# Price Momentum and Political Uncertainty

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## Abstract

This thesis discusses whether price momentum returns differ in stable times compared to times when there is political uncertainty. First, this thesis investigates whether price momentum returns are still significantly positive. Furthermore, price momentum returns are compared over different years in Belgium, when there was no government active at that time period. The years 2008 up until 2011 are taken into account. I used t-tests to investigate whether the returns of the different years differ from each other. I found that price momentum positive returns still exist, but there is not enough evidence to state that price momentum returns differ significantly during times of uncertainty.

# Contents

# 1. Introduction

Price momentum appears to be a returning subject in financial papers. Especially in the 1990s and the start of the 2000s, there was quite some research regarding this topic. Price momentum is defined as 'the phenomenon that the best and worst performing stocks over the past three to twelve months continue to realize, respectively, high and low returns over the next three to twelve months.' (van der Sar, 2018, p. 58). This has been shown in the US to be significant by Jegadeesh & Titman (1993) over the period of 1965-1989 and in another study by the same authors in 2001 in the period of 1990-1998. Both periods seem to have high abnormal returns when you look at the price momentum strategy. Also Rouwenhorst (1998) has tried to show the price momentum effects in different countries. He found significant returns for 12 different countries.

The most important researches in this field have been performed around the 1990s. More recent research is not in large portions available. A lot of research in this topic has also been done to look for possible explanations of the effect. It is generally accepted that price momentum can yield significant abnormal returns, but there is not one generally accepted explanation for the effect. Bondt & Thaler (1985) looked at the overreaction effect, for example. Most of the explanations that have been researched focus on a misperception of information. Underreaction and overreaction effects are closely examined by several researchers. There is still no complete explanation found for price momentum, which makes it still an interesting topic in research. Furthermore, it is very interesting for investors to look at these effects. This is mostly because there is a possibility for them to generate abnormal returns when they invest in price momentum strategies. That means that the research in price momentum is important in the literature (other research), as well as in practice (investors).

There are a lot of different explanations covered over the years with regards to price momentum. If we look at Griffin, Ji, & Martin (2003) for example, they tried to explain price momentum with macro-economic factors. They used GDP growth and aggregate stock market movements to check whether price momentum and the state of the economy are related to each other. They also state that risk-based asset pricing models cannot explain price momentum abnormal returns (Fama & French, 1993).

Griffin et al. use several different macro-economic variables to check for explanations in price momentum. They use a distinction between an unconditional and a conditional model. Starting with the unconditional model, the authors use the following variables: inflation, change in expected inflation, term spread, change in industrial production, and default risk premium. The conditional model uses the following instruments: the market dividend yield, the difference between the average yield on treasury bonds with more than 10 years to maturity and the 3-month treasury bill yield, the 3 month treasury bill yield, and the difference between the average yield of AAA and BBB rated bonds. They conclude that: 'momentum simply cannot be explained by our set of standard macro-economic state variables'. After reading this paper, we can conclude that the explanations of the price momentum will not be

found in the macro-economic corner. Then the question naturally rises; what does explain price momentum?

A lot of possible explanations are related to overreaction hypotheses, but it still does not give sufficient evidence to conclude that this is indeed the best explanation in price momentum. This means that it might be a good idea to look in another direction. This thesis will look into other possible explanations in the price momentum theory, mostly in the corner of politics. Perhaps political factors have an influence on the possibility to generate abnormally high returns with the strategy. I will check whether price momentum returns in regular (stable) times differ from times where there is political uncertainty.

Several events can bring political uncertainty. A recent example is Brexit, but there are also other events which bring political uncertainty in countries or regions. Another example is when there is no government, directly after elections. This happened in Belgium for example, in 2010/2011 they did not have a government for 541 days. This could have an impact on stock prices and price momentum in this period, this thesis will focus on the effects in Belgium. The expectation of this study is that political uncertainty has a negative effect on the price momentum returns, this will be further motivated in a later part. The effect of this event on price momentum will be studied in this thesis. There will be checked whether there is an influence on price momentum, and what kind of influence this is. That is why the central question in this study is as follows; what is the impact of political uncertainty on the price momentum abnormal returns?

I used the Belgium stock exchange, the BEL20, to compare the price momentum results with the market returns. The situation in Belgium is covered (no government for 541 days), compared to the stable state. The methodology of the paper by Griffin et al. is used. In their paper, they use monthly stock return data for listed firms available from Datastream International. There is a so called ‘ranking period’ in which good and bad stocks are determined and an ‘investment period’. In the investment period, there is artificially invested in the good stocks and short in the bad stocks. Both of these periods are six months long. The top 10% winners are held and the bottom 10% losers are shorted in an artificial portfolio. For the sake of robustness, I also tested the momentum profits with the top and bottom 25% of the index to check whether results differ when more stocks are taken into account.

It is also important to check whether there is still a possibility to generate high abnormal returns by using a price momentum strategy. The results of the portfolios are therefore compared to the market returns in that period, to check if price momentum still holds in the more recent time periods. I used t-statistics to check whether the returns are significantly different from the market returns in that time period. Furthermore, there are more t-tests to compare the ‘regular’ time period, with stable government and political climate, with the time period of uncertainty. In this case, t-statistics are used as well to check whether the returns are significantly different in different situations.

It is well known that in times of uncertainty, the stock prices go down. That is because investors switch in preference from stocks to more safe options, such as

bonds, in times of uncertainty. This trend is seen in many events, like a recession or war. The expectation of this study is that this is the same for political uncertainty, no government in this case. Which means that the abnormal returns from holding the before described portfolio will be lower than the returns in 'regular' times. In short, the expectation is that political uncertainty has a negative effect on the possibility to generate high abnormal returns with a price momentum strategy.

# 2. Literature Review

## 2.1 Price Momentum

A definition of price momentum documented by Chordia & Shivakumar (2006) is as follows: 'the price momentum strategy that buys past winners and sells past losers earns abnormal returns for a period of up to a year after the inception of the strategy.' (p. 628). This strategy entails going long in prior winners and going short in prior losers and appears to be significantly profitable for the period of approximately one year. There have been a lot of different authors who did research on this topic, the most important ones will be covered in the following section.

The explanation of price momentum, however, is still uncertain until this day. Several different theories have been linked to price momentum, but none of them appear to fully explain the phenomenon. The following part of this thesis will show the explanations that have been covered by the existing literature. This part will cover the following possible explanations: chasing past trends, earnings momentum, overreaction, underreaction, industry factors and macro-economic factors. These factors have all been examined and linked to price momentum, some of them provide partial explanations for price momentum, but none of them can fully explain it.

## 2.2 Empirical Results

Jegadeesh & Titman (1993) were the first to investigate the profits of momentum. They used the strategy of going long in prior winners and going short in prior losers. They investigated this in the period 1965-1989 in the United States. The portfolio they held, generated a 12.01% excess yearly return. They link overreaction and underreaction theories to their result, as well as systematic (market) risk, but do not find any sufficient explanations.

Rouwenhorst (1998) extended the literature in price momentum by examining multiple countries. He examined several European countries during the period 1980-1995. The portfolio of prior winners outperformed the portfolio of prior losers by average of 1% a month (after correcting for risk). He links his own research with the beforementioned research by Jegadeesh & Titman, (1993) and concludes that there are similar results for European countries and the U.S. He suggest that there is a common factor between all these countries that drives the price momentum significant positive returns, but he does not name this factor.

Chan, Jegadeesh, & Lakonishok (1999) also investigated the profitability of price momentum strategies. They found a maximum spread of 8.8% in the return between losers and winners over the next 6 months, related to the previous 6 months. The authors also give possible explanations, namely that investors might 'chase past

trends'. This entails that investors buy good performing stocks and sell bad performing stocks, which will lead to price drifts. They use this theory as a suggestion, but the authors do not imply that this is the explanation for price momentum.

Jegadeesh & Titman extended their study mentioned before in 2001. Their main findings are similar to their earlier paper. Price momentum strategies yield significant positive returns. The main possbile explanation they cover is the behavioral explanation. This means that investors might have a preference for prior winners, so the winners are in some kind of flow and generate high returns in the next period. They conclude that 'behavioral models provide at best a partial explanation for the momentum anomaly.' (Jegadeesh & Titman, 2001, p. 719)

### 2.3 Different Explanations

Another part of the literature tries to link earnings momentum to price momentum. Bernard & Thomas (1989) were one of the first authors to look into the earnings momentum. They investigated two different explanations, a delayed price response and a risk premium. They state that a delayed price response (the reaction to the unexpectedly high earnings is later than expected implemented in the price, which causes high earnings for the subsequent periods) is the most likely to be an influence on earnings momentum. Price momentum was not yet a known understanding in this period, so they did not link price to earnings momentum yet.

Chordia & Shivakumar (2006) investigated whether price momentum can be explained by earnings momentum. The authors define earnings momentum as follows: 'earnings momentum refers to the fact that firms reporting unexpectedly high earnings subsequently outperform firms reporting unexpectedly low earnings.' The authors conclude that price momentum is partly due to a systematic component of earnings momentum. The authors conclude that 'price momentum is merely a manifestation of earnings momentum' (p. 655). Their research contributes in finding an explanation for price momentum, but the explanation is still not sufficient.

Griffin, Ji, & Martin (2005) also examined both price momentum and earnings momentum. The authors draw several conclusions from their research. They conclude that a momentum strategy outperforms the market and that this is the case in multiple countries. They also state that price and earnings momentum are correlated. Momentum strategies that use both of the momentum phenomena outperform strategies that implement only one. Finally, momentum strategies also exist in both up- and down markets and are very volatile, they can yield even negative returns. They do not mention any explanation for these momentum profits.

Another research in price and earnings momentum is the research by Hou, Xiong, & Peng (2009). This paper investigates the profitability of both price and earnings momentum with several factors. They make a distinction between price and earnings momentum, and state that price momentum is profitable in high markets and with high volume stocks. Earnings momentum is profitable in low markets with low volume stocks.

The paper by Fama & French (1996) introduces their well-known three-factor model. In this paper, the authors link the three-factor model to several asset pricing anomalies, including price momentum. They even call the failure to capture the continuation of short term returns 'the main embarrassment of the three-factor model'. They give three possible explanations that their model cannot explain price momentum. The first story is that the price momentum results are caused by data snooping. The second is that asset pricing is irrational, investors underreact to past information and overreact to long-term information. The last one is that asset pricing is rational, but the three-factor model is just a model and not able to explain the price momentum positive returns.

Grundy & Martin (2001) also tried to use the three-factor model to explain the price momentum profits. The authors examine the risks and possible explanations of the price momentum positive returns. They show that the three-factor model cannot explain price momentum. They conclude that the profitability in the price momentum strategies has to lie in stock-specific component of returns. They fail to cover any explanations or theories regarding the positive momentum returns they found in their paper.

One theory that has often been linked to price momentum, is the overreaction theory. The first authors to document this effect are Bondt & Thaler (1985). They suggest that most people overreact to unexpected, bad news. This means that stocks that lose heavily will outperform the good performing stocks of about 25% in a 36-month period. They do not give any explanations for this effect. Since this research was before the first research regarding price momentum, they do not link overreaction and price momentum yet in their paper.

Underreaction is also a popular explanation for the price momentum effects. Chan, Jegadeesh, & Lakonishok (1996) tried to link under- and overreaction to momentum. They relate the predictability of future returns to the underreaction to information about the past earnings. The authors conclude that past earnings and past earnings surprises (price and earnings momentum) can explain future returns partly. Looking at price momentum (ranking stocks on the prior six-month returns), they observe spreads of 8.8% with regards to the following six months. They also acknowledge the difference between underreaction and overreaction in their paper, and state that one does not necessarily rule out the other.

Moving forward to a different type of explanation in momentum, some authors tried to link momentum to industry factors. One well-known paper regarding industry factors and momentum is the paper by Moskowitz & Grinblatt (1999). The authors conclude that industry effects capture most of the momentum returns. They state that after controlling for industry factors, momentum profits are significantly less. Industry momentum strategies, where stocks from winning industries are bought and stocks from losing industries are sold, appear to be highly profitable. They fail to give any explanations regarding their findings.

A follow-up study by Lee & Swaminathan (2000) refers to the previous paper. They state that the industry factors do have an effect on the price momentum returns, but not as strong as Moskowitz & Grinblatt (1999) say in their paper. Lee & Swaminathan

conclude that about 20% of the price momentum returns can be explained by industry factors, which means that it still has a significant effect. The authors state, however, that past returns and trading volume are most important predictors for future returns.

Macro-economic factors have also been linked to price momentum by several authors. The previously mentioned paper by Griffin e.a. (2003) is one example, Chordia & Shivakumar (2002) also relate price momentum with macro-economic factors. They conclude that macro-economic factors have some explanation in momentum profits, but those factors don't have full explanatory power. The authors state that future research should focus on linking the macro-economic factors to price momentum in trying to explain the momentum profits.

Cooper, Gutierrez Jr, & Hameed (2004) show that macro-economic variables have little explanatory value in momentum profits, after changing the methodology compared to Chordia & Shivakumar. They explicitly mention this paper in their research and state that their results are wrong. They link market states with momentum profits and show that momentum profits are more significant when the market had positive returns in that period, they even show that profits disappear completely when there was a down market in the previous period.

The previous part of this thesis showed that there are a lot of different possible explanations with regards to price momentum. Jegadeesh & Titman (2011) give an overview of the most significant explanations and research that has been done to try to explain price momentum profits. They do not, however, give an answer to the question what the most likely explanation is with regards to the momentum profits.

A lot of researchers have tried to link economic variables to price momentum. However, there is still not one generally accepted explanation in this corner. The results are mixed, some authors state that there is partial explanatory power in the economic variables, other state that there is none. Perhaps it would be better to look in other corners to look for price momentum explanations, in this case political factors.

## 2.4 The Situation in Belgium

Take for example Belgium. Belgium had a period where there was no government right after the elections because they could not build a coalition. After the elections, the formation period started, but the different parties did not really find each other in the negotiations. Especially regarding migration and other important issues, such as retirement, there were quite some differences between the parties. This process started in June 2010 and finished in December 2011, making it the longest period without a government in history. But what influence does this have on price momentum returns?

People could be uncertain in this kind time periods, especially when it takes as long as it did in Belgium in 2010/2011. What would be the influence of this uncertainty on the price momentum profits? It could be that the possibility of generating high returns by implementing a price momentum strategy will go down. Look for example at Pastor & Veronesi (2012), they show that stock prices tend to fall in times of

uncertainty. The authors used changes in government policy here as times of uncertainty and tested that on the stock prices. They state that the changes in government policy result in a lower stock price compared to regular times. Another paper that links political factors to stock returns is the paper by Santa-Clara & Valkanov (2003). They tested the difference between returns in America when there was a Republican government compared to a Democratic government. They show that there was about a 16% difference on their equal weighted portfolio, but there were not any differences in risk. This shows that the political situation can have an impact on the stock market in a particular country.

There is no paper available which links momentum to political factors. This thesis will research the effect that political uncertainty has on these profits and I will compare the results of the times of uncertainty with regular 'stable' times. My expectation is that the profits will be less significant in uncertain times, compared to the profits in the regular time periods. As both before mentioned papers show, political factors can have an impact on the stock market. In this case I expect that stock prices will go down, and thus the possibility of generating high price momentum returns will go down as well.

## 3. Data and methodology

The data that I used is retrieved from Datastream International. I used this to obtain the index returns of the BEL 20, the national index of Belgium. This index comprises 20 Belgium stocks, that were chosen through several criteria and is the most used Belgian index. To identify the top 10% and the bottom 10%, I used Yahoo Finance to gather all the separate returns from the stocks that were part of the index at a particular point in time. I used time series data to obtain the data from several time periods. I used the top and bottom 10% stocks as a main result, but as a robustness check I also investigated if there were any differences in the results with the top and bottom 25%. This thesis investigates the difference in price momentum profits when there is a stable time and when there are unstable times. Unstable times in this case, is the time where Belgium didn't have any government. This is from 13$^{th}$ June 2010 until the 6$^{th}$ of December 2011, which is 541 days without government.

This particular time period is compared to another time period. These time period is January 2007 until June 2010. The reason I chose this time period is that the this was the start of the economic crisis in the world. The time when Belgium was without a government was in the middle of this crisis, so it might be good to compare those two periods, to avoid potential biases.

I made portfolios comprising the best and worst performing stocks during a six month period, the six months that follow show the momentum profits. I used the top and bottom 10% of the first six months and invest in those stocks the following six months. The first six months can be seen as a control period, in which the stocks are ranked and the best and worst performing stocks are chosen. I invested in those stocks in the investment period, which starts at the end of the control period and will go on for six months.

Because I use the BEL20 (which consists of 20 stocks), the two best performing and the two worst performing stocks of every month will be identified and then invested in. I will go long in the best performing stocks over that period, and short in the worst performing stocks every month. Because I use this strategy every month, there will be six different portfolios active at all times.

The BEL20 consists of 20 stocks, and the index is revisited every year in March to check whether there are other companies that might be better qualified to be included. This means that over the years, several different companies were in the BEL20. I made an overview of all the stocks that were in the BEL20 over the years 2007-2011. In the control period I made sure that the best and worst performing stocks were indeed part of the index in that particular time period. Table 1 shows an overview of all the relevant stocks that were part of the index over the years used in this study.

| **Company** | **Time Period** | | |
|---|---|---|---|
| AB Inbev | 2002-present | Ackermans | 2007-present |
| Ageas | 1991-present | Agfa-Geveart | 1999-2009 |
| Befimmo-Sicafi | 2009-2016 | Bekaert | 1999-2008 |
| CNP | 2006-2011 | Colruyt | 1993-present |
| Confinimmo | 2003-present | Delhaize | 1991-2017 |
| Dexia | 1997-2012 | Engie | 2005-2019 |
| GBL | 1991-present | KBC | 1993-present |
| Mobistar | 2002-2013 | Nystar | 2008-2009 & 2011-2013 |
| Omega Pharma | 2002-2011 | Proximus | 2004-present |
| Solvay | 1991-present | Telenet | 2009-present |
| UCB | 1991-present | Umicore | 1991-present |

*Table 1: all the stocks that were part of the BEL20 index over the period 2007-2011. In this stocks the top and bottom 10% are used, which means that we go long in the 2 best performing stocks over the past few months and short in the 2 worst performing stocks over that time period.*

After I identified the top and bottom performers over a particular month, I invested in those stocks the following six months. I compared the returns that this strategy yields to the returns of the BEL20 in the same time period. First I checked whether there are possible price momentum profits at all. After that I investigated whether price momentum returns differ in times of political uncertainty. I used t-statistics to identify any differences between the strategies.

I will show the results for the momentum strategy for each year and compare each year to the BEL20 returns to check for different results between different years. As such, I can make a distinction between several years and identify irregularities here.

What follows is a table that shows the most important variables with regards to all the stocks that were part of the index over the relevant time period.

| Company | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| BEL20 | 55 | -.0491768 | .1712255 | -.4401625 | .3523737 |
| ABInbev | 55 | .0451867 | .2298591 | -.5322541 | .8087666 |
| Ackermann | 55 | .0045134 | .1860453 | -.4940916 | .4151465 |
| Ageas | 55 | -.0760368 | .5375072 | -.9434562 | 1.906.351 |
| Cofinnimo | 55 | -.0398951 | .1079414 | -.3048755 | .1514021 |
| Colruyt | 55 | -.0036191 | .0940206 | -.25332 | .1429016 |
| GBL | 55 | -.0367236 | .1164636 | -.3334306 | .193706 |
| KBC | 55 | -.0520688 | .4637392 | -.8593839 | 1.28 |
| Proximus | 55 | -.0283745 | .0972997 | -.2229064 | .2053431 |
| Solvay | 55 | -.0186305 | .2078624 | -.477056 | .5238181 |
| Telenet | 34 | .1382575 | .156701 | -.1778639 | .4150943 |
| UCB | 55 | -.0149407 | .1864237 | -.4569349 | .3922279 |
| Umicore | 55 | .0493606 | .2633319 | -.6029579 | .5325928 |
| AgfaGevaert | 21 | -.3542915 | .2135679 | -.6100623 | .0989895 |
| BefimmoSic~i | 34 | -.0170759 | .0906307 | -.2301687 | .1561879 |
| Bekaert | 55 | .0771462 | .3996471 | -.6346313 | 1.257.981 |
| Delhaize | 34 | .0090568 | .0829364 | -.1434333 | .1605525 |
| Dexia | 55 | -.1490459 | .5268721 | -.8394595 | 2.280.357 |
| Engie | 55 | -.0338034 | .1308605 | -.3071233 | .1857991 |
| Mobistar | 55 | -.0334175 | .0942344 | -.2356422 | .1652579 |
| Nyrstar | 46 | .0902482 | .617721 | -.8329884 | 1.936.077 |

*Table 2: descriptive statistics for each company that was part of the index in the relevant time period. Here we can identify the average six month return of each company, when looking at 'mean'. The data is over the period 2007-2011, so the relevant time period for this thesis. Min and max show the minimum and maximum six month results for each company, while std. dev. shows the standard deviation for the company. The data for the stocks was acquired through Datastream International or Yahoo Finance.*

Note that these are the statistics for the six month returns (control period). For example, the mean shows the average six month returns in percentage. So the BEL20 has an average six month return of -4.9% over the four relevant years. Telenet has the highest average return with 13.8%, while Agfa-Geveart has the lowest average return with -35.4%, but this company has less observations because they were taken out of the index in 2009. It makes sense that their average return is so low, since they were taken out of the index for a reason. Other companies were more suited at this point to take part in the index.

Another thing that is noteworthy is the high standard deviation of Ageas, KBC, Dexia and Nyrstar. These companies were at the begin of my dataset the worst performers, but recovered in the final years. During their recovery, they all had some highly positive returns, which can be seen in the table at the last column (max value). They all had a six month return of over 125% at some point in the dataset.

## 4. Results

To check whether there are differences between different years with regards to price momentum returns, it is important to check whether the price momentum returns are still significant. There have not been a lot of researches in recent years testing whether implementing price momentum strategies is still profitable. Therefore, it is first important to check if it is still a strategy that is worthwhile to implement. After I identify these returns I can compare the years with each other to check for differences.

I retrieved the data starting January 2007, which means that this is the start of the control period for the first month. This control period will thus be until June 2007, so the first investment period will be from July 2007 until December 2007. I make a distinction between different years in my thesis, which means that the end date of the investment period determines to what year it belongs. For example, the investment period November 2007-April 2008 belongs to the year 2008. As such, I start with the year 2008 in my results.

2008:

| **End of investment period** | **Return portfolio** | | |
|---|---|---|---|
| January 2008 | -0.9559% | July | 68.3991% |
| February | 14.9823% | August | 35.2402% |
| March | 57.3926% | September | 19.7224% |
| April | 59.9101% | October | 104.6701% |
| May | 64.7497% | November | 38.3205% |
| June | 73.0350% | December | 61.4701% |

*Table 3: Momentum returns over the year 2008. The momentum returns for each month are given here. The cumulative return over the full year can be calculated by adding all the months. The top and bottom 10% is used here.*

The first thing that catches the eye with regards to the returns over 2008 is that the returns are spectacularly high. In October, the return was even above 100%. In this

year this is mainly because the bottom 10% yield very bad returns. In October, for example, Nyrstar has a return of -83.2988%. Since this is the worst performing stock in the return period already, we go short in this stock. This gives us a very good return in this time period. This is the case in most months, a lot of stocks lose heavily here because of the crisis. This means that going short yields very high returns. This is the main reason that the momentum strategies generates high returns over this year. Since the crisis plays a big role in the returns of this year, this year might not be very important with regards to the research question.

The cumulative return in 2008 is given if we add all the numbers of the previous mentioned months. This gives us a return of 596,9362%, while the BEL20 yielded a return of -16.0444% in the same period. This is a huge outperformance of the momentum strategy, which is because of the crisis. Going short in the worst performing stocks is the reason for the very high returns for the momentum strategy in the year 2008. The bad return of the market makes this possible explanation more believable. Later in this section I will show the results of the t-statistics to formally show whether they differ significantly.

2009:

| **End of investment period** | **Return Portfolio** | | |
|---|---|---|---|
| January 2009 | 66.6143% | July | -190.0961% |
| February | 49.2770% | August | -256.7312% |
| March | -98.6197% | September | -33.7910% |
| April | -284.2532% | October | -84.1776% |
| May | -418.7797% | November | -78.1144% |
| June | -232.7877% | December | 6.8643% |

*Table 4: Momentum returns over the year 2009*

The difference between 2008 and 2009 momentum returns is that the strategy in 2009 yields very bad returns. In April, May, June, and August the return is even below the -200%. The reason here is that several companies are recovering from the first year of the crisis and have very good returns over this period. This means that the control period returns were quite bad for several stocks, but they recovered and yield quite good returns in the investment period. Since we go short in those stocks, the increase in the stock price of those companies results in bad returns for our momentum strategies.

If we look at May for example, the return is extraordinary high. This is because the companies Ageas and Nyrstar are recovering from the crisis and almost triple their stock price in this period. They made a switch from worst performing companies to the best ones, both generating a return of over 190% in the investment period that lasts until May. As we can see in the table, especially from April until August are extraordinary high. Thereafter, the market returns to a relatively stable state and the index starts to rise.

The cumulative return over 2009 is -1,554.595%, which is extremely low, while the BEL20 has a cumulative return of -48.9529% over 2009. The BEL20 returns are

pretty low at this point, but this is mostly due to the bad performance in the starting months of this year. In the final months, the price of the index shows that the market is beginning to recover from the big hit of the first crisis year. The rise in the price of the index makes the possible explanation regarding the huge difference in returns between 2008 and 2009 more plausible (with regards to the recovering companies generating bad momentum returns).

2010:

| **End of investment period** | **Return Portfolio** | | |
|---|---|---|---|
| January 2010 | -5.9467% | July | 15.3901% |
| February | -28.3458% | August | 75.0197% |
| March | 2.9024% | September | 73.6929% |
| April | 1.6238% | October | 105.6710% |
| May | 24.6364% | November | 58.8979% |
| June | 79.7037% | December | 104.6278% |

*Table 5: Momentum returns over the year 2010*

2010 is the year in which the elections in Belgium take place. 2010 and 2011 are important years regarding the research question of this thesis. Here we can identify whether the absence of the government has any influence in momentum profits. The time without any government starts the 13th of June.

The momentum profits appear to grow starting June, but the profits are not as big as the previous years. The profits in this year are high because the stocks really appear to have momentum here. The stocks in which we go long still perform well after six months and the losers still perform quite bad after six months. This results in good returns in our long and short positions, so the momentum strategy is quite profitable here. Especially the second half of the year appears to be profitable, with October and December as peaks. This is mostly due to the same companies in this month. The company Bekaert performs very well here, generating high returns for almost one entire year. In 2010, their stock price rose from approximately €35,- to a peak of more than €85 per share. Another company that really appears to have momentum in this year is Dexia. They continue to have bad returns for over a year, in 2011 as well, so they generate high returns for the momentum portfolio.

The cumulative return in this year is 507,8732%, which is still very high. Here the momentum strategy outperforms the market very easy. The return of the BEL20 in 2010 is 5,3289%, which is pretty modest in one year. To draw any conclusions with regards to the research question, we first have to look to 2011.

2011:

| End of investment period | Return Portfolio | | |
|---|---|---|---|
| January 2011 | 54.1324% | July | 8.3859% |
| February | 11.5785% | August | -40.8448% |
| March | 17.4937% | September | -9.7291% |
| April | 38.5871% | October | 58.5530% |
| May | -31.4453% | November | 92.1890% |
| June | 9.0716% | December | 87.5972% |

*Table 6: Momentum returns over the year 2011*

If we look at the momentum returns over the year 2011, it is especially noticeable that the last few months generate higher returns than the other months in this year. This is because there is one company called Dexia that has very low returns in these months. The crisis was especially hard on this company, and their six month return was a loss of more than 79% in October, November and December. In November, the company even lost almost 85%. Since we go short in this stock, because they were identified as 'losers' in the control period, we generate a high return with the momentum strategy. This company is quite an outlier in the results, and one reason why the strategy yields such high returns.

The cumulative return for this year is 295.5692%, which is also spectacularly high, but not as high as the previous three years. The BEL20 yield -16.3679% in 2011, which is an indication that the market is still not performing very well in this year. There is no government in Belgium until mid-December of 2011, so that is the relevant time period for this thesis.

For the sake of clarity, here is a table with the momentum returns and the returns of the index over the 4 years that I tested in this thesis.

| Year | Momentum Returns | BEL20 returns |
|---|---|---|
| 2008 | 596.9362% | -16.0444% |
| 2009 | -1,554.595% | -48.9529% |
| 2010 | 507.8732% | 5.3289% |
| 2011 | 295.5692% | -16.3679% |

*Table 7: all momentum returns and index returns tested in this thesis. All these results were previously mentioned in this thesis, but this table makes the most important results a little clearer. The momentum returns are when implementing the top and bottom 10% strategy.*

I performed t-tests to formally check whether the momentum returns outperform the index. They all appear to significantly differ from the index at the 1% significance level (p-values of 0.001, 0.0114 and 0.0087 for the respective years), except for 2011, which gives a p-value of 0.0468. All values are significant at the 5% level, so we can conclude that the momentum returns differ from the index significantly. All

years outperform the index, except for 2009, where the strategy clearly underperforms compared to the BEL20 returns.

When we look at differences between years, I used t-tests for every year to check whether they differ significantly from each other. Since I have 4 years here, I performed 6 t-tests to check for all the differences and to be able to answer the research question. It is especially interesting to look at the difference between the first two years and the last two years, to check whether the absence of the government has any influence on the momentum profits. Special interest is thus on the difference between 2008 and 2010/2011 and between 2009 and 2010/2011.

If we first look at the difference between 2008 and 2010, the t-test gives a p-value of 0.5472, so this is clearly not significant and we can't say that the momentum returns of 2008 and 2010 differ from each other. The same can be said about the difference between 2008 and 2011, since the p-value of this test gives us 0.1059, which is not even significant at the 10% level. Thus, we can't say that there exist any differences between the momentum strategy returns for 2008 compared to the years 2010 and 2011 here.

Moving on to 2009, I apply the same t-tests to compare this year to 2010 and 2011 as well. The results are quite different from the results for 2008. Here we reject the null-hypothesis that there is no difference at the 1% level for both years. Testing for the difference between 2009 and 2010 gives a p-value of 0.0030, and testing between 2009 and 2011 gives a p-value of 0.0017. This means that for both years we can state that the momentum returns differ significantly compared to the year 2009.

Finally, the t-test to compare the years 2010 and 2011 could also be important. The elections in Belgium were in June 2010, but the first few months it is not uncommon that there is no government, this happens in other countries as well (recently in the Netherlands in 2017, it took 225 days). To compare these two years, we can check whether the returns differ when the forming of the coalition took longer than usual, in this case longer than six months. T-test gives a p-value of 0.3019, which means that we cannot say that the momentum return is different in 2011 compared to 2010.

I also calculated the results using the top and bottom 25%, to check for the robustness of my results (tables are in the appendix). The momentum results are still all significant here, compared to the BEL20 index (all at the 10% level, two of the four years at the 1% level). I also looked at the differences between the years at the 25% top and bottom results. The t-tests have similar results as the tests with the top and bottom 10%, two t-tests gave different results. This is the case with the test that compares 2008 and 2011 for example. With the top and bottom 10% strategy, the t-test showed that there was not a significant difference between the two years, while the top and bottom 25% strategy rejects the null-hypothesis that the years yield similar returns with a p-value of 0.0209, which means that it is significant at the 5% level.

The other years that give different results are 2010 and 2011. With the top and bottom 10% strategy they did not differ significantly, but with the 25% they differ

significantly at the 10% level. However, this is not very important regarding the research question since the differences between 2008/2009 and 2010/2011 are the main focus of this thesis.

## 5. Conclusion and discussion

The first thing that is very important to identify is whether price momentum strategies still yield positive returns. Research regarding this topic has quieted down in recent years, which makes it interesting to check whether the strategy still yields positive returns. In 2008, 2010 and 2011 the returns are significantly positive and differ significantly from the index. The latter can also be said about 2009, but contrary to the other years the strategy yields extremely low returns in this year. A plausible explanation for this result is that the financial crisis reached a peak at this point, resulting in very low returns for multiple companies. We can thus conclude that price momentum profits still exist, in line with beforementioned research by Jegadeesh & Titman (1993), Rouwenhorst (1998), and Griffin e.a. (2003), among others.

The difference between years is especially important regarding the research question, since we want to answer whether stable times and unstable times differ in the possibility to generate high momentum returns. It appears that the year 2008 doesn't differ from 2010 and 2011 significantly, while 2009 is significantly different from both years. The most plausible explanation regarding this result is the crisis of these years. I expected, in line with Pastor & Veronesi (2012) and Santa-Clara & Valkanov (2003), that the returns would differ in times of uncertainty. But, 2009 had lower returns than 2010 and 2011, probably because of the crisis. This means that this year might not really be important for the research question.

Taking everything into account, we cannot really conclude that the momentum returns are different in politically unstable times. There are no differences when comparing 2008 to the relevant years, and 2009 appears to be lower because of the crisis. Furthermore, some of the p-values changed when I took more stocks into account (with the 25% top and bottom strategy). The difference between 2008 and 2011 also gave different results when I took different percentages in account. It was not significantly different with the top and bottom 10%, but it was significant with the top and bottom 25% at the 5% level. The difference between the year 2010 and 2011 also gave an ambiguous conclusion, since it was not different with the top and bottom 10% strategy, but it was different when the top and bottom 25% were taken into account. It might still be true that political factors do have an influence in momentum strategy, but it will require further research to be able to make a full conclusion on this topic.

There are a few suggestions for further research. It might be better to use more years than the four years that were investigated in this thesis. Furthermore, there could be more countries that are interesting to look at. An example I gave earlier in this thesis is Brexit, for the sake of robustness multiple countries should be considered to draw a full conclusion. Another suggestion that might be good to use in further research is using more stocks. Momentum strategy usually uses 10-20% top and bottom stocks, but since the Belgian stock exchange only consists of 20 stocks, outliers may be

important here. Due to time constraints of this thesis, I could not investigate a higher percentage of stocks, but the top and bottom 50% could even be investigated to check whether the results will change.

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# 7. Appendix

2008:

| End of investment period | Return Portfolio | | |
|---|---|---|---|
| January 2008 | 47.7483% | July | 125.4797% |
| February | 77.0949% | August | 46.8774% |
| March | 38.6217% | September | 112.6478% |
| April | 21.0573% | October | 74.1642% |
| May | 88.5359% | November | 2.0595% |
| June | 123.2204% | December | 87.5016% |

*Table 8: Momentum returns over the year 2008 when using the top and bottom 25% strategy.*

2009:

| End of investment period | Return Portfolio | | |
|---|---|---|---|
| January 2009 | 132.7876% | July | -697.9493% |
| February | 115.7263% | August | -586.8346% |
| March | -120.6453% | September | -55.8222% |
| April | -323.7908% | October | -47.0365% |
| May | -445.4520% | November | -83.6871% |
| June | -358.9346% | December | -2.8446% |

*Table 9: Momentum returns over the year 2008 when using the top and bottom 25% strategy.*

2010:

| End of investment period | Return Portfolio | | |
|---|---|---|---|
| January 2010 | -21.4067% | July | 30.1394% |
| February | 20.1013% | August | 86.1761% |
| March | -12.2941% | September | 108.2567% |
| April | 3.6385% | October | 99.1424% |
| May | 89.6472% | November | 76.0184% |
| June | 92.8574% | December | 146.3449% |

*Table 10: Momentum returns over the year 2008 when using the top and bottom 25% strategy.*

2011:

| End of investment period | Return Portfolio | | |
|---|---|---|---|
| January 2011 | 37.0788% | July | -7.1763% |
| February | 22.3354% | August | -41.6593% |
| March | 54.0093% | September | -5.2469% |
| April | 30.0972% | October | 84.2323% |
| May | -49.5555% | November | -11.9964% |
| June | 61.7287% | December | 105.6675% |

*Table 11: Momentum returns over the year 2008 when using the top and bottom 25% strategy.*

| Year | Momentum Returns | BEL20 returns |
|---|---|---|
| 2008 | 845.0087% | -16.0444% |
| 2009 | -2,474.4831% | -48.9529% |
| 2010 | 718.6215% | 5.3289% |
| 2011 | 279.5148% | -16.3679% |

*Table 12: All momentum returns and BEL20 returns for the relevant years of this thesis. Momentum returns are given when adding all the separate monthly returns together (as seen in tables 8 until 11)*