January 1st 2020 until April 1st 2021 are gathered, and are then manually rated as positive, negative or neutral.

Furthermore, the size of the firm(s) and/or region(s) news articles cover, are ranked. The smallest firm(s) and/or region(s) the news announcements are about will have a value of 1. The biggest firm(s) and/or region(s) the news are about will have a value of N, where N is the amount of unique firm(s)/region(s) found in all of the news articles from the Wall Street Journal and the Financial Times. The ranking of the firm(s) and region(s) are relative to all the other firm(s) and region(s) which are found in the news articles. The size of the firms and regions will be approximated by their market capacities on the stock market. If this data is not available, when for example a firm is private the size will be classified as the average size. Figure 4 shows all the firms and regions which are discussed in the news articles and how many times they are encountered. Figure 5 shows an overview of the ranking of the firms and regions, based on their approximated market capacities. These figures can be found in appendix A.

In the section methodology different cases will be examined. This will be done to test for a news sentiment effect and firm or region size effect on the aviation industry. In the first case, when there

is both positive and negative news, the negative news will be disregarded. In the second case the positive news will be disregarded. And in the third and final case, the news announcements which are about the smaller firms or regions will be disregarded. The argumentation and explanation for why these different cases are examined, will be given in the section methodology

For the different cases, the following figures give a summary of the data used to test for possible effects of news sentiment and the size of the firm which these news articles are about. Figure 6 gives a summary for case 1, figure 7 gives a summary for case 2 and figure 8 gives a summary for case 3. These figures can be found in appendix A.

An ETF will be used that includes a majority of the companies in the flying industry. This makes it a valid proxy to measure how news announcements affect stock prices for the flying industry. The ETF used as a representative of the stock market value for the flying industry is JETS. The prices of JETS ETF are downloaded and then converted to daily returns. JETS contains nearly all capcompanies of international passenger airline industry, aircraft manufacturers and airport companies.

Approximately 80% of the stocks within JETS consists of airlines over the entire world, with the rest of the share of JETS consisting of airport services, Air freight transport, IT and consultancy for airline companies and aerospace and defense companies.

Next for this thesis, momentum will be defined as in the paper of Jagadeesh and Titman (1993). Several time frames will be tested: 3 months, 2 months, 1 month, 3 weeks, 2 weeks and 5 days. The formula used for momentum will be JETS ETF return at time t divided by JETS ETF return at time t-k, where k specifies the used time frame.

$$momentum_{t,k} = \frac{R_t}{R_{t-k}} - 1$$

$momentum_{t,k}$ = momentum at time t, with timeframe k

R_t = JETS ETF return at time t

R_{t-k} = JETS ETF return at time t-k, where k is the specified time frame for the momentum variable

Last, the MSCI index will be used to proxy the market's overall movement. Daily prices will be downloaded, whereafter it will be converted to daily returns.

4. Methodology:

In this section the methodology used to test for the hypotheses is explained.

A time-series analyses in the form of a regression will be conducted with JETS ETF returns as the dependent variable and the following variables as independent variables: News content and size of firm which the news is about. In this manner, the effects that news announcement might have on stock returns in the flying industry will be examined and tried to be captured. This will be done in STATA after the manual gathering of the data.

Next several tests will be done to account for any problems the regression might face, such as correlated error terms (seasonality, this will be resolved with Newey-West standard errors or (more) lags) and any (partial) autocorrelation that might be of presence will be tested, with a Ljung-Box Q test. The general regression equation will be as follows.

$$R_t = \alpha + \sum_{p=0}^P \beta_{1,t-p} \text{News Content} + \sum_{q=0}^Q \beta_{2,t-q} \text{Size of Firm} + \sum_i^{P_1} \theta_i \text{Instrumental Variable}_i$$

R_t = Returns of JETS ETF at time t

α = Constant of the regression

$\beta_{1,t-p}$ = Coefficient of News Content at time t, where p stands for the p-th lag of news content

$\beta_{2,t-q}$ = Coefficient of Size of firm at time t, where q stands for the q-th lag of size of firm

θ_i = Coefficient of instrument variable i

P, Q = Total number of lags. $P, Q \in \mathbb{N}_0$

P_1 = The total number of instrumental variables. $P_1 \in \mathbb{N}_0$

t = The time from January 1st 2020 until April 1st 2021

As mentioned before, on numerous occasions there are both positive and negative news announcements, on the same day. To account for this, several cases have been created. In the first case, the negative news is disregarded when there is both positive and negative news on the same day. In the second case, the positive news is disregarded when there is positive and negative news on the same day. In the third and final case, the news article which are about the smaller firm or region, are disregarded in the data.

4.1 Case 1: Assuming risk-seeking investors

So as explained above, the first case and all its subcases, go as follows. When there are positive and negative news announcements on the same day, the negative news announcements are disregarded. By doing this it is assumed that the investors are risk-seeking and they regard the

positive news announcements as more important than negative news announcements. So in the first case an OLS regression is done, with the JETS ETF returns as the dependent variable and the news sentiment as the independent variable. This way any possible systematic effects of news sentiment during the day on the aviation industry in the end of the day can be discovered. Hence the first hypothesis is tried to be answered.

After this a White test is conducted to test for the assumption that the data is homoscedastic. Next, a Ljung-Box Q test is conducted to test whether the lags of the JETS ETF return variable or lags of the error terms should be added.

4.1.2 Case 1 subcase 2: Adding the variable firm or region size

Next, the variable firm or region size is added and the previous process of regressing and testing for assumptions is repeated. By adding this variable the second hypothesis is tested, namely whether the size of the firm or the size of the region which the news announcements cover, have a systematic effect on the financial market of the aviation industry during the period January 1st 2020 until April 1st 2021.

4.1.3 Case 1 subcase 3: Adding lags of news sentiment and firm or region size

To test whether there is a more delayed systematic effect of news announcements on the aviation industry and thus to test whether the strict efficient market hypothesis holds, more lags of news sentiments are added. When needed, Newey-West standard errors are used to account for serial correlation in the error terms and possible heteroscedasticity in the data. The process of adding lags for the news sentiment variable and the firm or region size variable, is done as followed: At first, 1 lag is added to the regression every time up until 14 lags, after looking backwards for 2 weeks, an additional 7 lags is added every time up until the 63rd lag mark. The maximum of 63 lags is chosen in accordance with the paper of Heston & Sinha (2017) who found evidence that news announcements can have a delayed effect of up to 2 months on the stock market. By testing this, the first and second hypotheses are tried to be answered again.

4.2 Case 2: Assuming risk-averse investors

In the second case the positive news is disregarded when there are both positive and negative news announcements on the same day. By doing this it is assumed that the investors are risk-averse and they disregard positive news when encountered with negative news as well as positive news on the same day. This would mean that investors regard negative news as more important than positive news. In line with this, is some previous literature which has found evidence that investors seem to weigh the results of negative returns more than positive returns Figlewski & Wang (2000), indicating that emotions such as panic can be present.

For the regressions the same process as in Case 1 is repeated, but from a different point of view. This results in having different data to regress on. Here is a short summary of the steps that follow.

The first regression in the second case has the returns of JETS ETF as the dependent variable and the news sentiment as the independent variable, but this time positive news is disregarded when there is both positive news and negative news on the same day. Then all the tests as in Case 1 are repeated to check whether statistically correct conclusions can be made about a possible systematic effect of news articles on the aviation industry. This way, the first hypothesis is tried to be answered again.

4.2.2 Case 2 subcase 2: Adding the variable firm or region size

Just as in case 1 subcase 2, the independent variable firm or region size the news articles cover, is added. However, this variable will differ from case 1.2, because of the fact that on some days, other news announcements are regarded, in accordance with the case 2 assumptions. Next the process of testing for the OLS assumptions is repeated, to make statistically valid conclusions.

4.2.3 Case 2 subcase 3: Adding lags of news sentiment and firm or region size

To check whether news announcements in the second case have a delayed effect, a few more lags of news sentiment and firm or region size have been added to try and find a systematical effect. The process of adding lags of news sentiment is done as in case 1 subcase 3, specifically: At first, 1 lag is added to the regression every time up until 14 lags, after looking backwards for 2 weeks, an additional 7 lags is added every time up until the 63rd lag mark. Thus a maximum delay of 2 months is tested. This way the first two hypotheses are tried to be answered.

4.3 Case 3: Assuming that the firm or region covered in news is important

The 3rd and final case to cover the occurrence of both positive and negative news announcements on the same day is case 3. Case 3 considers the news article which is about the biggest firm or region as most important and disregards the other news. Doing this it is assumed that the firm or region size which the news is about has a bigger impact on investors' decisions.

The same methods as in case 1 and case 2 will be repeated. This way the first hypothesis is tried to be answered again. A short summary of this method follows, at first a regression will be done with the JETS ETF returns as the dependent variable and the news sentiment variable as the independent variable. After a white test and Ljung-Box Q test will be conducted.

4.3.2 Case 3 subcase 2: Adding the variable firm or region size

In the next case the size of the firm or region variable will be added as another independent variable. Then the same process as case 3 will be followed to test for any potential systematical

effects of the independent variables. This way the first two hypothesis are tried to be answered again.

Case 4.3.3 Case 3 subcase 3: adding lags of news sentiment and firm or region size

Next the same process as in case 1.3 and case 2.3 will be repeated, but now with the lags of the variables. So at first a regression will be done with the JETS ETF returns as the dependent variable and the first lag of the news sentiment variable as the independent variable. Then the lag of the variable firm or region size will be added to the regression as an independent variable.

Finally more lags of news sentiment and firm or region size will be added. Like in all other cases, for all these regressions the assumptions of the OLS will be checked, to see whether there is heteroskedasticity or serial correlation in the error terms. Furthermore a Ljungbox Q-test will be conducted to check if lags of returns or lags of the error terms are needed to be added.

This is the last way this thesis tries to answer the first two hypothesis, namely if during the period January 1st 2020 until April 1st 2021, news sentiments have a systematic effect on the financial market of the aviation industry and if this is influenced by the firm or region size the news articles cover.

4.4 Momentum

After testing for possible news effects on the aviation industry in this period of pandemic and uncertainties, momentum will be tested. Momentum with time frames of 5 days, 2 weeks, 3 weeks, 1 month, 2 months and 3 months will be checked by making a zero-cost trading portfolio as in the paper of Jagadeesh and Titman (1993). In the paper, Jagadeesh and Titman researched momentum with a time frame of 3-12 months in their time. The shorter time frames in this research are chosen, in thought of the growing retail investors and uncertainties in the financial markets during the pandemic period. There are no time frames chosen longer then 3 months, since the time frame of the data is only 14 months.

The momentum variable will be defined as high momentum when it is greater than 0, and it will be defined as low momentum when it is smaller than 0. When the momentum variable is equal to 0, there is no case of momentum. Two zero-cost trading portfolios will be set up for all of the momentum variables with different time frames. The first portfolio, namely high momentum portfolio, will start investing in the aviation industry when the aviation industry exhibits high momentum and stop investing in it as soon as it starts exhibiting low momentum. The second portfolio, that is the low momentum portfolio will start investing in the aviation industry when it exhibits low momentum and stop investing in it as soon as it exhibits high momentum.

The performances of the portfolios will be measured against a market index that is considered to represent the market's movement as a whole. For this the MSCI index will be used. In other words, regressions of the MSCI index returns on the zero-cost portfolio returns will be conducted. The alpha of these regressions will represent the excess returns, while the beta's of these regressions will measure the broad market's overall risk. This way the third and final hypothesis of this thesis will be tried to answered.

4.5 Concluding research methodology

With the regressions (after accounting for and assuming that all the assumptions for a proper (time-series) regression hold) the t-statistics for the news content variable and the size of the firm variable will be checked, to determine if the effects of these variables are statistically significant. Whereafter the coefficient might conclude what systematic effects these variables have on airline industry stock returns during the period of January 1st 2020 until April 1st 2021.

So with the regressions of case 1, case 2 and case 3, the following hypotheses are tested: What sort of effect does the content of the news article have on stock price of the aviation industry in the period of January 1st 2020 until April 1st 2021? How long is the possible systematic effect of news sentiment delayed in the period of January 1st 2020 until April 1st 2021? Are the effects of news announcement on aviation stock return, which is proxied by JETS ETF returns, dependent on the size of the firm which the news articles are written about? With the tests for momentum, the last hypothesis of this research is tested, namely if In the period of January 1st 2020 until April 1st 2021 there is momentum for the flight industry.

5. Results

This part of the research contains the results of the different cases, to try and answer the hypotheses of this research.

5.1 Case 1

In the first case, when there are positive news announcements as well as negative news announcements on the same day, the negative news announcements are disregarded. The data which is available in this case is summarized in figure 9. Figure 9 can be found in appendix A.

In figure 9, it can be seen that there is a relatively large amount of private firms (or firms not yet on the stock market), which the news announcements are about. The entire aviation industry is also mentioned relatively often. There is also a relatively large amount of days on which there is no news.

First, the effects of the news sentiment on the aviation industry will be examined for case 1. Table 1 shows that in this case, today's news sentiment has a positive effect on the end of the day's aviation industry, which is proxied by the JETS ETF returns.

Table 1:

A regression of news sentiment on JETS ETF returns, in case 1.

JETS ETF returns	coefficient	Standard error
News sentiment	0.00269	0.0016982
Constant	-0.0050954	0.0036565

T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.

However the coefficient for the news sentiment is insignificant at a 1%, 5% and 10% significance level. This means that the null hypothesis that news sentiment during the day, does not have a significant effect on the end of the day's JETS ETF returns, cannot be rejected. After testing for heteroscedasticity with the White test, the White test gives a P-value of 0,1811. Thus the null hypothesis that the data is homoscedastic, cannot be rejected. Thus the default standard errors do not need to be adjusted. The details for the White test are shown below in table 2.

Table 2:

White test of the regression of news sentiment on JETS ETF returns, in case 1.

White's general test statistic	Chi-squared(2)	P-value
	3.417086	0.1811

Case 5.1.2 Case 1 subcase 2

When the independent variable “firm or region size which the news articles are about” is added, the next results from table 3 follow:

Table 3:

A regression of news sentiment and firm or region size on JETS ETF returns, in case 1.

JETS ETF Returns	Coefficient	Standard error
News Sentiment	0.002479	0.0017033
Firm or Region size	-0.0001798	0.0001295
Constant	-0.0008885	0.004745

T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.

Today’s news sentiment has a positive relationship with the aviation industry, while the firm or region the news articles are about has a negative relationship with the industry. This would be curious, however the results show that the coefficients for both independent variables are insignificant at a 1%, 5% and 10% significance level. This means that the null hypotheses that these independent variables do not have an effect on the dependent variable, cannot be rejected.

In short no conclusion can be made about possible systematic effects of these independent variables on the aviation industry, where the aviation industry is proxied by JETS ETF returns and the period which is examined is January 1st 2020 until April 1st 2021. This is with the criteria that negative news is disregarded in the case that there is positive news as well as negative news on the same day.

Since the data is homoscedastic, the standard errors and thus the conclusions do not need to be adjusted. The White test shown in table 4, has a P-value of 0,4813, which indicates that the null hypothesis of homoscedasticity, cannot be rejected.

Table 4:

White test of the regression of news sentiment and firm or region size on JETS ETF returns, in case 1.

White’s general test statistic	Chi-squared(5)	P-value
	4.489433	0.4813

5.1.3 Case 1 subcase 3

In case 1 subcase 3, lags of the independent variables are added 1 at a time, up until the 14th lag of both news sentiment and firm or region size variables. After this last regression, 7 lags at a time are added to the next regressions for every independent variable.

Based on the adjusted R-squared, the regression with 5 lags of each independent variables comes out as best. All the other regressions with different independent variables have a negative adjusted R-squared. In table 5 an overview of the regression with 5 lags of each independent variable is shown.

Table 5:

A regression of the first 5 lags of news sentiment and firm or region size regressed on JETS ETF returns.

JETS ETF returns	Coefficient	Newey West standard error
L1. News sentiment	-0.0009405	0.0013059
L2. News sentiment	-0.0017486	0.0019166
L3. News sentiment	0.0029743	0.0015986
L4. News sentiment	0.0019502	0.0017994
L5. News sentiment	-0.0007896	0.0017994
L1. Firm or region size	-0.0001621	0.0000961
L2. Firm or region size	0.0001822	0.0001359
L3. Firm or region size	-0.0000148	0.0000694
L4. Firm or region size	-0.0000148	0.0000694
L5. Firm or region size	-0.0001212	0.0001208
Constant	0.0008261	0.0054692

T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.

A Ljung-Box Q test is conducted in the start, indicating that there is no need for lagged variables of JETS ETF returns or lagged variables of the error terms. Next, after each regression a White test and a Breusch-Godfrey test have been conducted. The White test indicates that the data for all of the regressions is homoscedastic, the null hypothesis cannot be rejected at a 5% significance level, for any of the regressions.

On the other hand the Breusch-Godfrey test indicates that there is serial correlation in the error terms for all of the regressions with lagged variables. The serial correlation consists up until the xth lag, where x varies for the various regressions. For all the regressions with a P-value below 5% when conducting a Breusch-Godfrey test, the null hypothesis can be rejected that there is no serial

correlation in the error terms. To make valid statistical conclusions, serial correlation in the error terms must be taken in account.

After accounting for serial correlation in the error terms by adjusting the standard errors to Newey-West standard errors in all of the regression, the results show that the coefficient of the lagged news sentiment variable and the firm or region size are all still insignificant for nearly all of the regressions. This means that the null hypothesis that the independent variable do not have an effect on the dependent variable cannot be rejected. Thus no conclusion can be drawn, based on the outcomes of these regressions.

However, in a few regressions a random lagged variable is significant at a 5% significance level, but for the following reasons this is assumed not to reflect a true effect. First the adjusted R-squared for these regressions is negative, second these lagged variables are insignificant in previous regressions, third the rest of the variables are all still insignificant, fourth and last the number of variables are very high, it seems unlikely that these results support the hypotheses of this research.

Summarized, no conclusions can be made about possible delayed systematic effects of news on the aviation industry during the period of January 1st 2020 until April 1st 2021, if it is assumed that when there is both positive and negative news on the same day, the negative news announcements are disregarded. Furthermore based on these regressions, one cannot conclude that the size of the firms, mentioned in the news articles, have an effect on the financial market of the aviation industry either.

5.2 Case 2

Continuing with case 2 without the firm or region sizes, the results of news sentiment effects are shown in table 6.

Table 6:

A regression of news sentiment on JETS ETF returns in case 2.

JETS ETF Returns	Coefficients	Standard error
News sentiment	-0.0000343	0.0019826
Constant	0.0002189	0.0034038

T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.

In contrast with case 1, the coefficient of the news sentiment variable is negative. However, just as in case 1, the coefficient is insignificant. Therefore no conclusions can be drawn out of these results

either, this time while assuming that positive news is disregarded, when there is both positive and negative news on the same day.

The white test indicates that the null hypothesis of homoscedasticity cannot be rejected at a 1% and 5% significance level. Thus the default standard errors do not need to be adjusted for these levels.

Table 7:

White's general test statistic	Chi-squared(2)	P-value
	5.983371	0.0502

White test of the regression of news sentiment and firm or region size on JETS ETF returns, in case 2.

5.2.2 Case 2 subcase 2

After adding the independent variable “the size of the firm or region which news articles are about”, the following regression seen in table 8 results.

Table 8:

A regression of news sentiment and firm or region size on JETS ETF returns in case 2.

JETS ETF Returns	Coefficients	Standard error
News sentiment	-0.0012211	0.0020925
Firm or region size	-0.0002347*	0.0001349
Constant	0.007119	0.0052218

*T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.*

Table 9:

White test of the regression of news sentiment and firm or region size on JETS ETF returns, in case 2 subcase 2.

White's general test statistic	Chi-squared(5)	P-value
	8.446266	0.1333

Conducting a White test gives the P-value of 0,1333, which is not small enough to reject the null hypothesis of homoscedasticity, thus the default standard errors of the regression are not adjusted.

Opposed to case 1.2, the variables news sentiment and firm or region size in table 8 both have a negative effect on JETS ETF returns. However, the coefficient for news sentiment is insignificant at a 1%, 5% and 10% significance level.

The coefficient for firm or region size is only significant at a 10% significance level. Since the usual significance level upheld in research papers is 5%, the coefficient of firm or region size is not significant enough to make solid conclusions on, especially since the coefficient of the news sentiment variable is highly insignificant.

5.2.3 Case 2 subcase 3

In case 2 subcase 3, the same process of adding lags to the independent variables as in case 1.3 is repeated. except this time when there is both negative and positive news on the same day, the positive news is disregarded. Just as in case 1.3 first a Ljung-Box Q test is conducted. Next a White and Breusch-Godfrey test are conducted for all of the regressions. The results show that the data is homoscedastic in every regression, however all of these regressions contain serial correlation in the error terms. Appropriate Newey West standard errors are used to deal with these serial correlations in the error terms.

In all of the regressions with different amount of lags, all of the lags of news sentiment are consistently insignificant. An example is given in table 10, the first lag of news sentiment has an insignificant coefficient for the 1%, 5% and 10% significance level. In a number of these regressions, the first lag of firm or region size does have a significant effect at a 10% significance level, as it is shown in table 10. In a few regressions, the first lag of firm or region size is even significant at a 5% significance level. All the other lags of the firm or region size are also insignificant in all of the regressions.

Table 10:

A regression of the first lag of news sentiment and the first lag of firm or region size on JETS ETF returns in case 2 subcase 3.

JETS ETF Returns	Coefficients	Newey West standard error
L1. News sentiment	-0.0022051	0.002071
L1. Firm or region size	-0.0001804*	0.0001008
Constant	0.0074588	0.0044314

T-statistics based on robust standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.

The fact that the first lag of the firm or region size is significant at a 10% level insinuates that the size of the firm or region the news articles are about does have a delayed effect on the aviation industry. However, since this effect is not consistent enough through all of the regressions and is more often

only significant at a 10% significance level throughout these regressions, no conclusions can be drawn out of these results.

5.3 Case 3

The data of firm and region sizes the news articles are about in case 3 are shown in figure 11 in appendix A. Same as in the previous cases, the amount of observations for the different firms are irregular. This time the news about the whole industry is encountered the most.

First results of the effects of news sentiment on the aviation industry for case 3 are shown in table 11 below.

Table 11:

A regression of news sentiment on JETS ETF returns in case 3.

JETS ETF Returns	Coefficients	Standard error
News sentiment	0.0024321	0.0017958
Constant	-0.0039955	0.0034308

T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$

Table 12:

White test of the regression of news sentiment and firm or region size on JETS ETF returns, in case 3.

White's general test statistic	Chi-squared(5)	P-value
	3.613973	0.1641

The White test has a P-value of 0,1641, thus we cannot reject the null hypothesis that the data is homoscedastic. Thus the default standard errors are upheld, which means that the t statistics do not change.

In contrast to case 2, the news sentiment effect on JETS ETF returns is positive again. This is also exhibited in case 1. However, just like the previous cases the coefficient is insignificant, thus no conclusions can be drawn from the above results.

5.3.2 Case 3 subcase 2

For case 3 subcase 2 the independent variable "firm or region size which the news articles are about" is added. The same process as in case 1.2 and case 2.2 is followed. This gives the following results:

Table 13:

A regression of news sentiment and firm or region size on JETS ETF returns in case 3 subcase 2.

JETS ETF Returns	Coefficients	Standard error
News sentiment	0.00248	0.0018356
Firm or region size	0.0000196	0.0001519
Constant	-0.0045564	0.0055352

T-statistics based on default standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$.

The coefficients of the news sentiment variable and the firm or region size variable are both positive. As in the previous case the coefficients are insignificant at a 1%,5% and 10% significance level, so no conclusions can be drawn from these outcomes as well.

5.3.3 Case 3 subcase 3

In case 3 subcase 3, the same process is upheld as in cases 1.3 and 2.3. For all of the regressions, with varying amounts of lagged independent variables the results are quite similar to those of case 1.3. The coefficients for all of the lagged variables are insignificant. Even the first lag of firm or region size is insignificant for all of the regressions, in contrast to case 2.3. Therefore no conclusions can be drawn from these results. An example regression is given in the next table.

Table 14:

A regression of the first lag of news sentiment and the first lag of firm or region size on JETS ETF returns in case 3 subcase 3.

JETS ETF Returns	Coefficient	Newey West standard error
L1. News sentiment	-0.017419	0.0018388
L1. firm or region size	-0.0001217	0.000153
Constant	0.0061204	0.0055659

T-statistics based on robust standard errors are shown in parentheses. *** $p < 0.01$ level, ** $p < 0.05$, * $p < 0.1$

5.4 Momentum

When setting up zero-cost trading portfolios for high and low momentum, some interesting results emerge. For almost all of the portfolios, investing in the aviation industry during low momentum periods seems to result in more positive accumulative returns. In some portfolios, investing in the

high momentum periods seems to even give negative accumulative returns. Examples are given in figures 12 , 13, 14, 15, 16 and 17. These figures can be found in appendix A.

When examining the JETS ETF returns in figure 18 in appendix A, it stands out that in the period where the high momentum portfolios' accumulated returns decreases, there seems to be high volatility. After this period of high volatility, a period of relatively low volatility seems to follow. In this period of low volatility it can also be seen that the low momentum portfolios increases in accumulated returns. Every time there seems to be a big shock to the JETS ETF returns, the low momentum portfolio increases in accumulated returns and the high momentum portfolio decreases in accumulated returns.

Finally, in the following table, table 15, the results of regressing the MSCI index returns on the different portfolio returns are shown. Alpha, " α " represents the excess returns the various zero-cost portfolios achieved, while beta, " β " represents the broad markets overall risk.

Table 15:

Overview of the alphas and betas of the MSCI index returns regressed on the different zero-cost portfolio returns.

Time frame	Strategy	α	β
5 days	High momentum	0.0003155	-0.0512219
5 days	Low momentum	0.0001471	0.1144631
2 weeks	High momentum	-0.0016802	0.0459104
2 weeks	Low momentum	0.0020519	-0.1459258
3 weeks	High momentum	-0.001869	-0.0476128
3 weeks	Low momentum	0.0019092	-0.0620503
1 month	High momentum	-0.0004041	-0.0199054
1 month	Low momentum	0.0004158	-0.1016543
2 months	High momentum	0.0012443	-0.0764262
2 months	Low momentum	0.0018659	-0.055724
3 months	High momentum	0.0013238	-0.010577
3 months	Low momentum	0.0030848	-0.1782124

The highest alphas are recorded for the 2 weeks low momentum-portfolio and the 3 months low momentum-portfolio. They have a alpha of 0,0020519 and 0,0030949 respectively. The corresponding betas are -0,1459248 and -0,1782124 respectively.

5.5 Conclusions on the hypotheses

In the period January 1st 2020 until April 1st 2021, by manually determining news as positive, neutral or negative and considering different cases, no significant relationship has been found between news sentiment and JETS ETF returns. Therefore no statements can be made about the first hypothesis, namely:

Hypothesis 1: News sentiment have a systematic effect on the aviation industry proxied by JETS ETF returns in the period of January 1st 2020 until April 1st 2021.

In all of the different cases examined, the results show weak to no significant effects of firm or region size on JETS ETF returns, during the period of January 1st 2020 until April 1st 2021. Given the fact that there can also be no statements made about effects of news sentiment on JETS ETF returns, no statements can be made about the second hypothesis either. Namely,

Hypothesis 2: The effects of news announcement on the financial market of the airline industry in January 1st 2020 until April 1st 2021, are dependent on the size of the firm or region which the news announcement is written about. Where size of the firm is measured relatively within the industry looking at the market value.

However, for the third and final hypothesis when looking at time frames of 3 months, 2 months, 3 weeks and 2 weeks, a zero-cost trading strategy based upon low momentum seems to give accumulated returns of approximately 29% to 63%. Furthermore a alpha as high as 0,0030949 is achieved with the 3 months low momentum-portfolio. These results support the last hypothesis.

Hypothesis 3: In the period of January 1st 2020 until April 1st 2021 there is momentum for the flight industry.

6. Conclusion

In this research the effects of news sentiment and the effects of the size of the firms which news articles are about on the aviation industry are analyzed. Furthermore the presence of momentum is examined. The aim of this thesis is to understand how news announcements affect the financial market of the aviation industry during the period of January 1st 2020 until April 1st 2021. All of the news announcements on the aviation industry from the Financial times and the Wall Street Journal have been manually collected and manually categorized as either negative, neutral or positive news. A total amount of 716 news announcements are collected and rated.

The research question of this thesis is:

How did news announcements affect stock prices for the airline industry during the period 2020 until 2021?

This is investigated by the use of 3 hypothesis. For these hypothesis the following variables have been used: 3 different news sentiment variables for the 3 different cases, 3 different firm or region size variables for the 3 different cases, the lagged variants of these variables, 12 different kinds of momentum variables, JETS ETF returns and the MSCI index returns.

The first hypothesis is that news sentiment have an effect on the financial market of the aviation industry during the period January 1st 2020 until April 1st 2021. Different cases are examined, based upon assumptions on investors' decisions when there is both positive and negative news on the same day. In the 3 different cases, 9 subcases in total have been conducted to test whether news sentiment have a (non-) delayed effect on the aviation industry. Over 80 regressions have been conducted. As can be seen in the results, in none of the cases is it possible to reject the null hypothesis that news sentiment have no effect on the financial markets of the aviation industry, proxied by JETS ETF returns.

The second hypothesis is that the effect of the news sentiment is influenced by the firm or region size which the news articles are about during the period of January 1st 2020 until April 1st 2021. For this hypothesis in the 3 different cases, 6 subcases have been examined and over 70 regressions have been conducted. As can be seen in the results, some significant effect are found, but these effects are not strongly significant nor consistent. Therefore no conclusions could be drawn from these regressions about the second hypothesis.

The third and last hypothesis states that there is momentum for the aviation industry during the period of January 1st 2020 until April 1st 2021. This is tested by defining and analyzing 12 different types of momentum. Where after zero-cost trading portfolios are created. For this hypothesis some more support is found, suggesting investor over-/underreaction. As shown in the results, the equity

curves for some of the zero-cost trading portfolios gained over 50% returns in a period of 10 to 13 months. Furthermore the zero-cost portfolios performance have been compared against the market, which is proxied by the MSCI index returns.

7. Discussion

In the previous section, the findings of this thesis are discussed. Continuing in this section, the limitations of the research and suggestions for further research will be discussed.

In a majority of previous literature, significant effects of news announcements was found in some way or another. Not in line with those findings, in this research, the results which were obtained, are insignificant. This could be influenced by some limitations in this thesis. These limitations may have affected the quality and reliability of the results.

One such limitation could be the following. All of the news announcements gathered from the Financial Times and the Wall Street Journal, seemed biased towards certain firms. There were relatively large observations for a couple of firms, while relatively little for others. Because of this, it might be possible that the influence the size of firms or regions might have is diluted, overexaggerated or not found. By increasing the period where data is collected, a more suiting distribution of data could be realized. This way the possible influence of the size of the firm or region could be captured correctly.

Another limitation this thesis could have, is the omitted-variable bias problem. The omitted-variable bias problem results in the model attributing the effect of the missing variables to the estimated effects of the included variables. At a certain point the overall stock market increased in value. This was caused by a surge in demand. There was a sudden expansion of investors on the market, since other equity markets were less profitable in this period Tompor (2021). So the period of January 2020 until April 2021 could be divided in two periods. A period before the rise in demand and a period after the rise in demand. In the data it looks like the stock market has a reaction when extra investors enter the market. Since this instantaneous change is not somehow captured in the regressions, it could cause a bias in the results. The surge in investors could have also changed the effects of news announcements during the period, which could be another possible explanation for not finding a significant effect.

Other concerns for this thesis, is the generalization of all degrees of positive and negative news. Certain effects might be diluted, exaggerated or lost, depending on the data. This can be tried to fix, by widening the sentiment news announcements have, for example, instead of negative, neutral and

positive news, the news articles can be classified as very negative, negative, little bit negative, neutral, little bit positive, positive and extremely positive news. When very positive news and little bit positive news both are deemed as positive news, while very positive has an effect, and little bit positive news has no effect, the effects of very positive news are diluted.

Another interesting follow up research could be to only analyze big positive and big negative news announcements, which are distinct with their subjects. For example all news articles about CEOs, investment firms and high net worth individuals can be regressed individually on the aviation industry, to see if there is a relationship.

It could also be interesting to widen the sources of news, to for example social media. Since there is an increasing amount of retail investors, who most likely do not get their information from sources such as the Wall Street Journal.

8. Appendix A: figures

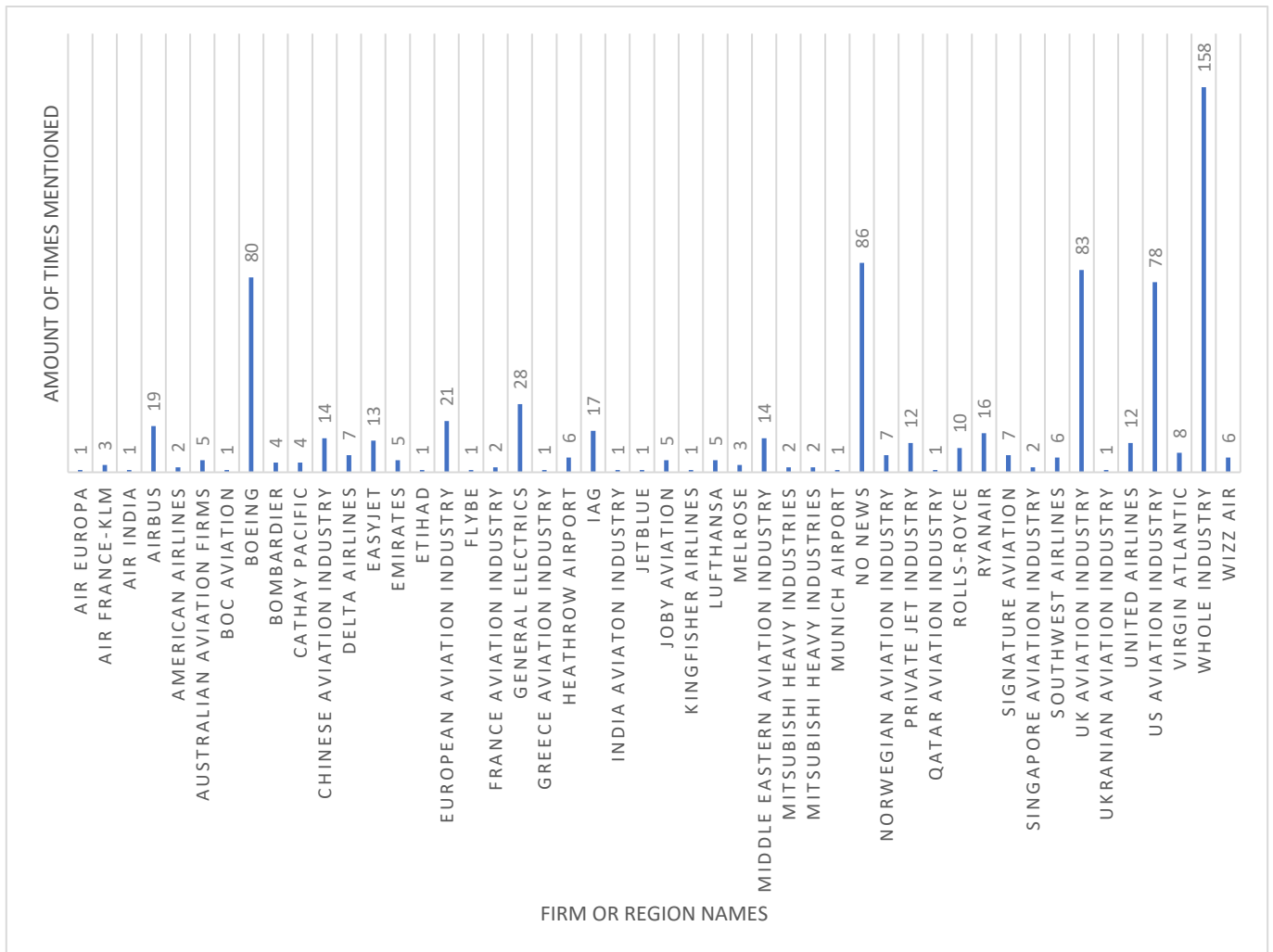


Figure 4: Firms and regions all the news announcements are about and how often they are encountered..

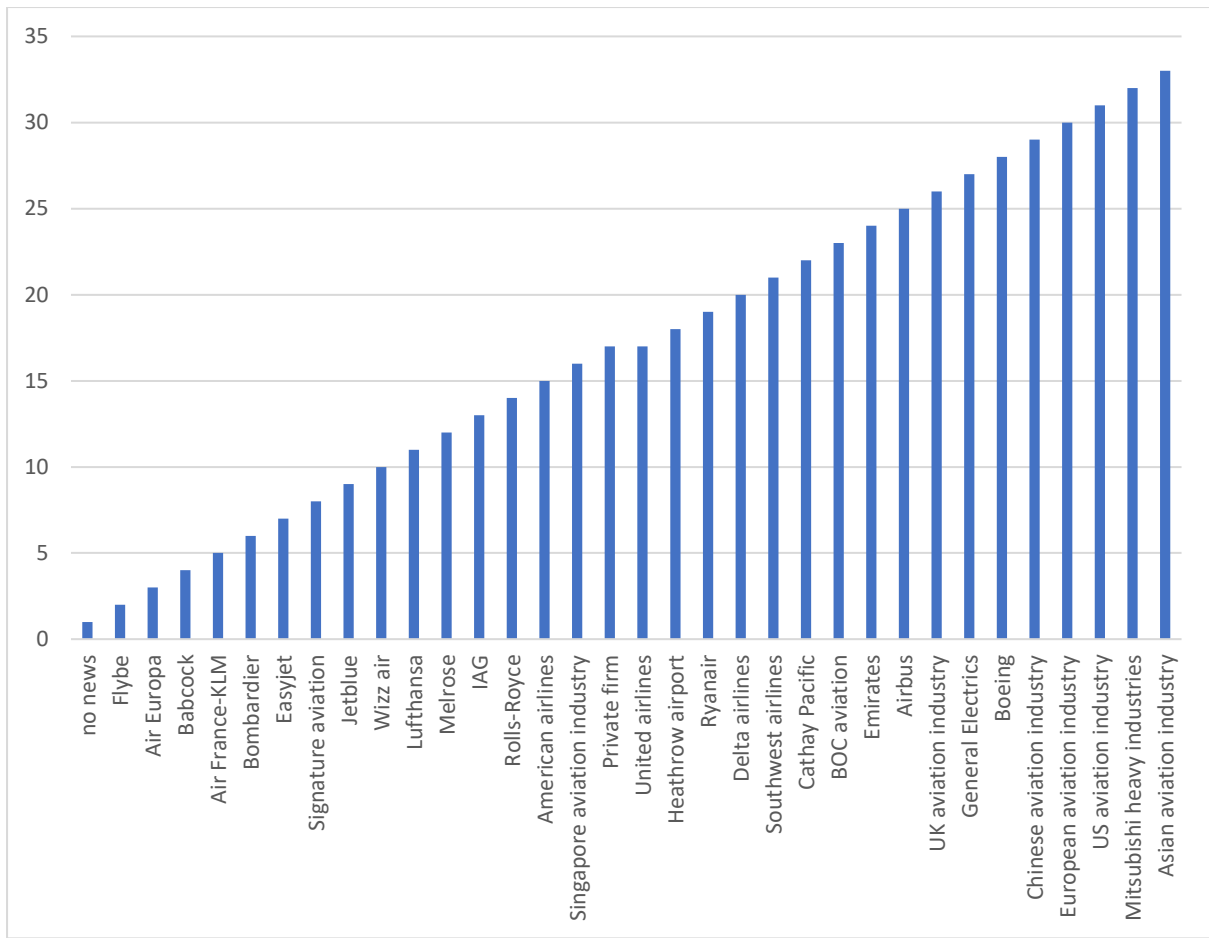


Figure 5: Firm and region ranking, based on their approximated market capacities

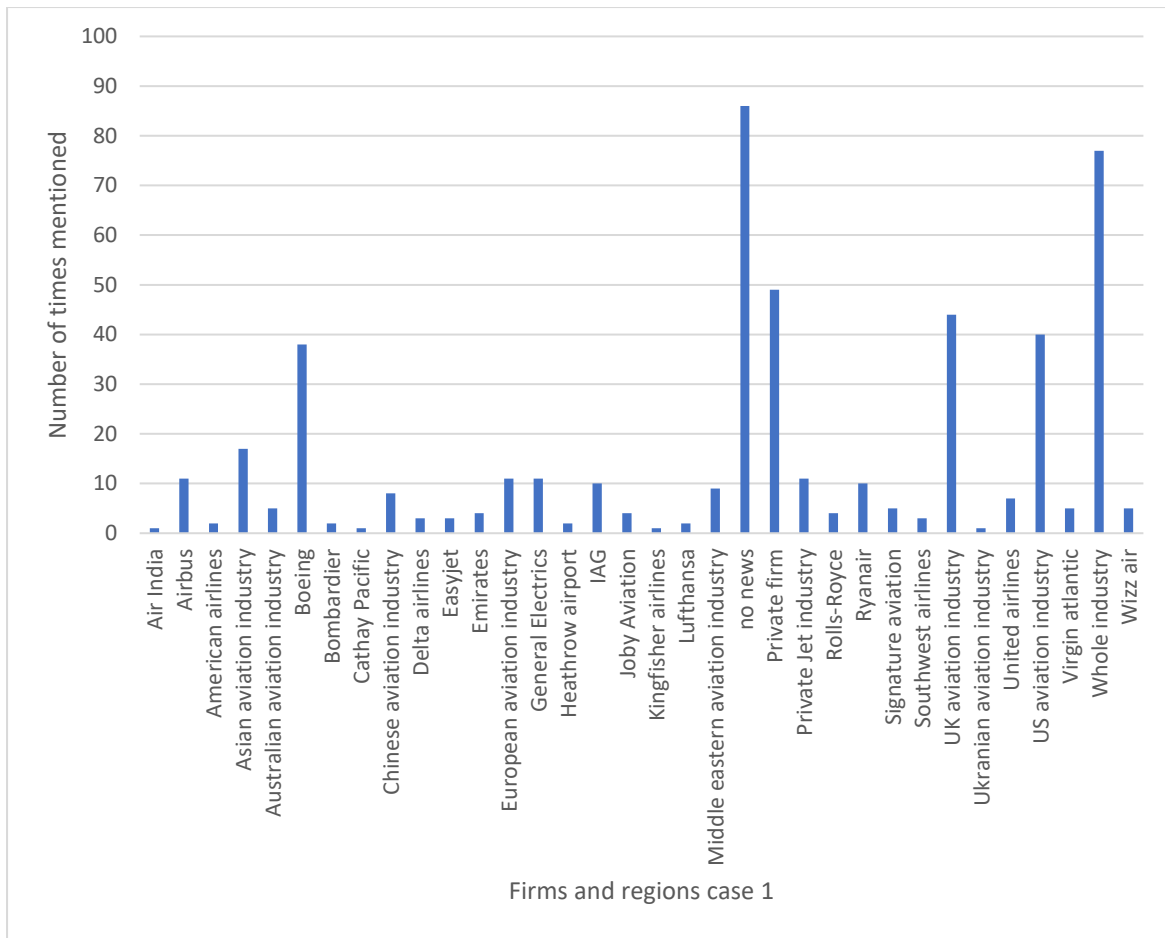


Figure 6: Firms and regions news is about and how often they are encountered for case 1.

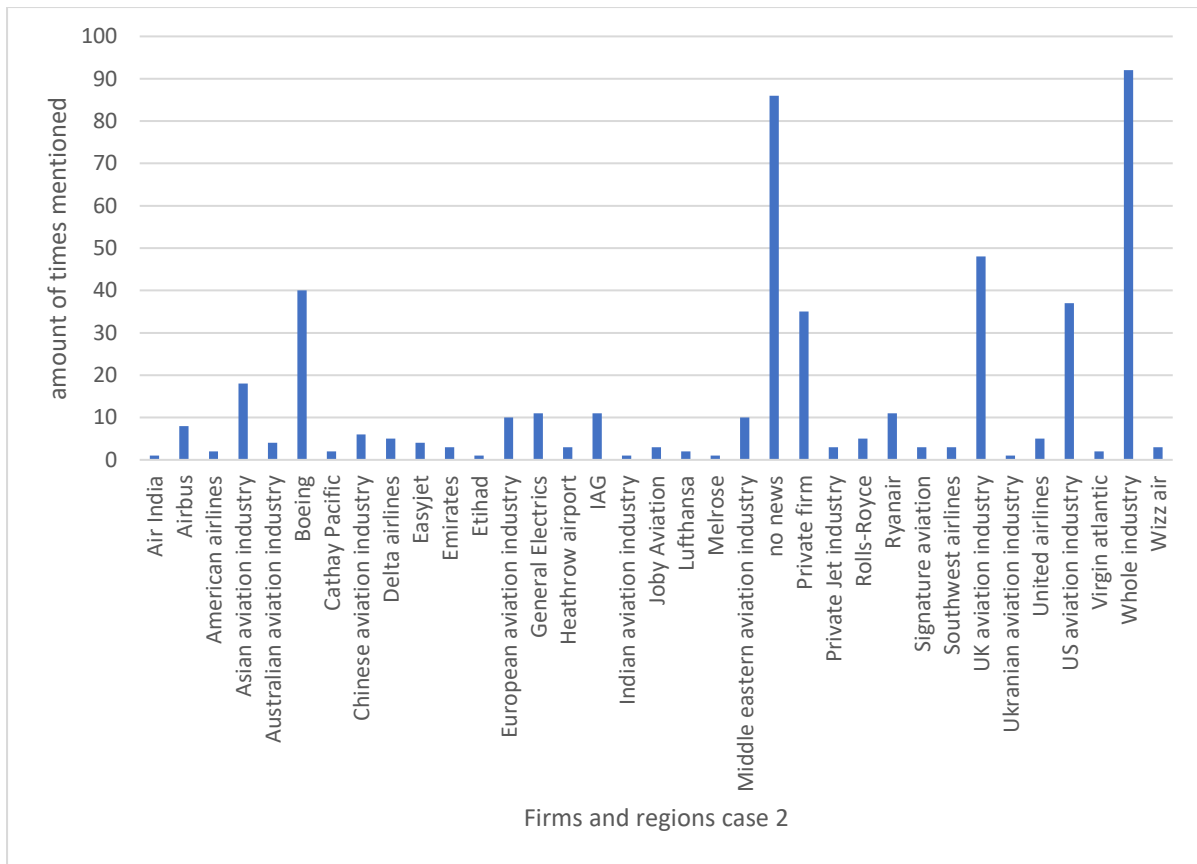


Figure 7: Firms and regions news is about and how often they are encountered for case 2.

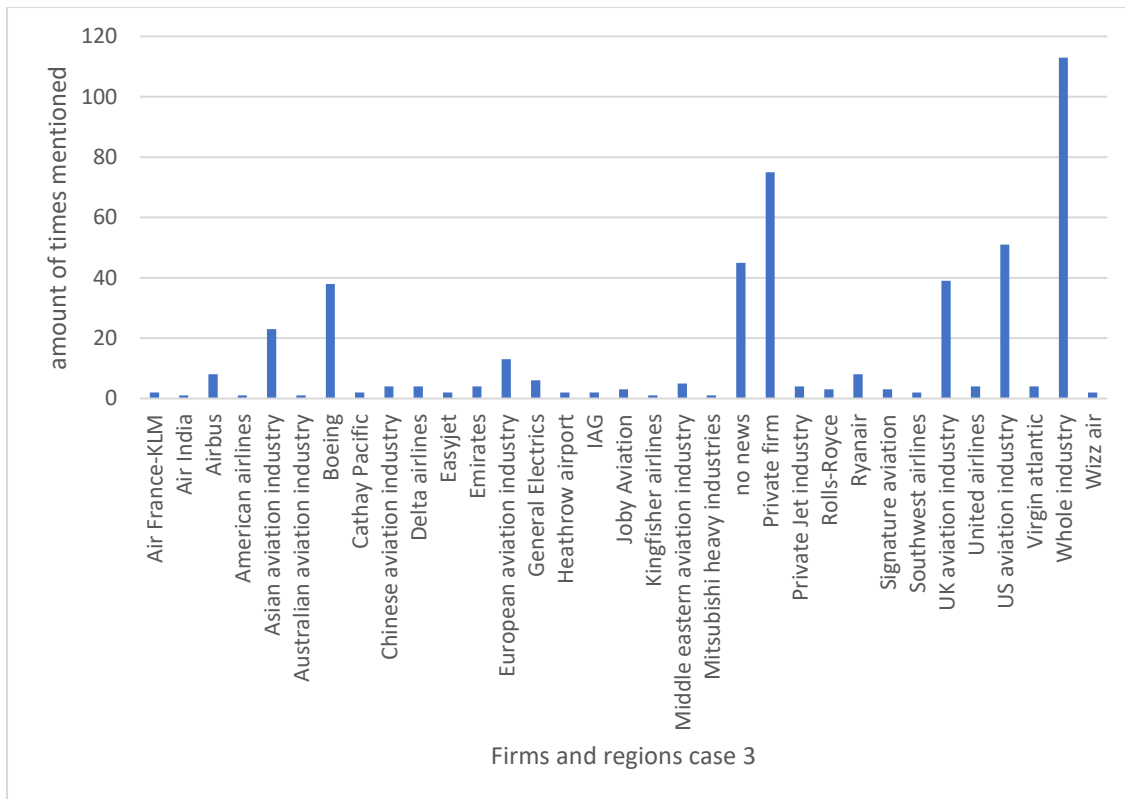


Figure 8: Firms and regions news is about and how often they are encountered for case 3.

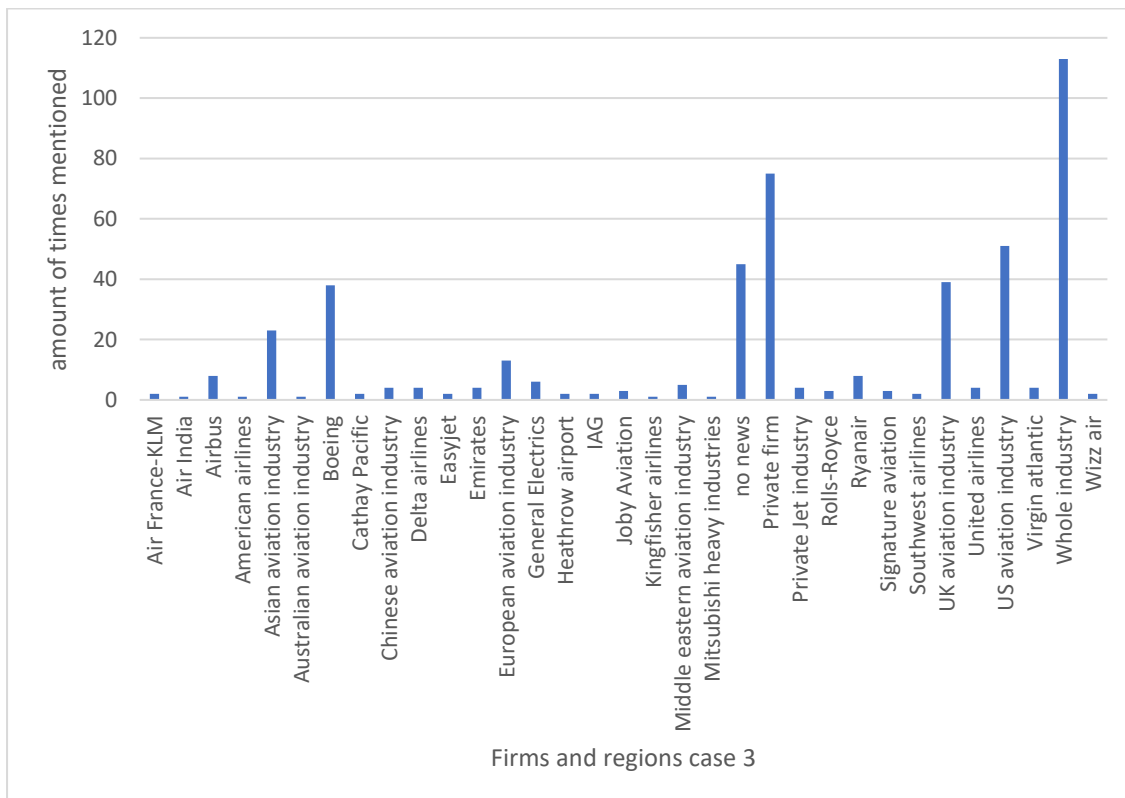


Figure 11: Firms and regions news is about and how often they are encountered for case 3.

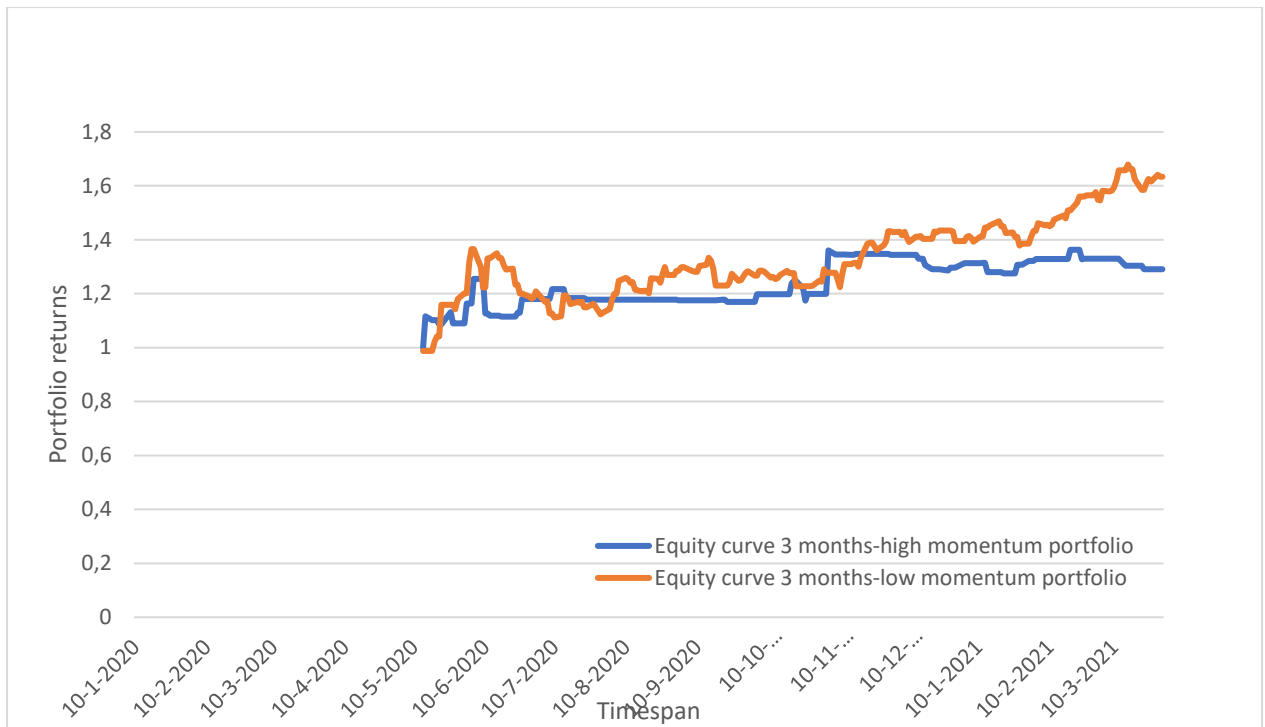


Figure 12: Equity curves of the 3 months momentum portfolios.



Figure 13: Equity curves of the 3 weeks momentum portfolios.

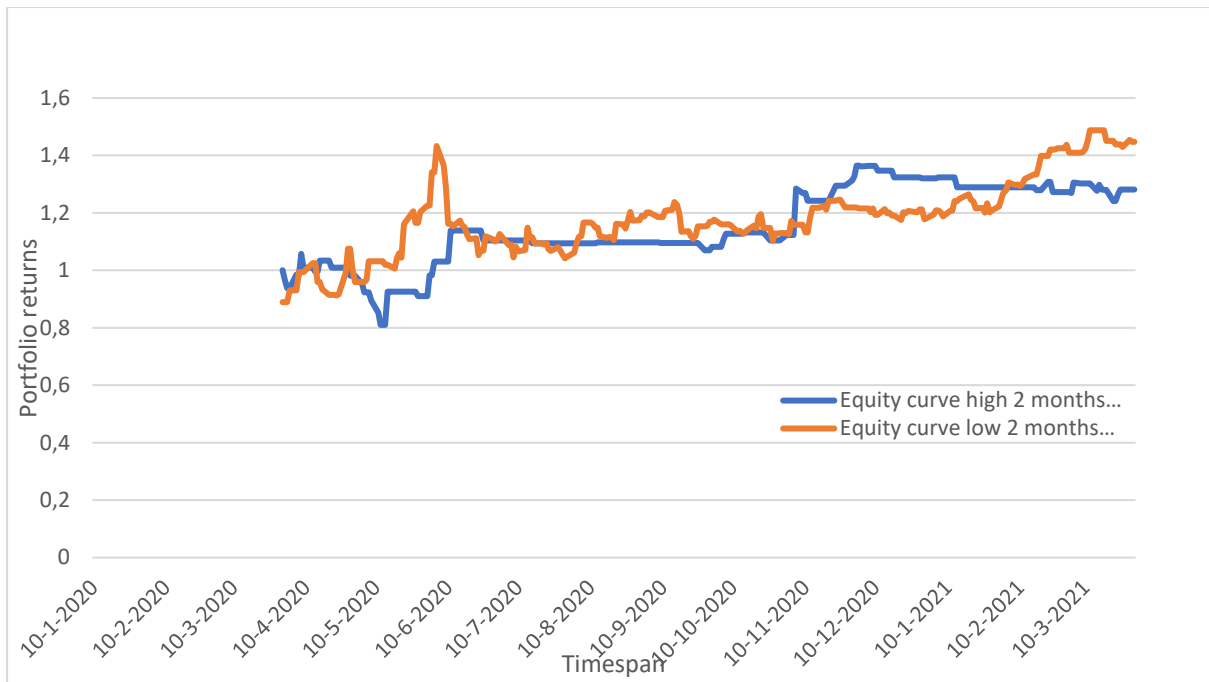


Figure 14: Equity curves of the 2 months momentum portfolios.

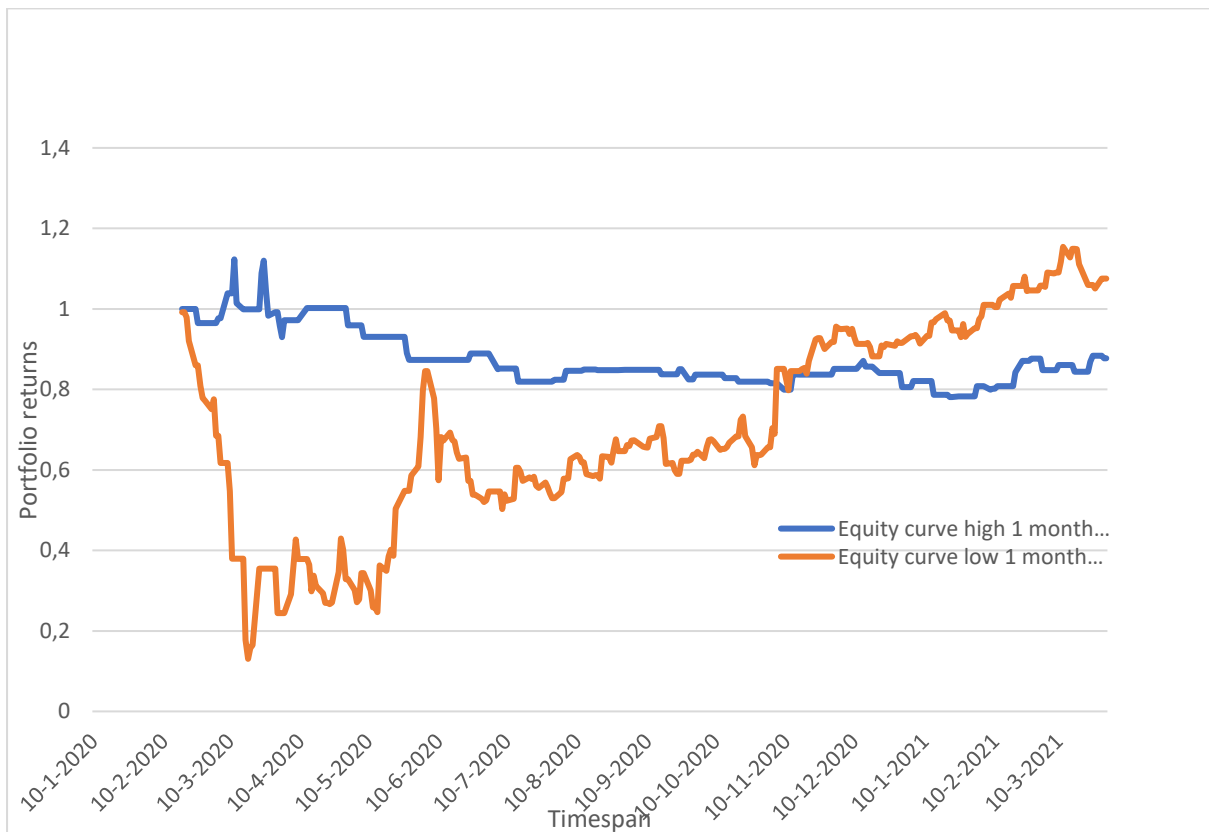


Figure 15: Equity curves of the 1 month momentum portfolios.

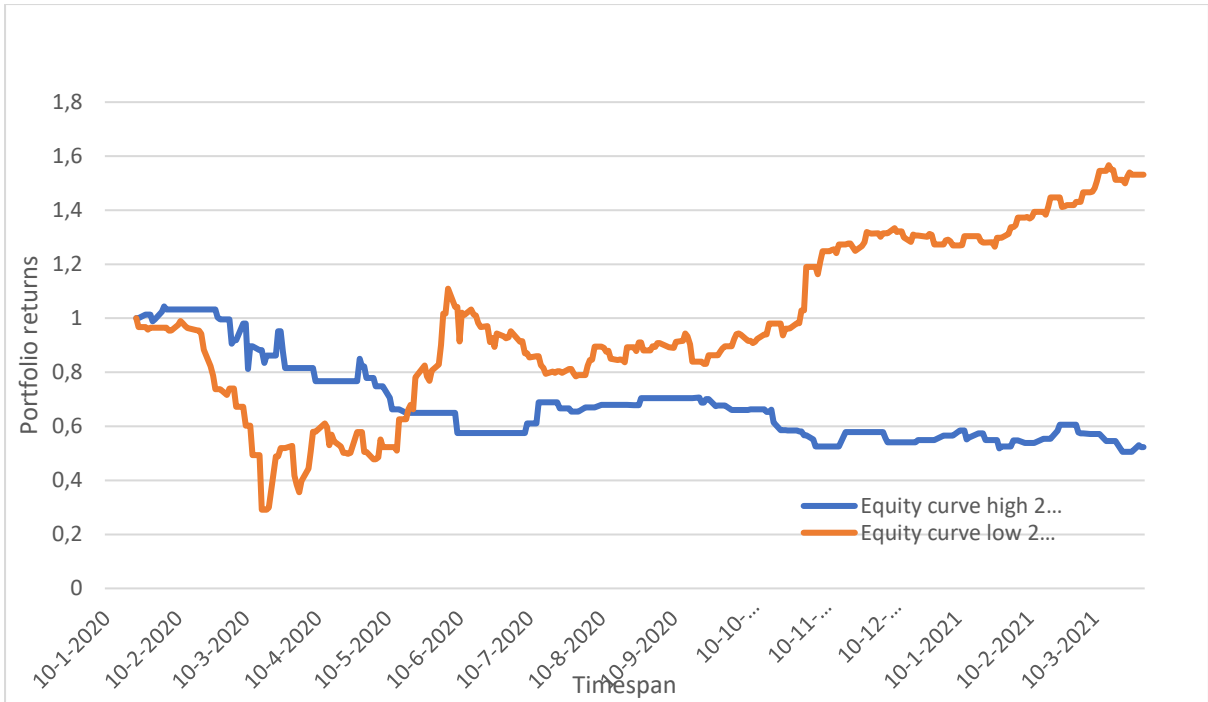


Figure 16: Equity curves of the 2 weeks momentum portfolios.

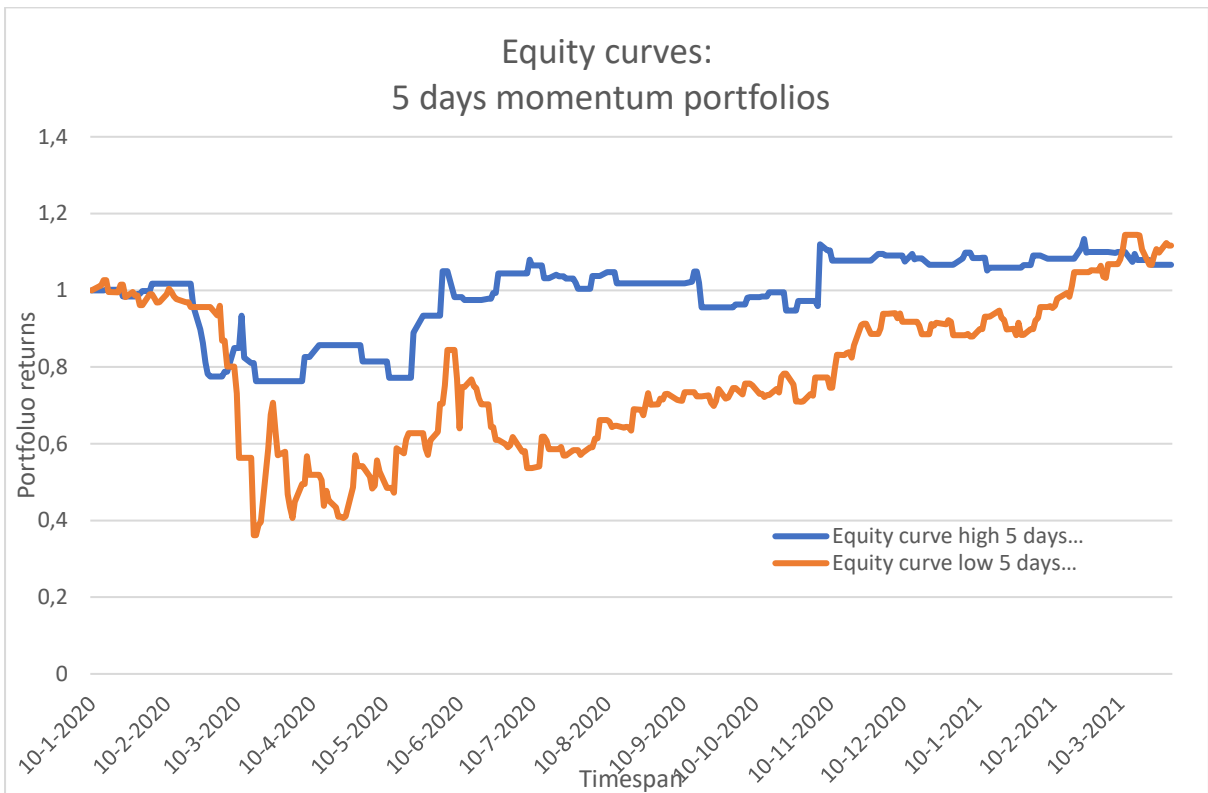


Figure 17: Equity curves of the 5 days momentum portfolios.

9. Appendix B: Stata data import instructions

For case 1:

- Import the data from excel sheet "Case 1 only positive news".
- Import the columns R to V until row 458
- Import the first row as the variable names

For case 2:

- Import the data from excel sheet "Case 2 only negative news".
- Import the columns R to W until row 458
- Import the first row as the variable names

For case 3:

- Import the data from excel sheet "Case 1 only biggest firm_region"
- Import the columns X to AA until row 458
- Import the first row as the variable names

For the momentum analysis:

- Import the data from excel sheet "Momentum data".
- Import the columns CO to DA until row 315
- Import the first row as the variable names

10. Appendix C: Stata do files for case 1

//Telling stata we're working with timeseries data

```
gen t=_n
```

```
tsset t
```

// normal regression, not a timeseries yet test

```
reg Returns news
```

```
whitetst
```

```
reg Returns news firmsize
```

whitetst

//simple regression with only news sentiment as the independent variable

regress Returns L.news

// testing for OLS assumptions: Homoskedasticity and uncorrelated errorterms

whitetst

estat bgodfrey, lag(75)

corrgram Returns

//regressing while accounting for serial correlation in the error terms

newey Returns L.news, lag(75) force

// regression with news sentiment and firm size as independent variables

regress Returns L.news L.firm size

// testing for OLS assumptions: Homoskedasticity and uncorrelated errorterms

whitetst

estat bgodfrey, lag(73)

// regressing while accounting for serial correlation in the error terms

newey Returns L.news L.firm size, lag(73) force

//adding lags of news sentiment and lags of firm or region size

regress Returns L1.news L2.news

estat bgodfrey, lag(72)

whitetst

newey Returns L1.news L2.news, lag(72) force

regress Returns L1.news L2.news L1.firmsize L2.firmsize

whitetst

estat bgodfrey, lag(73)

newey Returns L1.news L2.news L1.firmsize L2.firmsize, lag(73) force

// 3 lags

regress Returns L1.news L2.news L3.news

estat bgodfrey, lag(71)

whitetst

newey Returns L1.news L2.news L3.news, lag(80) force

regress Returns L1.news L2.news L3.news L1.firmsize L2.firmsize L3.firmsize

whitetst

estat bgodfrey, lag(82)

newey Returns L1.news L2.news L3.news L1.firmsize L2.firmsize L3.firmsize, lag(82) force

// 4 lags

regress Returns L1.news L2.news L3.news L4.news

whitetst

estat bgodfrey, lag(83)

newey Returns L1.news L2.news L3.news L4.news, lag(83) force

regress Returns L1.news L2.news L3.news L4.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize

whitetst

estat bgodfrey, lag(83)

newey Returns L1.news L2.news L3.news L4.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize,
lag(83) force

// 5 lags

regress Returns L1.news L2.news L3.news L4.news L5.news

whitetst

estat bgodfrey, lag(83)

newey Returns L1.news L2.news L3.news L4.news L5.news, lag(83) force

regress Returns L1.news L2.news L3.news L4.news L5.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize

whitetst

estat bgodfrey, lag(83)

newey Returns L1.news L2.news L3.news L4.news L5.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize, lag(83) force

//6 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news

whitetst

estat bgodfrey, lag(84)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news, lag(84) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize

whitetst

estat bgodfrey, lag(84)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize, lag(84) force

//7 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news

whitetst

estat bgodfrey, lag(79)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news, lag(79) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize

whitetst

estat bgodfrey, lag(79)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize, lag(79) force

//8 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news, lag(72) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize, lag(72) force

//9 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

whitetst

estat bgodfrey, lag(71)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news,
lag(71) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize

L9.firmsize

whitetst

estat bgodfrey, lag(71)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize

L9.firmsize, lag(71) force

//10 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

L10.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

L10.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

L10.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize

L9.firmsize L10.firmsize

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize, lag(68) force

//11 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize, lag(68) force

//12 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news, lag(67) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize, lag(67) force

//13 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news

whitetst

estat bgodfrey, lag(66)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news, lag(66) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize

whitetst

estat bgodfrey, lag(66)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize,
lag(66) force

//14 lags

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news
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whitetst
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estat bgodfrey, lag(66)
```

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newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news, lag(66) force
```

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize  
L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize  
L13.firmsize L14.firmsize
```

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whitetst
```

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estat bgodfrey, lag(66)
```

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newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize  
L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize  
L13.firmsize L14.firmsize, lag(66) force
```

// adding 7 lags at a time until 62 lags

//21 lags

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news  
L20.news L21.news
```

```
whitetst
```

```
estat bgodfrey, lag(67)
```

```
newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news  
L20.news L21.news, lag(67) force
```

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize
L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize
L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize, lag(67) force

//28 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news

whitetst

estat bgodfrey, lag(65)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news, lag(65)
force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize
L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize
L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize
L26.firmsize L27.firmsize L28.firmsize

whitetst

estat bgodfrey, lag(65)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize
L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize
L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize
L26.firmsize L27.firmsize L28.firmsize, lag(65) force

//35 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news

whitetst

estat bgodfrey, lag(64)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news, lag(64) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize
L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize
L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize
L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize

whitetst

estat bgodfrey, lag(64)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize
L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize
L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize
L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize,
lag(64) force

//42 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news

whitetst

estat bgodfrey, lag(54)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news, lag(54) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize
L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize

L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize
L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize
L39.firmsize L40.firmsize L41.firmsize L42.firmsize

whitetst

estat bgodfrey, lag(54)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize
L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize
L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize
L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize
L39.firmsize L40.firmsize L41.firmsize L42.firmsize, lag(54) force

//49 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news

whitetst

estat bgodfrey, lag(75)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news,
lag(75) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize
L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize
L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize
L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize
L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize
L49.firmsize

whitetst

estat bgodfrey, lag(75)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize
L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize
L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize
L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize
L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize
L49.firmsize, lag(75) force

//56 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news

L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news

whitetst

estat bgodfrey, lag(84)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news, lag(84) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize
L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize
L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize
L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize
L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize
L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize
L51.firmsize L52.firmsize L53.firmsize L54.firmsize L55.firmsize L56.firmsize

whitetst

estat bgodfrey, lag(84)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize

L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize
L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize
L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize
L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize
L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize
L51.firmsize L52.firmsize L53.firmsize L54.firmsize L55.firmsize L56.firmsize, lag(84) force

// 63 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news

whitetst

estat bgodfrey, lag(87)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news, lag(87) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize

L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize
L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize
L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize
L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize
L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize L51.firmsize L52.firmsize L53.firmsize
L54.firmsize L55.firmsize L56.firmsize L57.firmsize L58.firmsize L59.firmsize L60.firmsize L61.firmsize
L62.firmsize L63.firmsize

whitetst

estat bgodfrey, lag(87)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize
L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize
L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize
L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize
L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize
L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize L51.firmsize L52.firmsize L53.firmsize
L54.firmsize L55.firmsize L56.firmsize L57.firmsize L58.firmsize L59.firmsize L60.firmsize L61.firmsize
L62.firmsize L63.firmsize, lag(87) force

11. Appendix D: Stata do files for case 2

//Telling stata we're working with timeseries data

```
gen t=_n
```

```
tsset t
```

// normal regression, not a timeseries yet test

```
reg Returns news
```

```
whitetst
```

```
reg Returns news firmsize
```

```
whitetst
```

//simple regression with only news sentiment as the independent variable

```
regress Returns L.news
```

// testing for OLS assumptions: Homoskedasticity and uncorrelated error terms

```
whitetst
```

```
estat bgodfrey, lag(75)
```

```
corrgram Returns
```

//regressing while accounting for serial correlation in the error terms

```
newey Returns L.news, lag(75) force
```

// regression with news sentiment and firmsize as independent variables

```
regress Returns L.news L.firmsize
```


// testing for OLS assumptions: Homoskedasticity and uncorrelated error terms

whitetst

estat bgodfrey, lag(73)

// regressing while accounting for serial correlation in the error terms

newey Returns L.news L.firmsize, lag(73) force

//adding lags of news sentiment and lags of firm or region size

regress Returns L1.news L2.news

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news, lag(72) force

regress Returns L1.news L2.news L1.firmsize L2.firmsize

whitetst

estat bgodfrey, lag(73)

newey Returns L1.news L2.news L1.firmsize L2.firmsize, lag(73) force

// 3 lags

regress Returns L1.news L2.news L3.news

whitetst

estat bgodfrey, lag(71)

newey Returns L1.news L2.news L3.news, lag(71) force

regress Returns L1.news L2.news L3.news L1.firmsize L2.firmsize L3.firmsize

whitetst

estat bgodfrey, lag(82)

newey Returns L1.news L2.news L3.news L1.firmsize L2.firmsize L3.firmsize, lag(82) force

// 4 lags

regress Returns L1.news L2.news L3.news L4.news

whitetst

estat bgodfrey, lag(70)

newey Returns L1.news L2.news L3.news L4.news, lag(70) force

regress Returns L1.news L2.news L3.news L4.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize

whitetst

estat bgodfrey, lag(80)

newey Returns L1.news L2.news L3.news L4.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize,
lag(80) force

// 5 lags

regress Returns L1.news L2.news L3.news L4.news L5.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize

whitetst

estat bgodfrey, lag(83)

newey Returns L1.news L2.news L3.news L4.news L5.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize, lag(83) force

//6 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize

whitetst

estat bgodfrey, lag(82)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize, lag(82) force

//7 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize

whitetst

estat bgodfrey, lag(80)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize, lag(80) force

//8 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize

whitetst

estat bgodfrey, lag(76)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize, lag(76) force

//9 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

whitetst

estat bgodfrey, lag(70)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news,
lag(70) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize

whitetst

estat bgodfrey, lag(71)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize, lag(71) force

//10 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news, lag(67) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize

whitetst

estat bgodfrey, lag(71)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize, lag(71) force

//11 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news

whitetst

estat bgodfrey, lag(64)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news, lag(64) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize

whitetst

estat bgodfrey, lag(69)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize, lag(69) force

//12 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news, lag(67) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize, lag(68) force

//13 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news

whitetst

estat bgodfrey, lag(66)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news, lag(66) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize

whitetst

estat bgodfrey, lag(69)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize,
lag(69) force

//14 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news, lag(67) force


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regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize  
L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize  
L13.firmsize L14.firmsize
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whitetst
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estat bgodfrey, lag(68)
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```
newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize  
L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize  
L13.firmsize L14.firmsize, lag(68) force
```

// adding 7 lags at a time until 62 lags

//21 lags

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news  
L20.news L21.news
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whitetst
```

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estat bgodfrey, lag(66)
```

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newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news  
L20.news L21.news, lag(66) force
```

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news  
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
```

L20.news L21.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize
L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize
L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize, lag(72) force

//28 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news

whitetst

estat bgodfrey, lag(62)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news, lag(62)
force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize
L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize

L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize
L26.firmsize L27.firmsize L28.firmsize

whitetst

estat bgodfrey, lag(69)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize
L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize
L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize
L26.firmsize L27.firmsize L28.firmsize, lag(69) force

//35 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news

whitetst

estat bgodfrey, lag(64)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news, lag(64) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news

L30.news L31.news L32.news L33.news L34.news L35.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize
L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize
L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize
L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize
whitetst

estat bgodfrey, lag(73)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L1.firmsize L2.firmsize L3.firmsize
L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize
L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize
L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize
L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize,
lag(73) force

//42 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news

whitetst

estat bgodfrey, lag(66)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news

L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news, lag(66) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize
L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize
L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize
L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize
L39.firmsize L40.firmsize L41.firmsize L42.firmsize

whitetst

estat bgodfrey, lag(90)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize
L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize
L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize
L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize
L39.firmsize L40.firmsize L41.firmsize L42.firmsize, lag(90) force

//49 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news

L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news

whitetst

estat bgodfrey, lag(65)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news,
lag(65) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize
L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize
L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize
L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize
L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize
L49.firmsize

whitetst

estat bgodfrey, lag(73)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news

L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize
L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize
L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize
L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize
L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize
L49.firmsize, lag(73) force

//56 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news

whitetst

estat bgodfrey, lag(62)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news, lag(62) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news

L50.news L51.news L52.news L53.news L54.news L55.news L56.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize
L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize
L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize
L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize
L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize
L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize
L51.firmsize L52.firmsize L53.firmsize L54.firmsize L55.firmsize L56.firmsize

estat bgodfrey, lag(78)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize
L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize
L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize
L27.firmsize L28.firmsize L29.firmsize L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize
L35.firmsize L36.firmsize L37.firmsize L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize
L43.firmsize L44.firmsize L45.firmsize L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize
L51.firmsize L52.firmsize L53.firmsize L54.firmsize L55.firmsize L56.firmsize, lag(78) force

// 63 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news

estat bgodfrey, lag(78)

// lag 78 minimum point, breusch godfrey null hypothesis not rejectable at 1% and 5% significance level

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news, lag(78) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize
L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize
L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize
L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize
L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize
L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize L51.firmsize L52.firmsize L53.firmsize
L54.firmsize L55.firmsize L56.firmsize L57.firmsize L58.firmsize L59.firmsize L60.firmsize L61.firmsize
L62.firmsize L63.firmsize

estat bgodfrey, lag(82)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news

L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news L36.news L37.news L38.news L39.news
L40.news L41.news L42.news L43.news L44.news L45.news L46.news L47.news L48.news L49.news
L50.news L51.news L52.news L53.news L54.news L55.news L56.news L57.news L58.news L59.news
L60.news L61.news L62.news L63.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize
L14.firmsize L15.firmsize L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize
L22.firmsize L23.firmsize L24.firmsize L25.firmsize L26.firmsize L27.firmsize L28.firmsize L29.firmsize
L30.firmsize L31.firmsize L32.firmsize L33.firmsize L34.firmsize L35.firmsize L36.firmsize L37.firmsize
L38.firmsize L39.firmsize L40.firmsize L41.firmsize L42.firmsize L43.firmsize L44.firmsize L45.firmsize
L46.firmsize L47.firmsize L48.firmsize L49.firmsize L50.firmsize L51.firmsize L52.firmsize L53.firmsize
L54.firmsize L55.firmsize L56.firmsize L57.firmsize L58.firmsize L59.firmsize L60.firmsize L61.firmsize
L62.firmsize L63.firmsize, lag(82) force

12. Appendix E: Stata do files for case 3

//Telling stata we're working with timeseries data

```
gen t=_n
```

```
tsset t
```

// normal regression, not a timeseries yet test

```
reg Returns news
```

```
whitetst
```

```
reg Returns news firmsize
```

```
whitetst
```

//simple regression with only news sentiment as the independent variable

```
regress Returns L.news
```

// testing for OLS assumptions: Homoskedasticity and uncorrelated error terms

whitetst

estat bgodfrey, lag(75)

corrgram Returns

//regressing while accounting for serial correlation in the error terms

newey Returns L.news, lag(75) force

// regression with news sentiment and firm size as independent variables

regress Returns L.news L.firm size

// testing for OLS assumptions: Homoskedasticity and uncorrelated error terms

whitetst

estat bgodfrey, lag(73)

// regressing while accounting for serial correlation in the error terms

newey Returns L.news L.firm size, lag(73) force

//adding lags of news sentiment and lags of firm or region size

regress Returns L1.news L2.news

whitetst

estat bgodfrey, lag(73)

newey Returns L1.news L2.news, lag(73) force

regress Returns L1.news L2.news L1.firm size L2.firm size

whitetst

estat bgodfrey, lag(78)

newey Returns L1.news L2.news L1.firmsize L2.firmsize, lag(78) force

// 3 lags

regress Returns L1.news L2.news L3.news

whitetst

estat bgodfrey, lag(77)

newey Returns L1.news L2.news L3.news, lag(77) force

regress Returns L1.news L2.news L3.news L1.firmsize L2.firmsize L3.firmsize

whitetst

estat bgodfrey, lag(84)

newey Returns L1.news L2.news L3.news L1.firmsize L2.firmsize L3.firmsize, lag(84) force

// 4 lags

regress Returns L1.news L2.news L3.news L4.news

whitetst

estat bgodfrey, lag(73)

newey Returns L1.news L2.news L3.news L4.news, lag(73) force

```
regress Returns L1.news L2.news L3.news L4.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize
```

```
whitetst
```

```
estat bgodfrey, lag(82)
```

```
newey Returns L1.news L2.news L3.news L4.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize,  
lag(82) force
```

```
// 5 lags
```

```
regress Returns L1.news L2.news L3.news L4.news L5.news
```

```
whitetst
```

```
estat bgodfrey, lag(77)
```

```
newey Returns L1.news L2.news L3.news L4.news L5.news, lag(77) force
```

```
regress Returns L1.news L2.news L3.news L4.news L5.news L1.firmsize L2.firmsize L3.firmsize  
L4.firmsize L5.firmsize
```

```
whitetst
```

```
estat bgodfrey, lag(83)
```

```
newey Returns L1.news L2.news L3.news L4.news L5.news L1.firmsize L2.firmsize L3.firmsize  
L4.firmsize L5.firmsize, lag(83) force
```

```
//6 lags
```

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news
```

```
whitetst
```

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news, lag(72) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize

whitetst

estat bgodfrey, lag(83)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize, lag(83) force

//7 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize

whitetst

estat bgodfrey, lag(78)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L1.firmsize L2.firmsize
L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize, lag(78) force

//8 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize, lag(72) force

//9 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news

whitetst

estat bgodfrey, lag(70)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news,
lag(70) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize, lag(72) force

//10 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news

whitetst

estat bgodfrey, lag(67)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news, lag(67) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize

whitetst

estat bgodfrey, lag(71)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize
L9.firmsize L10.firmsize, lag(71) force

//11 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news

whitetst

estat bgodfrey, lag(69)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news, lag(69) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize, lag(72) force

//12 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news

whitetst

estat bgodfrey, lag(68)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news, lag(68) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize

whitetst

estat bgodfrey, lag(72)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize
L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize, lag(72) force

//13 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news

whitetst

estat bgodfrey, lag(66)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news, lag(66) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize

whitetst

estat bgodfrey, lag(71)

```
newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize
L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize,
lag(71) force
```

//14 lags

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news
```

```
whitetst
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```
estat bgodfrey, lag(67)
```

```
newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news, lag(67) force
```

```
regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize
L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize
L13.firmsize L14.firmsize
```

```
whitetst
```

```
estat bgodfrey, lag(68)
```

```
newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize
L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize
L13.firmsize L14.firmsize, lag(68) force
```

// adding 7 lags at a time until 62 lags

//21 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news

whitetst

estat bgodfrey, lag(66)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news, lag(66) force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize
L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize

whitetst

estat bgodfrey, lag(70)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L1.firmsize L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize
L8.firmsize L9.firmsize L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize
L16.firmsize L17.firmsize L18.firmsize L19.firmsize L20.firmsize L21.firmsize, lag(70) force

//28 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news

whitetst

estat bgodfrey, lag(54)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news, lag(54)

force

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize
L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize
L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize
L26.firmsize L27.firmsize L28.firmsize

whitetst

estat bgodfrey, lag(53)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L1.firmsize
L2.firmsize L3.firmsize L4.firmsize L5.firmsize L6.firmsize L7.firmsize L8.firmsize L9.firmsize
L10.firmsize L11.firmsize L12.firmsize L13.firmsize L14.firmsize L15.firmsize L16.firmsize L17.firmsize
L18.firmsize L19.firmsize L20.firmsize L21.firmsize L22.firmsize L23.firmsize L24.firmsize L25.firmsize
L26.firmsize L27.firmsize L28.firmsize, lag(53) force

//35 lags

regress Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
L30.news L31.news L32.news L33.news L34.news L35.news

whitetst

estat bgodfrey, lag(54)

newey Returns L1.news L2.news L3.news L4.news L5.news L6.news L7.news L8.news L9.news
L10.news L11.news L12.news L13.news L14.news L15.news L16.news L17.news L18.news L19.news
L20.news L21.news L22.news L23.news L24.news L25.news L26.news L27.news L28.news L29.news
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13. Appendix F: Stata momentum do file

// MSCI regressed on 5 days high momentum-portfolio

reg dayshighmomentumportfolior Returns

// MSCI regressed on 5 days low momentum-portfolio

reg dayslowmomentumportfoliore Returns

// MSCI regressed on 2 weeks high momentum-portfolio

reg weekshighmomentumportfolio Returns

// MSCI regressed on 2 weeks low momentum-portfolio

reg weekslowmomentumportfolior Returns

// MSCI regressed on 3 weeks high momentum-portfolio

reg CT Returns

// MSCI regressed on 3 weeks low momentum-portfolio

reg CU Returns

// MSCI regressed on 1 month high momentum-portfolio

reg monthhighmomentumportfolio Returns

// MSCI regressed on 1 month low momentum-portfolio

reg monthlowmomentumportfolior Returns

// MSCI regressed on 2 months high momentum-portfolio

reg monthshighmomentumportfolio Returns

// MSCI regressed on 2 months low momentum-portfolio

reg monthslowmomentumportfolio Returns

// MSCI regressed on 3 months high momentum-portfolio

reg CZ Returns

// MSCI regressed on 3 months low momentum-portfolio

reg DA Returns

14. Appendix G: Gathered data



Thesis data.xlsx

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